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Ashraf Dewan
Robert Corner *Editors*

Dhaka Megacity

Geospatial Perspectives on Urbanisation, Environment and Health

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Editors
Ashraf Dewan
Department of Spatial Sciences
Curtin University
Western Australia

Robert Corner
Department of Spatial Sciences
Curtin University
Western Australia

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This book is dedicated to our wives Shikha and Margaret who have given us their unstinting support during its genesis

Preface

This book is the result of a collaboration between two geographers – one an environmental geographer from a developed country, the other a physical and human geographer from a developing country. We share an interest in human–environment interactions that goes beyond the academic. We now find ourselves working in the same university where we are able to use geospatial tools to explore those human–environment interactions and the often deleterious effects that they have on not just the environment but on the human population themselves. We have assembled a talented collection of authors with expertise in many areas of human–environment interactions. Some of them are our own students, both past and present, and others are collaborators from a range of universities and institutes across the globe.

Humankind has been living in cities since the Chalcolithic era, but it was not until relatively modern times that cities began to approach the size and dominance that they currently possess. Two related phenomena occurred in the late twentieth century. The first was the expansion of existing cities to a new class of urban settlement known as the megacity, and the second is the fact that there are now more people living in the world's cities than in its rural areas. A primary driving factor for this has been rural–urban migration, which has been observed all over the world as the economies of countries transform from an agrarian base to an industrial base and in some "first world" countries to post-industrial service-based economies. The move to an urban lifestyle has always had positive and negative effects on those making that move. For many, it initially results in overcrowded conditions that are deleterious to health, but modern medicine is beginning to counteract that. The upshot of this is that rural–urban migrants frequently continue the high birth rate practices of their rural predecessors for at least a generation or two, without the moderating effect of higher infant mortality. This, in turn, fuels the population growth of the cities and megacities that these migrants inhabit.

South Asia, the home of some of the world's first cities in the Indus valley civilisation, is now the home of several megacities and a number of large conurbations that are on the threshold of becoming megacities. Unlike the mega-cities of the developed world, where population growth has slowed in recent years,

the megacities of South Asia are bustling places where the demand for accommodation far outstrips the efforts of the civic administration either to control the supply of land for housing or to provide adequate infrastructure to service the burgeoning population. There are many reasons for this, and they are shared by the megacities of other developing countries. They include a basic lack of resources, a culture that sees no harm in taking bureaucratic shortcuts and poorly resourced planning and enforcement agencies whose underpaid staff may be prey to unscrupulous property developers. Regrettably, many of these developers care more about a rapid profit now than they do about the future environmental living conditions of their "clients".

Dhaka, the capital of Bangladesh, is a rapidly developing megacity. Whilst it has its own particular characteristics, it is a good example of the organic, often chaotic, development of megacities the world over. We hope that this book will be of interest to those who care about the future of our planet and its people and the way in which we accommodate our population as the whole world seeks to emulate the lifestyle of the so-called developed world.

We, finally, would like to thank all our authors who have taken their time to write their contributions in such a manner that they are widely accessible to readers of all levels, especially those who are seeking to understand the basic methodological and quantitative methods used.

Perth, Western Australia — Robert Corner
February 2013 — Ashraf Dewan

Contents

Contributors

Sohel J. Ahmed The Bartlett Development Planning Unit, University College London (UCL), London, UK

Sarwa Ali Department of Spatial Sciences, Curtin University, Bentley, Perth, WA, Australia

Md. Ruhul Amin Traffic North Division, Bangladesh Police, Dhaka, Bangladesh

Glen Bramley School of the Built Environment, Heriot-Watt University, Edinburgh, UK

Salit Chakma Department of Spatial Sciences, Curtin University, Bentley, Perth, WA, Australia

Razia A. Chowdhury Department of Geography, Faujderhat Cadet College, Faujderhat, Chittagong, Bangladesh

