



UvA-DARE (Digital Academic Repository)

Evolving property rights in water and their impact on water allocation and reallocation

Bosch, H.J.

Publication date
2023

[Link to publication](#)

Citation for published version (APA):

Bosch, H. J. (2023). *Evolving property rights in water and their impact on water allocation and reallocation*. [Thesis, externally prepared, Universiteit van Amsterdam].

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.



Evolving Property Rights in Water and Their Impact on Water Allocation and Reallocation

Hilmer J. Bosch

Evolving Property Rights in Water and Their Impact on Water Allocation and Reallocation

Hilmer J. Bosch

Evolving Property Rights in Water and Their Impact on Water Allocation and Reallocation

Copyright © 2023, Hilmer J. Bosch, Amsterdam, the Netherlands

PhD thesis, Governance and Inclusive Development (GID), Amsterdam Institute for Social Science Research (AISSR), University of Amsterdam, the Netherlands.

ISBN: 978-94-93330-12-2

Cover design: DALL·E 2

Publisher: Proefschriftspecialist

All rights reserved. No part of this thesis may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission from the author. If applicable, refer to the copyright of the published articles.

Evolving Property Rights in Water and Their Impact on Water Allocation and Reallocation

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

op gezag van de Rector Magnificus

prof. dr. ir. P.P.C.C. Verbeek

ten overstaan van een door het College voor Promoties ingestelde commissie,

in het openbaar te verdedigen in de Agnietenkapel

op vrijdag 30 juni 2023, te 10.00 uur

door Hilmer Jan Bosch

geboren te Dongeradeel

Promotiecommissie

<i>Promotores:</i>	prof. dr. J. Gupta	Universiteit van Amsterdam
	dr. H.J.L.M. Verrest	Universiteit van Amsterdam
<i>Overige leden:</i>	dr. mr. S. Schmeier	IHE Delft Institute for Water Education
	prof. dr. M. Hurlbert	University of Regina
	mr. dr. C.M. Brölmann	Universiteit van Amsterdam
	dr. M.A. Hordijk	Universiteit van Amsterdam
	prof. dr. I.S.A. Baud	Universiteit van Amsterdam

Faculteit der Maatschappij- en Gedragwetenschappen

Table of Contents

List of Tables	xi
List of Figures	xii
List of Boxes	xii
List of Abbreviations	xiii
Publications	xv
Acknowledgement	xvii
Chapter 1 Property rights in Water and Reallocating Water	1
1.1 Introduction	3
1.2 Social relevance: Real-life problem	4
1.2.1 Increasing demand and decreasing supply calls for reallocating water	4
1.2.2 Water privatization and commodification	6
1.2.3 Social movements on water and water litigation	8
1.2.4 The need to understand property rights	9
1.3 Academic relevance: Scholarly gaps in knowledge	10
1.3.1 Legacy of historical property rights and the creation of new quasi-property rights in water in the Global South	10
1.3.2 A lack of understanding of the relationship between ‘property’ rights and water allocation and reallocation	11
1.4 Research question, approach, and limits	12
1.4.1 Question and sub-questions	12
1.4.2 Scope and limitations	13
1.5 Property rights in water, water allocation and reallocation, and inclusive development	14
1.5.1 Property rights in water	14
1.5.2 Water allocation and reallocation problems as part of water governance	15
1.5.3 Inclusive development and water allocation and reallocation of water	17
1.6 Policy relevance: Water property rights and water allocations and reallocation	20
1.6.1 International policy	20
1.6.2 Property rights in water IWRM and the SDGs	22
1.6.3 Inferences	24
1.7 Structure of thesis	24

