

International Yearbook of Soil Law and Policy

Series editor

Harald Ginzky
German Environment Agency
Dessau, Germany

Advisory editors

Jerry Anderson, Drake University, Des Moines, USA
Ralph Bodle, Ecologic Institute, Berlin, Germany
Ben Boer, Wuhan University, Wuhan, Hubei
Eduardo Chiziane, Eduardo Mondlane University, Maputo, Mozambique
Victor Castillo, UNCCD, Bonn, Germany
Maylis Desrousseaux, Aix-Marseille University, Marseille, France
Qun Du, Wuhan University, Wuhan, Hubei
Alexander Erlewein, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Bonn, Germany
Ian Hannam, University of New England, Armidale, Australia
Robert Kibugi, University of Nairobi, Nairobi, Kenya
Marcia Leuzinger, University of Brasilia, Brasilia, Brazil
Paul Martin, University of New England, Armidale, Australia
Grammenos Mastrojeni, Department of Foreign Affairs, Rome, Italy
José Rubens Morato Leite, Federal University of Santa Catarina, Brazil
Kamunde Nelly, Kenyatta University, Nairobi, Kenya
William Rees, University of British Columbia, Vancouver, Canada
Jesse Richardson, West Virginia University, Morgantown, USA
Oliver Ruppel, Stellenbosch University, Stellenbosch, South Africa
Bernard Vanheusden, University of Hasselt, Hasselt, Belgium
Patrick Wegerdt, European Commission, Brussels, Belgium
Michael Windfuhr, German Institute for Human Rights, Berlin, Germany

The *International Yearbook of Soil Law and Policy* is a book series that discusses the central questions of law and policy with regard to the protection and sustainable management of soil and land. The Yearbook series analyzes developments in international law and new approaches at the regional level as well as in a wide range of national jurisdictions. In addition, it addresses cross-disciplinary issues concerning the protection and sustainable management of soil, including tenure rights, compliance, food security, human rights, poverty eradication and migration. Each volume contains articles and studies based on specific overarching topics and combines perspectives from both lawyers and natural scientists to ensure an interdisciplinary discourse.

The *International Yearbook of Soil Law and Policy* offers a valuable resource for lawyers, legislators, scholars and policymakers dealing with soil and land issues from a regulatory perspective. Further, it provides an essential platform for the discussion of new conceptual approaches at the international, national and regional level.

More information about this series at <http://www.springer.com/series/15378>

Harald Ginzky • Elizabeth Dooley •
Irene L. Heuser • Emmanuel Kasimbazi •
Till Markus • Tianbao Qin
Editors

International Yearbook of Soil Law and Policy 2018



Springer

Editors

Harald Ginzky
German Environment Agency
Dessau, Germany

Elizabeth Dooley
University of Exeter
Exeter, UK

Irene L. Heuser
Specialist Group on Sustainable Soils
and Desertification
IUCN World Commission
on Environmental Law
Kleinmachnow, Germany

Emmanuel Kasimbazi
Makerere University
Kampala, Uganda

Till Markus
Research Centre for European
Environmental Law
University of Bremen
Bremen, Germany

Tianbao Qin
Research Institute of Environmental Law
Wuhan University
Wuhan, China

ISSN 2520-1271

ISSN 2520-128X (electronic)

International Yearbook of Soil Law and Policy

ISBN 978-3-030-00757-7

ISBN 978-3-030-00758-4 (eBook)

<https://doi.org/10.1007/978-3-030-00758-4>

Library of Congress Control Number: 2018965123

© Springer Nature Switzerland AG 2019

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Foreword

Cities are potential hot spots for innovation, creativity and sustainable lifestyles. By 2030, six out of ten persons worldwide are expected to live in cities. The German Advisory Council on Global Change has described the twenty-first century as the ‘century of the cities’.¹ Thus, cities should be a focus for transformative actions towards sustainability. We, at the German Environment Agency (UBA), agree: cities deserve our full awareness.

Forecasts show that the rapid worldwide urbanisation will continue for the next decades with all potential negative effects unless appropriate measures will be applied. Nowadays, in developing countries and emerging economies, one third of the urban population does not have access to adequate housing. If the trend is continued, in Africa, for example, 80% of the people will live in cities by 2100—and 60% of them in slums—with all the social, economic and environmental consequences.

Cities and agglomerated areas are sensitive to several environmental issues like groundwater depletion, storms and flooding, as well as urban heat, droughts and water scarcity. However, we have to realise that such aspects currently only play a subordinate role in the process of urban development. This must be changed: issues like climate adaption, air quality, noise reduction, reduction of land take and the protection of soils must be stronger integrated.

