

Proceedings SUSDEV-CHINA Symposium

Sustainable Agroecosystem Management and
Development of Rural-Urban Interaction
in Regions and Cities of China

Leif Söderlund, Jouko Sippola and
Mitsuyo Kamijo-Söderlund (eds.)



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Foreword

The world has focused on China with great interest in recent years, particularly since its entry into the WTO at the end of 2001. The opening-up policy and economic reforms launched by China in 1978 have enabled the country to become one of the world's largest economies.

The Chinese Government has stated that the most difficult problems facing the country today concern agriculture and rural areas. The great challenge for China's agriculture is to ensure food security for the population of 1.3 billion while at the same time coping with the grave environmental problems confronting the country, most of which are linked to shortages of natural resources, severe soil erosion, and water and air pollution. The management of water resources is an issue of great urgency due to the scarcity of water, notably in the main agricultural regions and in the populous cities of North China.

Coordinated by MTT Agrifood Research Finland, the project Sustainable Agroecosystem Management and Development of Rural-Urban Interaction in Regions and Cities of China (SUSDEV-CHINA) is a multidisciplinary joint research undertaking of the European Union's International Cooperation programme. The research partners alongside MTT are Imperial College London, Tongji University of Shanghai, and six research institutes of the Chinese Academy of Sciences (CAS): the Research Center for Eco-Environmental Sciences, the Institute of Geographical Sciences and Natural Resources Research, the Institute of Policy and Management, the Institute of Genetic and Developmental Biology, the Institute of Soil and Water Conservation, and the Institute of Earth Environment. Within the SUSDEV-CHINA project, we are studying the main issues of agroecosystem management and rural-urban interactions as related to water management, land use, and human welfare in five heavily populated regions and three major cities of China.

An important milestone in the progress of the project was the SUSDEV-CHINA Symposium held in Xi'an on 2 - 4 August 2004. Xi'an with its surrounding area has been at the very heart of China's history. The city served as the capital seat of twelve dynasties for more than 1100 years and its Wei Valley is the legendary birthplace of Chinese civilisation.

The symposium had three principal themes: 1) Agriculture and Ecosystem Management, 2) Rural-Urban Interaction: Water Technology and Water Resources Management, and 3) Sustainable Socio-Economic Development. The symposium brought together experts on a wide range of issues related to the transformation of Chinese agriculture, the efficient management of scarce water resources, and the socioeconomic impact of the strengthening economy.

The symposium proceedings contain papers addressing a great variety of topics, for example, water-saving agriculture techniques aimed at ensuring food supplies; agricultural production in the North China Plain; soil erosion prevention and ecosystem reconstruction in the Loess Plateau; water resource management in China as a whole and in the cities of Shanghai and Xi'an in particular; the economic development of China and its impact on the world economy; the relation between migrant distribution and socio-economic change in the regions of China; the loss of cultivated land due to urbanization; China's WTO membership and reform of the grain circulation system; and problems inherent in China's rural financial system. Regardless of its contribution to the economy, the role of agriculture and the agri-food sector remains a central policy issue and a major consideration in relation to rural development and environmental policies.

These proceedings offer the reader the fruits of timely analytical and strategic thinking on sustainable development in a global perspective and views on the most important policy issues for the future of China.

Leif Söderlund

Coordinator of SUSDEV-CHINA
MTT Agrifood Research Finland

Acknowledgements

We express our deep gratitude to the keynote speakers of the symposium: Professor Liu Changming, College of Resources and Environment Sciences, Beijing Normal University; Dr. Olli Varis, Water Resources Laboratory, Helsinki University of Technology; and Dr. He Qing Huang, School of Geography and the Environment, University of Oxford.

We are indebted to all participants, whose commitment and efforts made this symposium possible. A special note of thanks is due to the symposium organisers at the Institute of Earth Environment and the Institute of Soil and Water Conservation in China.

We would further like to thank all the authors who contributed to the symposium publication.

Finally, we are profoundly grateful to the European Community for financing the SUSDEV-CHINA project.

The editors of the symposium proceedings:

Leif Söderlund

Jouko Sippola

Mitsuyo Kamijo-Söderlund

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Agriculture and ecosystem management



**Rural-urban interaction: water technology, water
resources management**



Sustainable socio-economic development



Appendix

SUSDEV-CHINA Symposium Programme

Sunday, 1 August

18:30 - 20:00 Registration/Reception

Day 1: Monday, 2 August

08:30 – 08:40 Welcome by Zhou Jie, Institute of Earth Environment, CAS

Theme: AGRICULTURE AND ECOSYSTEM MANAGEMENT

08:40 – 12:00 **Session I** Chaired by LU Qi

1. *LIU Changming*, Keynote Speaker, College of Resources and Environment Sciences, Beijing Normal University; Water-Saving Agriculture Ensuring Food Security
2. *Aarne KURPPA*, MTT Agrifood Research Finland; Experiences in the use of reduced tilling and no-till methods in the cultivation spring and winter cereals in Finland
3. *LIU Mengyu*, Center for Agricultural Resources Research, Institute of Genetic and Developmental Biology, CAS; Studies on Water Use Efficiency and Evaluation to Drought Resistance and Water Saving in Winter Wheat

10:30 – 10:45 Coffee/Tea break

4. *LIU Puling*, Institute of Soil and Water Conservation, CAS; A Study on Benefits from Eco-system Reconstruction in Yan'gou Watershed of Yan'an in China
5. *HE Xiubin*, Institute of Soil and Water Conservation CAS; Decoupling Indicators of Soil Erosion for Agro-ecosystem Assessment
6. *LIU Xiaojing*, Center for Agricultural Resources Research, Institute of Genetic and Developmental Biology, CAS; Two phase tillage: A quick method for crop production in saline soils

12:00 – 13:30 Lunch break

13:30 – 17:00

Session II Chaired by MU Rongping

1. *Jouko SIPPOLA*, MTT Agrifood Research Finland; Soil research in Europe with special reference to that in Finland
2. *HU Chunsheng*, Center for Agricultural Resources Research, Institute of Genetic and Developmental Biology, CAS; RZWQM simulation of nitrogen rate effects on nitrate-nitrogen dynamics and nitrate leaching for wheat-corn double cropping systems in North China Plain.