Chapter 2 Methodology and research approach	27
2.1 Introduction	29
2.2 Case study approach	29
2.2.1 Focus on Africa and Asia	30
2.2.2 Case selection content analysis	30
2.2.3 Case study selection	33
2.3 Methods	34
2.3.1 Literature review	34
2.3.2 Content analysis	37
2.4 Positionality and research approach	51
2.5 Ethics	52
2.6 Inferences	53
Chapter 3 State-of-the Art: The changing nature of property rights in water	55
3.1 Introduction	57
3.2 Water property rights in different systems of law	57
3.2.1 Customary Law, and the law of Indigenous peoples and local communities	58
3.2.2 Common law	59
3.2.3 Civil law	62
3.2.4 Religious law	63
3.2.5 Inferences	64
3.3 Water ‘property’ rights in statutory instruments	64
3.3.1 Water property rights through water use permits	65
3.3.2 Water property rights through purchase in water markets	67
3.3.3 Water property rights through contract, lease, concession	68
3.3.4 Inferences	70
3.4 Inferences for water property rights	71
Chapter 4 A water ownership and allocation inventory in Africa and Asia	73
4.1 Introduction	75
4.2 Water Ownership in Africa and Asia	75
4.2.1 De jure water ownership vested in the state	76
4.2.2 Exceptions to state water ownership	76
4.2.3 Customary law and water ownership	77

4.3	Inventory of water allocation instruments	80
4.3.1	Existing water use	81
4.3.2	Domestic water use	82
4.3.3	Exempt water use	82
4.3.4	Water use permits	82
4.3.5	Contracts, leases and concessions	83
4.4	Inferences on the state of water ownership and water allocation instruments	84
Chapter 5	Water property rights through water use permits, affects water allocation and reallocation: An empirical assessment of 60 countries in Africa and Asia	87
5.1	Introduction	89
5.2	Dimensions and elements of Permits	90
5.2.1	Temporal dimension	90
5.2.2	Dispute resolution	95
5.2.3	Compensation	96
5.2.4	Protection of interests	97
5.2.5	Alienation	98
5.3	Conditions for reallocating permits	99
5.3.1	Cancelling permits	99
5.3.2	Modifying permit conditions	105
5.3.3	Limiting permits	110
5.3.4	Suspending permits	110
5.3.5	(Periodical) review of permits	113
5.3.6	Permit re-application	114
5.3.7	Declare areas: Spatial protections	115
5.4	Inferences for water reallocation	116
Chapter 6	Water property rights in investor-state contracts on extractive activities, affects water allocation and reallocation: An empirical assessment of 80 contracts in Africa and Asia	121
6.1	Introduction	123
6.2	Right to use and operate	125
6.2.1	Right to operate	125
6.2.2	Land use rights	127
6.2.3	Water use rights	129
6.3	Temporal dimension	133

6.4	Dispute resolution mechanism	134
6.4.1	Mineral contracts	135
6.4.2	Petroleum contracts	136
6.4.3	Agriculture contracts	137
6.5	Compensation	138
6.5.1	Mineral contracts	138
6.5.2	Petroleum contracts	138
6.5.3	Agriculture contracts	139
6.6	Stability	139
6.6.1	Change of legislation	139
6.6.2	State support to investors	141
6.7	Alienation	142
6.8	Inferences for water reallocation	143
Chapter 7	Case Study India: An analysis on the status of water 'property rights' in India's 28 States	149
7.1	Introduction	151
7.2	Context of India	151
7.2.1	Context and drivers in relation to water availability	151
7.2.2	Evolution of water property rights in India	154
7.2.3	The institutional set up for water governance in India	157
7.2.4	Water access and allocation instrument design	161
7.3	Water 'property' rights: Surface- and groundwater	171
7.3.1	Surface water	171
7.3.2	Groundwater	173
7.3.3	Water (surface- and groundwater)	175
7.4	Inferences for water allocation and reallocation	178
Chapter 8	Case study South Africa: An analysis on the status of water 'property rights'	181
8.1	Introduction	183
8.2	Context of South Africa	183
8.2.1	Context and drivers in relation to water availability	183
8.2.2	Evolution of water property rights in South Africa: 1910 – 1998	187
8.2.3	The institutional set up for water governance in South Africa	189
8.2.4	Water access and allocation instrument design	195