For Germany, we can conclude that many helpful measures have already been established: an effective town planning system, an obligation to assess and consider the effects on the environment, as well as a commitment to compensate unavoidable negative effects—at least to a certain extent. Nevertheless, many urban problems that relate to environmental protection are still omnipresent.

As inner city land, for example, is scarce, it is often the easiest solution to satisfy the needs by expanding our cities into the surrounding area on Greenfields—causing

¹See the WBGU’s flag ship report ‘Humanity on the move: Unlocking the transformative power of cities’, published in 2016.

unnecessary land take when doing so. Although Germany aims to limit land take to less than 30 ha/day by 2030, more effective solutions are still required to achieve this. Of course, we observe that we are already on track concerning this challenge—stepwise. In Germany, for instance, we modified our legal planning system several times: now we have a legally binding priority for inner urban development over Greenfield developments. Cities are now also by law obliged to consider their inner urban land potential substantially before they start expanding into the surrounding area. This is a major step ahead. However, several studies prove that much more inner urban land is potentially available for development: projections estimate some 165,000 ha throughout Germany consisting of brownfields, vacant lots and areas for densification: more than double the area of Berlin!

The massive trend to urbanisation—the extremely rapid settlement dynamics—thus requires a prudent handling of environment, economic and social concerns. The environmental issues to be dealt with also include various threats to our soils.

The need for fertile soils is increasing because of the growing global demand for renewable raw materials and meat and fostered by the persistent population growth. Moreover, soils are the second largest sequester of carbon and, in this regard, of eminent importance for protecting our climate.

At the same time, we see a loss of fertile, healthy soils as a result of land take and degradation processes such as erosion, salinisation and contamination. Globally, it is estimated that about 20–25% of soil resources are degraded, i.e. have a reduced functional capacity. Soil degradation is an ongoing process that affects an additional 5–10 million ha each year. Soil degradation across the world will therefore jeopardise global food security and deprive, in particular, rural regions of one of sources of income and economic development. Moreover, soil degradation would pose a major obstacle to achieving the objectives set by the Paris Agreement in 2015.

Next to agriculture, infrastructure projects such as roads or railways, and industry, urbanisation is one of the major drivers of soil degradation. Thus, our cities growing hunger for land, e.g. for building or trade activities, as well as for green and open spaces, has to be reasonably dealt with. The urban rural interface may accelerate these negative trends as cities need land not only for building activities but also for the use of resources, like raw materials, agricultural products, infrastructure and waste depositories.

In order to avoid negative path dependencies, soil and land use should adopt some key principles, such as reducing soil degradation (or soil remediation), environmental and social acceptable densification by keeping the relevant soil functions, orientation towards soil as a common good and good governance in soil management. Within cities, most of the natural soil functions are affected. If soils are completely or partly sealed, they cannot be a basis for life or a habitat for plants and soil organisms. Water and nutrient cycles are disturbed; the filter and buffer functions suffer severely.

To accept the challenge for soil protection within cities, first of all the remediation of contaminated sites is one of the main tasks. This is very often accompanied by brownfield recycling, which leads to a lower consumption of Greenfield areas. This

offers sometimes possibilities for efficient, environmentally friendly and nevertheless cost-effective solutions for the development of city quarters.

The need for sustainable management of soils has been more and more recognised by policy makers, scientists and the civil society. In 2015, the UN General Assembly adopted the ‘2030 Agenda for Sustainable Development’. It consists of 17 goals and 169 targets. The 2030 Agenda spells out commitments for both developing and developed countries.

Sustainable Development Goal 15 postulates: ‘Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.’ Target 15.3 specifies: ‘... by 2030, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world’.

The objective of achieving ‘a land-degradation neutral world’ means that in the future, net soil loss through, e.g. erosion, sealing and other forms of soil degradation, must be balanced by adequate soil restoration. Since soil degradation cannot be prevented completely, it must at least be minimised, and non-avoidable soil degradation must be compensated—through restoration or rehabilitation measures. In order to achieve this objective, all relevant drivers of soil/land degradation must be considered: agriculture, infrastructure projects, industry and also urbanisation.

We at the German Environment Agency (UBA) have committed ourselves to both topics—sustainable urbanisation and sustainable management of soils and land. Both strands are—to a certain extent—interlinked and thus require an integrated scientific approach. We must develop sustainable visions that are, on the one hand, scientifically verified and environmentally effective. On the other hand, however, solutions must also be politically acceptable to be implemented. So we must strengthen the science policy interface in our research design and should work together closer with the stakeholders instead of only working in ivory towers.

