

P r e f a c e

Last year, the IPCC (Intergovernmental Panel for Climate Change) released its fourth report, which clarified that CO₂ emissions resulting from human activities are the major cause of global warming. “Climate change”, both mitigating and adapting to this phenomenon, is now an important issue in managing national land. In spite of successful efforts to reduce the CO₂ emission in many industries, emission from households and offices is still increasing, and growing electricity demand in the hottest hours in summer is a critical issue in Japan.

In the near future, these will be phenomena common to tropical cities where modernization is rapidly changing the shapes of cities and urban life styles. However, planting trees to provide shade from the sun is a cultural tradition in the hot climates of tropical cities. Traditional and colonial houses also feature a variety of passive adaptations to the hot and humid climate: adaptations which offer suggestions for the design of future houses.

Human settlements have traditionally been local issues, however, borderless interaction is occurring through GHGs, and the international trade of materials is influencing local market prices. Therefore, we have to consider global impacts even when designing details of human settlements.

If instead of locking the barn door after the horses have escaped, we find sustainable solutions related to housing and the structures of cities before the price of fossil fuels soars and damage caused by emissions imposes heavy costs, citizens of the future will enjoy happier lives. Architects, engineers and city planners can also contribute to the creation of an image of future human settlements that will be sustainable in the face of climate change: a challenge unknown to creators of utopias in the past centuries. New technologies for saving material and energy are now being developed rapidly and might soon be available at reasonable costs.

This book is a report on the results of research titled “Supporting Strategy for Urban Development and Housing Construction in Developing Countries Related to Global Climate Change” undertaken between fiscal years 2004-2006. This work was supported by the Global Environment Research Fund (04-10) of the Ministry of the Environment, Japan.

Cities studied were selected in Indonesia, and the field research was carried out by a research team organized by the Research Center for Human Settlement, Ministry of Public Works, Indonesia, with the participation of many invited resource persons and experts, while the NILIM of Japan analyzed the satellite images. The research concluded with the proposal of eight alternative future plans related to climate change for two model districts. They were presented in the form of 3D data so they are easily comprehended by non-engineers. Emission from each plan was also evaluated based on data obtained from the field surveys of existing housing complexes. This is the first such endeavour undertaken for the above-mentioned purposes.

In addition to the research and planning activities, 4 seminars/workshops were held to report the

findings. However the results have still not been sufficiently disseminated. Therefore, this book is being released to publicize our findings and proposals and to trigger wider discussions regarding human settlements and climate change. One such effort is an international symposium to be held in Bali, March 2008.

Research Team:

Resource Persons:

Ir. Sri Hendarto, MSc. (ITB*)
DR. Heru W. Poerbo (ITB, Urban Design)
DR. Priana Sudjono (ITB)
Dr. Haryo Winarso (ITB)
DR. Puji Lestari (ITB, Atmosphere Measurement)

Leader:

Ir. Siti Zubaidah Kurdi, MSc.(RCHS**), Urbanization)

Members:

Ir. Puthut Samyawardja, CES, MSc.(RCHS, Urban Management)
Ir. Hartinisari, MT (RCHS, Architecture)
Dra. Sri Astuti, MSA (RCHS, Urban Design)
Ir. Arief Sabarudin, CES. (RCHS, Architecture)
Ir. Arvi Argyantoro, MA (RCHS, Urban Design)
Ir. R. Johnny F.S. Subrata, MA (RCHS, Architecture)
Drs. Aris Prihandono (RCHS, Urban Infrastructure)
Kuswara, ST, MA (RCHS, Urban Management)
Yuri Hermawan P., ST, MT (RCHS)
Ir. Fitriyani Anggraini, MT (RCHS, Environment Management)
Elis Hastuti, ST, MSc. (RCHS, Environment Management)
Fefen Suhedi, ST (RCHS, Energy Consumption)
Purwito, Dipl.E.Eng (RCHS, Building Structure and Material).
Dra. Titi Utami E.R (RCHS, Sociology)
Dra. Sri Sulasmi (RCHS, Statistics)
Syarif Hidayatullah, ST (RCHS)
Agus Taufik, S.Sos (RCHS)
Sofiyani, Amd (RCHS, Administration and Secretary)
Ir. I Gde Wayan Samsi G., M.Appl.Sc. (Centre for Research and Development of Road and Bridge Transportation, Min. of Public Works)

*) ITB: Bandung Institute of Technology

***) RCHS: Research Center for Human Settlements, Min. of Public Works

Field surveys of housing complexes were undertaken in cooperation with following universities:

Brawijaya University (UNBRA), Malang (Prof. Johanes, et-al.)

Winaya Mukti University (UNWIM), Bandung (Prof. Asep, et-al.)

Semarang University, Semarang (Prof. Ayu, et -al.)

Politeknik, Cirebon (Prof. Yoyon, et -al.)

Hassanudin University (UNHAS), Makassar

Mataram University, Mataram (Prof. Rini, et-al.)

Politeknik, Banjarmasin (Prof. Johan, et -al.)

Analysis of Satellite Image was undertaken by:

Ms. Satomi Kakuda (Ajiko Co.ltd, Green Coverage Ratio)

Mr. Akihiro Nakazawa (Ajiko, DEM of Bandung and Cirebon cities)

Improvement of software handling 3D data was undertaken by:

Mr. Hiroshi Nakajima (Softprime)

Alternative Plans of model districts were elaborated by:

Mr. Arief (RCHS, Architect)

Mr. Arvi (RCHS, City Planner)

Mr. Aswin (DHIKA)

Mr. Doni (DHIKA)

Mr. Kukuh (DHIKA)

Mr. Sigit (DHIKA)

Mr. Kobayashi (NILIM)