Robert J. Corner Department of Spatial Sciences, Curtin University, Bentley, Perth, WA, Australia

Ashraf M. Dewan Department of Spatial Sciences, Curtin University, Bentley, Perth, WA, Australia

Wilfried Endlicher Department of Geography, Humboldt-Universität zu Berlin, Berlin, Germany

Abu S.G. Faruque Department of Clinical Medicine, International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh

Sarath K. Guttikunda Division of Atmospheric Sciences, Desert Research Institute, Reno, NV, USA

Md. Rafiqul Haider Centre for Child and Adolescent Health, International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh

Masahiro Hashizume Institute of Tropical Medicine (NEKKEN), Nagasaki University, Nagasaki, Japan

Taiichi Hayashi Disaster Prevention Research Institute, Kyoto University, Uji City, Kyoto, Japan

Ken Hiramatsu Faculty of Applied Biological Sciences, Gifu University, Yanagido, Gifu, Japan

Sirajul Hoque Department of Soil, Water and Environment, University of Dhaka, Dhaka, Bangladesh

Md. Humayun Kabir Department of Geography and Environment, University of Dhaka, Dhaka, Bangladesh

S.M. Zobaidul Kabir Centre for Environmental Management, Central Queensland University, North Rockhampton, QLD, Australia

Yohei Kawamura Department of Mining Engineering, Curtin University, Kalgoorlie, WA, Australia

Tahmina Khan United Graduate School of Agricultural Science, Gifu University, Yanagido, Gifu, Japan

Masashi Kiguchi Institute of Industrial Science, The University of Tokyo, Tokyo, Japan

Akiko Masuya Department of Spatial Sciences, Curtin University, Bentley, Perth, WA, Australia

Salim Momtaz School of Environmental and Life Sciences, University of Newcastle, Ourimbah, NSW, Australia

Fumie Murata Faculty of Science, Kochi University, Kochi, Japan

Kamrun Nahar Department of Geography and Environment, University of Dhaka, Dhaka, Bangladesh

Kh. Md. Nahiduzzaman Department of City and Regional Planning, King Fahd University of Petroleum and Minerals, Dhahran, Kingdom of Saudi Arabia

Emmanuel T. Ongee Department of Spatial Sciences, Curtin University, Bentley, Perth, WA, Australia

Takeo Onishi Faculty of Applied Biological Sciences, Gifu University, Yanagido, Gifu, Japan

Towhida Rashid Department of Geography and Environment, University of Dhaka, Dhaka, Bangladesh

Toru Terao Faculty of Education, Kagawa University, Takamatsu, Kagawa, Japan

Peter H. Verburg Institute of Environmental Studies, VU University, Amsterdam, The Netherlands

Yusuke Yamane Faculty of Education, Tokoha Gakuen University, Shizuoka City, Shizuoka, Japan

Acronyms

ADB	Asian Development Bank
ADP	Annual Development Program
AEC	Atomic Energy Centre
AHP	Analytic hierarchy process
AIC	Akaike information criterion
AMIP	Atmospheric Model Intercomparison Project
AOI	Area of interest
AR	Assessment Report
ASCII	American Standard Code for Information Interchange
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
ATMoS	Atmospheric Transport Modelling System
AVHRR	Advanced Very High Resolution Radiometer
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BDT	Bangladesh Taka (*name of Bangladeshi currency*)
BLD	Bangladesh Legal Digest
BLHI	Boundary layer heat island
BMD	Bangladesh Meteorological Department
BNBC	Bangladesh National Building Code
BOD	Biological oxygen demand
BP	Bangladesh Police
BPDB	Bangladesh Power Development Board
BTM	Bangladesh Transverse Mercator
BWDB	Bangladesh Water Development Board
CA	Cellular automata
CBD	Central business district
CCI	Coping Capacity Index
CEGIS	Centre for Environmental and Geographic Information Services
CETP	Common Effluent Treatment Plant
CLHI	Canopy layer heat island