15:00 – 15:30

Coffee/Tea break

3. *CHEN Yunming*, Institute of Soil and Water Conservation, CAS; Effect of different land use types on soil hydrological cycle in loess hilly region
4. *XU Xuexuan*, Institute of Soil and Water Conservation, CAS; A field study of hydrological response on eco-construction in a small catchments in Yan'an on loess hilly region
5. *ZHANG Li*, Institute of Earth Environment, CAS; Features of Leaf Area Index Spatial Distribution in Xi'an Using LandSat TM Images

17:00 – 17:30

Wrap up session

Day 2: Tuesday, 3 August

Theme: RURAL-URBAN INTERACTION: WATER TECHNOLOGY, WATER RESOURCES MANAGEMENT

08:30 – 12:00

Session III Chaired by WU Peiling

1. *Olli VARIS*, Keynote Speaker, Helsinki University of Technology, Water Resources Laboratory; China's water resources challenges in a global perspective
2. *LIU Suiqing*, College of Environment Science and Engineering, Tongji University; Sustainable Approaches for Urban Water Resources Management in China
3. *Sevket DURUCAN*, Imperial College of Science, Technology and Medicine; Hydrological and agro- ecological data acquisition using remotely sensed data from satellite sensors

4. *HE Hongming*, Institute of Earth Environment, CAS; Relationship between River Bed Evolution and Flood Flow Refluxing of Weihe River

10:30 – 10:45 Coffee/Tea break

5. *CHEN Rui*, Institute of Policy and Management, CAS; Water resources Management for sustainable social and economic development in north China and northwest China
6. *LIU Junming*, Institute of Earth Environment, CAS; Water Resource Carrying Capacity and Urban Development of Xi'an
7. *XIE Xiuping*, Institute of Earth Environment, CAS; Analysis on Water Resources Exploitation and Utilization of Xi'an

12:00 – 13:30 Lunch break

13:30 – 17:00 **Session IV** Chaired by TIAN Junliang

1. *Hakan JANSSON*, MTT Agrifood Research Finland; Reducing the phosphorus load and the alga blooms in Finnish lakes and the Baltic Sea
2. *LIU Wenhua*, Research Center for Eco- Environmental Sciences, CAS; Impact of sewage irrigation on heavy metals distribution and pollution in Beijing
3. *WEI Linlin*, Research Center for Eco- Environmental Sciences, CAS; Water pollution and treatment situation in Beijing

15:00 – 15:30 Coffee/Tea break

4. *TAO Tao*, College of Environment Science and Engineering, Tongji University; An Informatics Tool for Water Resources Management in Shanghai
5. *LEI Yuping*, Center for Agricultural Resources Research, Institute of Genetic and Developmental Biology, CAS; Temporal and spatial variation in groundwater levels in Hebei Plain
6. *ZHANG Xiying*, Center for Agricultural Resources Research, Institute of Genetic and Developmental Biology, CAS; Agronomic measures to improve water use efficiency in the piedmont of Mt. Taihang in the North China Plain

17:00 – 17:30

Wrap up session

Day 3 Wednesday, 4 August

Theme: SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT

08:30 – 12:00

Session V Chaired by LIU Suiqing

1. *Leif SODERLUND*, MTT Agrifood Research Finland; The development of China and its impact on the world economy
2. *LU Qi*, Institute of Geographical Science and Natural Resources Research, CAS; Explanations of the relation between the geographical change of migrants' distribution and the economic development change in regions in China 1980-2000
3. *MU Rongping*, Institute of Policy and Management, CAS; Case study: survey of rural-urban interaction
4. *QIAO Yan*, Institute of Policy and Management, CAS; China's WTO Entry and Reform of the Grain Circulation System

10:30 – 10:45

Coffee/Tea break

5. *WANG Ruixiang*, Institute of Policy and Management, CAS; Problems of China's Rural Financial System
6. *CHEN Hui*, Institute of Policy and Management, CAS; R&D in China's Agriculture and Government's Support
7. *He Qing HUANG*, School of Geography and the Environment, University of Oxford; A Generative Approach to the Understanding of the Development of Rural Societies

12:00 – 13:30

Lunch break

13:30 – 15:30

Session VI Chaired by LIU Mengyu

1. *Anna KORRE*, Imperial College of Science, Technology and Medicine; Rural-Urban interaction: Addressing the sustainability of urban areas throughout land planning considerations, the role of Geographic Information Systems (GIS) and Earth Observation (EO)

2. *ZHANG Hailong*, Institute of Earth Environment, CAS; Land Use/Cover Dynamic Change Analysis in Xi'an Using Modified BP Neural Network Classification for Remote Sensing Images
3. *WANG Guoxia*, Institute of Geographical Science and Natural Resources Research, CAS; Change of the relation between the distribution and employment of migrants and the regional economic development: a comparative study between Beijing and Shanghai
4. *WU Peilin*, Institute of Geographical Science and Natural Resources Research, CAS; Arable land loss arising from the urbanization in China since 1978: case studies in Beijing and Shanghai

15:30 – 15:45 Coffee/Tea break

15:45 – 16:30 Wrap up session and conclusions

16:30 Closing remarks by Leif Soderlund, Tian Junliang and Zhou Jie