Here are some examples: the successful German model project on tradeable land planning permits (see article by Grimski in this volume of IYSLP) has gained very much from working close to practice by directly involving the municipalities. Furthermore, we must involve the stakeholders also in the finding process for future research topics. UBA has adopted a close stakeholder cooperation developing a strategic research agenda on urban environmental protection that addresses such issues in an integrated manner, considering both urban development and environmental protection. As described in the article of Reißmann et al. in this volume of the *International Yearbook of Soil Law and Policy*, our aim is to strengthen the role of environmental aspects in urban development policy and planning practice considerably.

The research should result in effective measures and actions for an environmentally oriented urban development that optimally addresses several challenges, e.g. soil protection and climate adaptation, at once. Several research projects related to sustainable soil management in particular have been mandated by UBA recently. They all referred to the Land Degradation Neutrality (LDN) obligation and aimed at the development, first, of an appropriate and measurable indicator for land/soil

degradation; second, of appropriate legal measure to implement the LDN objective on national level; as well as, third, of realistic options for future international soil governance.

And last but not least, this volume of the *International Yearbook of Soil Law and Policy* itself hopes to play a part in the ongoing process of detecting and ultimately implementing sustainable urbanisation patterns and measures for sustainable soil management. Moreover, it could be certainly regarded as impressing that Volume 3 of the *International Yearbook of Soil Law and Policy* is already about to be published. This clearly underlines the fact that sustainable soil management, to be implemented fully and in all its various facets reaching from, *inter alia*, agriculture to urbanisation, is still in need of intense discussions.

German Environment Agency (UBA)
Dessau-Roßlau, Germany

Maria Krautzberger

Preface

The prefaces of the *International Yearbook of Soil Law and Policy Volumes 1 and 2 both* commenced by saying—in different words—that soil has been the neglected environmental medium for a long time. While this is obviously true—just a look at the evolution of national and/or international environmental legislation confirms this statement—one could also say: ‘times are changing’.

We would like to think that the fact that we can proudly present Volume 3 of the *International Yearbook of Soil Law and Policy* indicates that the societal need for sustainable soil management and for interlinking soil management with other crucial challenges, such as climate change and food security, has increasingly come to the attention of policy makers, academics and civil society.

How to establish effectively soil governance at national, regional or even international level is the underlying theme of the *International Yearbook of Soil Law and Policy*. We are well aware that sustainable management requires—next to ambitious and effective regulations—a sound scientific basis, an enabling institutional arrangement, as well as sufficient financial resources. Thus, the contribution of the *International Yearbook of Soil Law and Policy* could be described as both insufficient and key. It is insufficient, on the one hand, because other means are required too but key, on the other hand, because good governance is essential for sustainable soil management.

The *International Yearbook of Soil Law and Policy* is intended to provide a platform for discourse on soil governance topics for academics, legislators and policy makers. Similar to the former volume, this volume again assumes the following parts:

- Part I: The Theme
- Part II: Recent Developments of Soil Regulation at International Level
- Part III: National and Regional Soil Legislation
- Part IV: Cross-Cutting Topics

We are very grateful to Maria Krautzberger, president of the German Environment Agency, for incisively highlighting the importance of sustainable soil management for environmentally sound urbanisation in the Foreword. Part I (The Theme) is dedicated to the ‘urbanization and sustainable management of soils’. It encompasses a compilation of chapters on that general topic from different perspectives and disciplines. In this volume, Part II first includes a global perspective on sustainable urbanisation (Schlacke/Jürschik), followed by national perspectives on the topic from India (Desai), New Zealand (Grinlinton), Netherlands (Boeve) and China (Wang). In addition, the part covers chapters with specific thematic focus, such as land take and soil sealing (Naumann et al.), tradable planning land certificates (Grimski), artificialised land (Desrousseaux) and soil rehabilitation (Brandon). The part concludes with a chapter on future research needs in sustainable urbanisation (Reißmann et al.).

Part II contains specific chapters on latest developments under UNCCD (Mastrojeni), UNFCCC (Fee), as well as UN Habitat (Kago et al.), whereas Part III—on national and regional soil legislation—foresees reports on the national soil legislation in Canada (Farnese), Uganda (Kasimbazi) and Mozambique (Chiziane). Lastly, Part IV on cross-cutting topics presents the thoughts by Elvers on the right to food and its implications for sustainable soil management and Vargas et al. on the relevance of increasing soil organic carbon for achieving sustainable soil management.