8.3	Water ‘property’ rights: Existing lawful use, water use licence, and contracts	200
8.3.1	Water use right	200
8.3.2	Temporal dimension	201
8.3.3	Dispute resolution	204
8.3.5	Alienation	206
8.4	Water access and allocation effects on inclusiveness	209
8.4.1	Quasi-property rights in water and social inclusiveness	210
8.4.2	Quasi-property rights in water and ecological inclusiveness	212
8.4.3	Quasi-property rights in water and relational inclusiveness	212
8.5	Inferences for water allocation and reallocation	219
Chapter 9 Conclusion and lessons learned		223
9.1	Introduction	225
9.2	Answering the research question	226
9.2.1	Property rights and their impact on water allocation and reallocation	227
9.2.2	Water reallocation policies	233
9.2.3	Property rights and quasi-property rights affect inclusive development	234
9.3	Policy recommendations: Designing permits and contracts	236
9.4	Theoretical contribution	241
References		243
Appendixes		287
Chapter 2. Methods		287
	Appendix A. Search words used in Scopus and HeinOnline databases	287
	Appendix B. Interview list	290
Chapter 4. A water property right inventory of 60 countries		291
	Appendix C. African countries included in analysis	291
	Appendix D. Asian countries included in analysis	295

Chapter 5. The governance of water use permits	297
Appendix E. Grounds and conditions for the cancellation of permits	297
Appendix F. Grounds and conditions for the amendment of permit conditions	299
Appendix G. Grounds for the suspension of permit	302
Appendix H. Grounds for the declaration of areas	304
Chapter 6. Water property rights in investor-state contracts	306
Appendix I. Overview of contracts included in analysis	306
Appendix J. Allocation of quasi-property rights through mineral contracts extraction	312
Appendix K. Allocation of quasi-property rights through petroleum extraction contracts	313
Appendix L. Allocation of quasi-property rights through land contracts	315
Chapter 7. Case Study India	316
Appendix M. Laws included in analysis India	316
Appendix N. Surface water governance and allocation instruments	321
Appendix O. Groundwater governance and allocation instruments	322
Appendix P. Water governance and allocation instruments	324
Chapter 7. Case Study South Africa	325
Appendix Q. Bilateral Investment Treaties concluded by South Africa	325
Appendix R. Treaties with Investment Provisions concluded by South Africa	327
Summary	328
Samenvatting	338

List of Tables

Table 1.1	Questions answered in the chapters, and the gaps they address	13
Table 1.2	Goal 6: Ensure availability and sustainable management of water and sanitation for all	22
Table 2.1	Summary criteria for selecting documents and case studies	31
Table 2.2	Results search Scopus and HeinOnline	36
Table 5.1	Allocation of quasi-property rights through permits.	91
Table 5.2	Grounds for the cancellation of permits	102
Table 5.3	Grounds for the amendment of permit conditions	106
Table 5.4	Grounds for the limiting permits	111
Table 5.5	Grounds for the suspension of permit	112
Table 5.6	Grounds and conditions for the periodical review of permits	113
Table 5.7	Grounds and conditions for the permit application and reapplication	115
Table 5.8	Quasi-property rights in water through permits, affecting water reallocation	118
Table 6.1	Quasi-property rights in water through investor-state contracts, affecting water reallocation	145
Table 7.1	Multi-level drivers of water-related challenges affecting India	153
Table 7.2	GDP-growth (annual %) – India	154
Table 8.1	Multi-level drivers of water-related challenges affecting South Africa	184
Table 8.2	GDP-growth (annual %) – South Africa	187
Table 8.3	Transboundary major rivers systems: River Basin Organisations, committees, and agreements	190
Table 8.4	Water allocation priorities	191
Table 8.5	Allocation of quasi-property rights through the granting of water entitlements in South Africa	202
Table 8.6	Volume of water registered by number of registered users in South Africa	217
Table 9.1	Recommendations for minimising the quasi-property rights nature of water use permits	238

