

**International Geographical Union Commission on Land Use/Cover Change**

**IGU-LUCC Research Reports**

**ISBN 978-4-907651-13-8**

---

**Land Use/Cover Changes in  
Selected Regions in the World  
Volume XII**

**EDITORS:**

**Yukio Himiyama**

**Hokkaido University of Education, Japan**

**Ivan Bicik**

**Charles University, Czech Republic**

**April 2017**

**Issued by IGU-LUCC**

# CONTENTS

Preface	1
Yukio Himiyama	
I. Changes of agricultural landscape in Central and Eastern Europe in 1990-2012	3
Feranec J., Kopecka M., Stych P., Bicik I., Soukup T., Jindrova M., Jupova K.	
II. Land Use / Land Cover Change influence on Water Deficit in Irrigated Regions of Central Asia: case study for Fergana Valley	13
E.V.Milanova, A.D. Nikanorova, N.M. Dronin, N.O.Telnova, N.N.Kalutskova	
III. Sanitation, Smart City and Urban Innovation: Case Study of Allahabad, India	21
Subhash Anand, Arun Pratap Mishra and R.B. Singh	
IV. The Declining of Rice Field and Greenery Areas in Java Island amid Continuing Urban Expansion and Regional Disparity in Indonesia	33
Ernan Rustiadi, Andrea Emma Pravitasari, Diar Shiddiq, Setyardi Pratika Mulya, Nur Etika Karyati, Alfin Murtadho	

# Preface

The International Geographical Union Commission on Land Use and Land Cover Change (IGU-LUCC) has been leading studies on land-use/cover changes throughout the world continuously since its establishment in 1996 for over 20 years, despite of the closure of the IGBP/IHDP-LUCC in 2006 and its reformation to GLP (Global Land Project). One of the schemes IGU-LUCC has been conducting continuously is the publication of the "Atlas – Land Use/Cover Changes in Selected Regions in the World". The series counts the twelfth volume in the present issue, as listed below:

Volume I	November 2001
Volume II	December 2002
Volume III & IV	April 2005
Volume V	February 2010
Volume I – IV Combined Edition	March 2010
Volume VI	July 2012
Volume VII	October 2012
Volume VIII	December 2013
Volume IX	July 2014
Volume X	March 2015
Volume XI	August 2015
<b>Volume XII</b>	<b>April 2017</b>

This atlas publication scheme has promoted production and use of historical information bases and maps of land use/cover changes in many countries and regions, including:

**Europe:** Czechia, Germany, Hungary, Ireland, Italy, Romania, Russia, Slovakia, Slovenia, Norway, Bulgaria, Poland

**Asia:** Bangladesh, China, India, Indonesia, Japan, Korea, Russian Far East, Taiwan

**Americas:** Mexico

**Africa:** Nigeria

The Atlas scheme in fact can have a far-reaching effect on the society,

education and global change research community including Future Earth, if pushed forward vigorously, because many of the priority issues of Future Earth and the United Nations Sustainable Development Goals require data and knowledge on land use/cover changes at local, regional, national and global levels.

The printed Atlas volumes have been archived at the IGU Archive located at Leipzig University, Germany. They will also be made accessible through the IGU website <http://lucc.zrc-sazu.si/Home.aspx> in the near future.

It is hoped that the scheme continues and evolves, supported by the old and the new contributors of articles and sponsors.

## Announcement of the Atlas Vol. XIII onward

Following the publication of Vol. XII, the publication of Vol. XIII is under preparation. For information, please visit the IGU-LUCC website

Each article is requested to cover a substantially large area, and is supposed to have large A3-size maps of national/regional scales as well as other maps, diagrams, tables and photographs, and are expected to include accounts on the following items:

- 1) data source and preparation
- 2) land use/cover classification
- 3) study methods
- 4) important facts, processes, drivers and mechanisms of land use/cover changes
- 5) regional differences, similarities, linkages and patterns of the items in 4) above
- 6) references

The following items are also encouraged to be included:

- 7) models of changes in the form of flow charts, diagrams or formulae
- 8) effects of changes and major problems related with changes
- 9) future prospects of land use/cover changes

## Editors:

Yukio Himiyama Hokkaido University of Education, Japan  
Ivan Bicik Charles University, Czech Republic

April 2017