In addressing one of the major drivers of soil degradations, Volume 3 offers important and insightful information on the specific topic of ‘urbanization and sustainable management of soils’. It also contains useful information on the latest developments at international level and reports on national legislation with the view to achieving a common understanding and identifying innovative concepts for soil legislation. Acknowledging the fact that sustainable soil management has almost endless interlinkages, this volume also attempts to explore an array of connecting themes and their related implications.

Although the *International Yearbook of Soil Law and Policy* only represents a small piece to the puzzle, we nevertheless hope that, as a platform for discussion and interaction, it serves its purpose to support the development towards sustainable soil governance.

In that connection, we would like to draw attention to the ‘Global Pact for the Environment’, adopted by the UN General Assembly in 2018. In this initiative, the UN General Assembly has mandated the UN General Secretary to prepare a report analysing possible gaps in international environmental law and has requested for an ad hoc open-ended working group to come up with proposals for additional international instruments. The question of whether gaps on international soil governance will be identified in this report is to be awaited.

Finally, we would like to express our deep gratitude to the respective authors of this volume for their engagement, commitment and contribution; to the members of the advisory board for helping us with the review process; and, last but definitely not least, to the publishing house SPRINGER for technical assistance.

Dessau, Germany
Urbandale, IA, USA
Kleinmachnow, Germany
Kampala, Uganda
Bremen, Germany
Wuhan, China

Harald Ginzky
Elizabeth Dooley
Irene L. Heuser
Emmanuel Kasimbazi
Till Markus
Tianbao Qin

Contents

Part I The Theme: 'Urbanisation and Sustainable Management of Soils'

Urbanisation and Urban Land Use: A Normative Compass for Sustainable Urban Governance	3
Sabine Schlacke and Ulrike Jürschik	
Sustainable Cities in India: A Governance Challenge	29
Bharat H. Desai, Balraj K. Sidhu, and Nitu Kumari	
Sustainable Management of Urban Soils: The New Zealand Approach	55
David Grinlinton	
Land Take and Soil Sealing—Drivers, Trends and Policy (Legal) Instruments: Insights from European Cities	83
Sandra Naumann, Ana Frelih-Larsen, Gundula Prokop, Sophie Ittner, Matt Reed, Jane Mills, Francesco Morari, Simone Verzandvoort, Stefanie Albrecht, Anna Bjuréus, Grzegorz Siebielec, and Tomasz Miturski	
Environmental Law Tools for the Idea of a Compact City. Learning from the Dutch Case	113
Marlon Boeve	
Tradable Land Planning Certificates to Reduce Land Take: Results of a Simulation Game with Communities in Germany	131
Detlef Grimski	
Artificialised Land and Land Take: What Policies Will Limit Its Expansion and/or Reduce Its Impacts?	149
Maylis Desrousseaux, Bertrand Schmitt, Philippe Billet, Béatrice Béchet, Yves Le Bissonnais, and Anne Ruas	

Cleaning Up Contaminated Sites in Urban China: Who Should Be Liable?	167
Huanhuan Wang	
The Rehabilitation of Contaminated Land to Enhance Future Options for Cities	189
Elizabeth J. Brandon	
An Environmental Perspective on Urbanization: Research Needs for Strengthening Environmental Aspects in Urban Development	215
Daniel Reißmann and Ulrike von Schlippenbach	
Part II Recent Developments of Soil Regulation at International Level	
UNCCD COP 13: From Awareness to Action in a Complex World	229
Grammenos Mastrojeni	
Implementing the Paris Climate Agreement: Risks and Opportunities for Sustainable Land Use	249
Eric Fee	
Implementing the New Urban Agenda: Urban and Territorial Integration Approaches in Support of Urban Food Systems	271
Jackson Kago, Stephanie Loose, and Remy Sietchiping	
Part III National and Regional Soil Legislation	
Canadian Soil Law	297
Patricia L. Farnese	
Soil Protection Law in Uganda	315
Emmanuel Kasimbazi	
The Design of the Political and Legal Framework on Soil Conservation in Mozambique: Deeply Unfinished	331
Eduardo Alexandre Chiziane	
Part IV Cross-Cutting Topics	
Human Rights Based Approach to Sustainable Agricultural Policies and Food Security	347
Hilal Elver	
Unlocking the Potential of Soil Organic Carbon: A Feasible Way Forward	373
Ronald Vargas-Rojas, Rosa Cuevas-Corona, Yusuf Yigini, Yuxin Tong, Zineb Bazza, and Liesl Wiese	