

SPRINGER BRIEFS IN ENVIRONMENTAL SCIENCE

Simone Borghesi
Massimiliano Montini
Alessandra Barreca

The European Emission Trading System and Its Followers

Comparative
Analysis and Linking
Perspectives

 Springer

SpringerBriefs in Environmental Science

SpringerBriefs in Environmental Science present concise summaries of cutting-edge research and practical applications across a wide spectrum of environmental fields, with fast turnaround time to publication. Featuring compact volumes of 50 to 125 pages, the series covers a range of content from professional to academic. Monographs of new material are considered for the SpringerBriefs in Environmental Science series.

Typical topics might include: a timely report of state-of-the-art analytical techniques, a bridge between new research results, as published in journal articles and a contextual literature review, a snapshot of a hot or emerging topic, an in-depth case study or technical example, a presentation of core concepts that students must understand in order to make independent contributions, best practices or protocols to be followed, a series of short case studies/debates highlighting a specific angle.

SpringerBriefs in Environmental Science allow authors to present their ideas and readers to absorb them with minimal time investment. Both solicited and unsolicited manuscripts are considered for publication.

More information about this series at <http://www.springer.com/series/8868>

Simone Borghesi · Massimiliano Montini
Alessandra Barreca

The European Emission Trading System and Its Followers

Comparative Analysis and Linking
Perspectives

Simone Borghesi
University of Siena
Siena
Italy

Alessandra Barreca
University of Siena
Siena
Italy

Massimiliano Montini
University of Siena
Siena
Italy

ISSN 2191-5547 ISSN 2191-5555 (electronic)
SpringerBriefs in Environmental Science
ISBN 978-3-319-31185-2 ISBN 978-3-319-31186-9 (eBook)
DOI 10.1007/978-3-319-31186-9

Library of Congress Control Number: 2016934194

© The Author(s) 2016

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.

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG Switzerland

Preface

During the past decades there has been a wide debate on which economic instruments are more suitable to fight climate change in a way that is both economically efficient and legally rigorous. Among the various instruments, Emission Trading has gained increasing importance worldwide. Following the example of the European Emission Trading System (henceforth EU ETS), which set up in 2005 the first international carbon market, many other countries have decided to set up their own ETS at the national or regional level, generating a sort of rapid sprawling of the ETSs around the world. Given the difficulties encountered in the post-Kyoto phase (and actually during the Kyoto phase too) to pursue a multilateral solution to climate change problems, many scholars and policy-makers started looking at linking ETSs as a possible way to progressively achieve a common instrument to reduce polluting emissions. Linking ETSs implies deep economic and legal difficulties: it requires a rigorous legal framework for its proper economic functioning. Still, it might become one of the main routes to fight climate change in the near future.

To get a deeper understanding on this issue, this book provides a detailed analysis of the main ETSs from both the legal and economic perspectives with the intent to compare their features and examine whether and how to link them in the future.

It is the effort of a joint legal and economic team based at the University of Siena where we collaborate within the research group R4S—Regulation for Sustainability.

The book is divided into four parts. Chapter 1 is devoted to the analysis of the EU ETS, which has played a pioneering role in establishing a large international carbon market. Chapter 2 examines what we call the followers, namely, the main ETSs that have been set up in various regions after the EU ETS. In particular, we selected three ETSs (California, RGGI and Quebec) that we regard as crucially important not only for their dimensions but also for their actual or potential capacity to set up bilateral or multilateral ETS agreements. We originally examined also other ETSs that could play an important role in the future carbon markets, such as Australia and China. But we decided to exclude them from the final version because

the Australian government eventually abandoned its ETS project, while the Chinese pilot ETSs are still at their early stages with no sufficient data available for a proper analysis. The first two chapters provide the foundations for the following two. In particular, Chap. 3 performs a comparative analysis of the ETSs examined above providing some critical insights on the lessons learnt from the leader (i.e. the EU ETS) and its followers. Finally, Chap. 4 investigates the pros and cons of linking various ETSs, discussing the requirements for a successful linking and the alternative ways in which this can be realised.

The book originates from a research project entitled “The future of carbon trading regulation in the post-2012 international climate change negotiations” supported by Enel Foundation. We are indebted to Enel Foundation for its financial support which gave us the opportunity to conduct a deep analysis of the subject. We are also thankful to many scholars and seminar participants who provided numerous insights and suggestions as our research evolved over time beyond the original project along with the continuous changes in the ETS legislation and in the international scenarios. In particular, preliminary drafts of single parts of this book were presented at the Tsinghua University in Beijing, the School of Oriental and African Studies in London and the University of Siena. We would like to thank seminar participants for stimulating discussions that helped us improve the analysis. We take this opportunity to thank also Sebastiano Cupertino, Michele Marini and Francesca Volpe for providing valuable research assistance in searching for relevant data and legislative sources, and two anonymous referees for their helpful and constructive indications.

Finally, Simone Borghesi and Massimiliano Montini would like to thank the Department of Land Economy at the University of Cambridge where they were hosted as Visiting Professors during the Spring semester 2015. Moreover, they gratefully acknowledge the receipt of the financial support from MIUR (Italian Ministry of the University and Research) for the PRIN 2010-11 National Research Project (Grant No. 2010S2LHSE) and from the project FESSUD (*Financialisation, Economy, Society and Sustainable Development*) (Grant Agreement No. 266800), funded under the European Union VII Research Framework Programme.

