

## **H-2. Interrelationship between population Growth in Developing Countries and Global Environment (Final Report)**

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Since April 1997, Professor at Keio University

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This research project aimed at 1) grasping changing population dynamics in China and Thailand in connection with urbanization process. 2) investigating the effects of changing environment on demographic and health behavior making use of DHS data sets. 3) examining the effects of urbanization on global warming by the Edmonds-Reilly model incorporating various scenarios.

In China, excess population created by a natural increase rate over 1% in rural areas, and their subsequent urban-bound migration caused some problems both in urban and rural areas. In the rural Thailand, demographic transition completed by fertility decline in the early 1970s, in response to the end of encroachment of forest land in the 1960s. Increasing opportunities of work in rural areas have changed the meaning of labor migration to Bangkok from negative to positive. Urbanization process of Bangkok was also analyzed by conducting questionnaire survey in a suburban residential area. The respondents there were classified into three groups, namely urban middle class, non-native working class and native Bangkokians, which suggests a multifold composition of suburban residents. From the trend of CO<sub>2</sub> emission and carbon exchange capacity in Thailand in the 1980s, we can estimate that the annual CO<sub>2</sub> emission from fossil fuels in Thailand will exceed the carbon exchange capacity of forests by 2003-2004.

The analysis of DHS clarified the tendency of urban-bound migrants to settle under mal environments and their experiences of infant death were related. The incorporation of the sub model considering urbanization indicated the decrease of CO<sub>2</sub> emission by 22 % in the year of 2050 in the whole world compared with the calculation from the original model.

The impact of population increase on total CO<sub>2</sub> emission in China during 1982-1990 period was analyzed. During the study period, population increase and CO<sub>2</sub> emission per capita contributed 21 % and 70 % respectively. In terms of population increase by region, some provinces in inland area and megacities like Shanghai and Beijing contributed most. Energy transition is the key for stabilization of future CO<sub>2</sub> emission in China.