List of Figures

Figure 1.1	Percentage Freshwater abstraction, GDP per capita, Population growth globally – 1950 compared to 2010	5
Figure 1.2	Private Participation in Infrastructure in water and sewerage in low- and middle-income countries – 1990 – 2021	7
Figure 2.1	Evolution of Concepts Between 1970 – 2021	36
Figure 2.2	Map of countries that are included in the content-analysis	42
Figure 6.1	Global network of BITs in force.	124
Figure 8.1	Surface Water Reserve determinations for South Africa ranging from 2010 up to 2016	210

List of Boxes

Box 7.1	Water: a State matter under the Indian Constitution	162
Box 8.1	Principal functions of the Water Users Association	194
Box 8.2	Schedule 1	197
Box 8.3	Specifying Existing Lawful Use	199
Box 8.4	Brief overview of the development of water trading in South Africa, 1998 – 2021	207
Box 8.5	Article 33. Declaration of water use as existing lawful water use	213
Box 8.6	Considerations for issue of General Authorisations and licences	216
Box 8.7	Water allocation priorities	219

List of Abbreviations

BITs	Bilateral Investment Treaties
BRICS	Brazil, Russia, India, China, and South Africa
CAR	Central African Republic
DRC	Democratic Republic of the Congo
DWS	Department of Water and Sanitation
ELU	Existing Lawful Use
GA	General Authorisation
GDP	Gross Domestic Product
HAI	Historically Advantaged Individuals
HDI	Historically Disadvantaged Individuals
IB	Irrigation Board
IWRM	Integrated Water Resources Management
MoU	Memorandum of Understanding
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
NEMA	National Environmental Management, Act 107 of 1998
NWA	National Water Act, Act. 36 of 1998
SDGs	Sustainable Development Goals
WUL	Water Use Licence

Publications

This thesis builds on 5 scholarly papers and 3 chapters in books on water governance.

Relevant thesis chapter	Title	Journal	Status	Authors
Papers				
3.	The tension between state ownership and private quasi-property rights in water.	Wiley Interdisciplinary Reviews Water (WIREs)	Published, October 2022	Bosch, H.J., & Gupta, J.*
4 & 5.	A water property right inventory of 60 countries.	Review of European, Comparative & International Environmental Law (RECIEL)	Published, May 2021	Bosch, H.J., Gupta, J., & Verrest, H.J.L.M.**
4 & 5.	Water Permits: Do they enhance or hinder water governance?	IUCN AEL Journal of Environmental Law	Published, April 2021	Bosch, H.J., & Gupta, J.*
6.	Water property rights in investor-state contracts on extractive activities, affects water governance: An empirical assessment of 80 contracts in Africa and Asia.	Review of European, Comparative & International Environmental Law (RECIEL)	Published, April 2022	Bosch, H.J., & Gupta, J.*
7.	An analysis on the status of water 'property rights' in India and its 28 States.	Economic and Political Weekly (EWP)	Submitted, October 2022	Bosch, H.J., & Gupta, J.*
8.	Access to and ownership of water in Anglophone Africa and a case study in South Africa.	Water Alternatives (WA)	Published, June 2020	Bosch, H.J., & Gupta, J.*

Relevant thesis chapter	Title	Journal	Status	Authors
Book chapters				
2 & 3.	Changing 'ownership' in water law: Comparative experiences in the developing world.	Elgar Encyclopedia of Environmental Law: Water Law	Published, September 2021	Gupta, J & Bosch, H.J.**
1.	The UN contribution to water law, environment, climate disruption, and the Sustainable Development Goals	Elgar Encyclopedia of Environmental Law: Water Law	Published, September 2021	Gupta, J & Bosch, H.J.**
1.	SDG 6: Ensure Availability and Sustainable Management of Water and Sanitation for All	Cambridge University Press.	Published, September 2022	Gupta, J., & Bosch, H.J.**

* Bosch conceptualised and developed the research, analysed the data, and wrote the first draft of the manuscript which was revised with inputs and constructive comments provided by Gupta.

** Bosch conceptualised and developed the research, analysed the data, and wrote the first draft of the manuscript which was revised with inputs and constructive comments provided by Gupta and Verrest.

*** Gupta conceptualised and developed the research. Gupta with input from Bosch wrote the manuscript.