Simone Borghesi
Massimiliano Montini
Alessandra Barreca

Contents

1	The EU ETS: The Pioneer—Main Purpose, Structure and Features	1
1.1	Introduction	1
1.2	The Current EU ETS Legislative Framework	2
1.3	EU ETS Purpose and Scope	3
1.4	The Actors of the EU ETS: The Duties of the Operators and of the Participating States and the Sanctions Against Non-compliant Operators	4
1.5	Allocation Regime and Validity of the European Union Allowances	6
1.5.1	General Rules for Allocation of EUAs	6
1.5.2	The EU-Wide Cap for Stationary Installations and for Aircraft Operators	6
1.5.3	The Allocation Rules for EUAs to Stationary Installations	7
1.5.4	The Benchmarks and the Special Regime for Manufacturing and Risk of Carbon Leakage	8
1.6	The New Entrants Reserve (NER) and the NER300 Programme	10
1.7	Article 27 of the EU ETS Directive: The Exclusion of Small Installations	11
1.8	The Auctioning Regime	13
1.8.1	The Rules on Timing, Administration and Other Aspects of the Auctioning of GHG Emission Allowances According to EC Directive 2003/87 and EC Regulation 1031/2010	13
1.8.2	The Auction Revenues	15
1.9	The Union Registry	16

1.10	Carbon Pricing	17
1.11	Incentives to Eco-Innovation and Technological Effectiveness	22
1.12	Back-Loading and Proposals for Other Structural Reforms of the EU ETS	24
	References	26
2	California, RGGI, Quebec: The Followers.	29
2.1	The California Cap and Trade Scheme	29
2.1.1	Introduction.	29
2.1.2	The California ETS: Main Scope, Purpose, Structure and Features	30
2.1.3	Duties of the Covered Entities and Competences of the California Air Resource Board (CARB) Executive Officer	31
2.1.4	Sanctions Against Non-compliant Entities	33
2.1.5	The Allocation Regime of the California Allowances	33
2.1.6	The California Instruments Tracking System (CITSS)	38
2.1.7	Carbon Pricing	38
2.1.8	Auction Revenues and Incentives to Environment-Friendly Technologies	39
2.1.9	Compliance Cost Assessment	41
2.1.10	Environmental Performance: Preliminary Evaluation.	43
2.2	The Regional Greenhouse Gas Initiative (RGGI)	44
2.2.1	Introduction.	44
2.2.2	The RGGI: Main Scope, Purpose, Structure and Features	45
2.2.3	Duties of the Covered Operators and Competences of the Regulatory Agency	45
2.2.4	Sanctions Against Non-compliant Operators	48
2.2.5	The Allocation Regime of the RGGI Allowances	48
2.2.6	The RGGI CO ₂ Allowance Tracking System (COATS)	51
2.2.7	Carbon Pricing	51
2.2.8	Auction Revenues and Incentives to Environment-Friendly Technologies	57
2.2.9	Compliance Cost Assessment	58
2.2.10	Environmental Performance: Preliminary Evaluation.	60
2.3	The Quebec Cap and Trade System	61
2.3.1	Introduction.	61
2.3.2	The Quebec Cap and Trade: Main Scope, Purpose, Structure and Features	61
2.3.3	Duties of the Covered Operators and Competences of the Ministry for the Environment of Quebec	62

2.3.4	Sanctions Against Non-compliant Operators	63
2.3.5	The Allocation Regime of the Quebec Allowances	64
2.3.6	The Quebec Compliance Instrument Tracking System Service (CITSS).	66
2.3.7	Carbon Pricing	67
	References	69
3	Comparing the EU ETS with Its Followers	71
3.1	Introduction.	71
3.2	Evolution of the Emission Trading Schemes	72
3.3	The EU ETS: Lessons Learnt	73
3.4	The EU ETS, Eco-Innovation and Environmental Effectiveness: Early Experiences	78
3.5	The Other ETSs: Differences and Similarities	80
3.6	A Few Emerging Trends from the Comparative Analysis	85
3.7	Conclusions	87
	References	88
4	Linking Emission Trading Schemes	91
4.1	Introduction.	91
4.2	Exploring Different Types of Linking	92
4.3	The Proper Legal Framework for Linking	94
4.4	Linking ETSs: Main Drivers, Pros and Cons	95
4.5	Linking ETSs: Necessary and Optional Features	97
	4.5.1 Necessary Features.	97
	4.5.2 Optional Features.	99
4.6	Options for Linking: A Critical Assessment.	102
	4.6.1 Option 1: A Global Single ETS	102
	4.6.2 Option 2: A Multilateral Agreement Among Regional/Domestic ETS Regimes	104
	4.6.3 Option 3: One or More Bilateral Agreements Between Regional/Domestic ETSs	105
4.7	Beyond Linking? Risks and Opportunities of the ETS Financialisation	107
4.8	Conclusions	108
	References	109

Abbreviations and Acronyms

AAR	Authorised Account Representative (RGGI)
AB32	(Californian) Assembly Bill 32
CAD \$	Canadian Dollars
CARB	California Air Resource Board
CCA	California Carbon Allowance
CCAP	(Quebec) Climate Change Action Plan
CCFE	Chicago Climate Futures Exchange
CCR	Cost Containment Reserve
CER	Certified Emission Reduction
CFR	Code of Federal Regulations (USA)
CH ₄	Methane
CO ₂	Carbon Dioxide
CO ₂ -e	Carbon Dioxide Equivalent
CP1, CP2, CP3	Commitment Period 1, 2, 3
CPM	(Australian) Carbon Pricing Mechanism
EC	European Community
EEA	European Environment Agency
EEX	European Energy Exchange
EFTA	European Free Trade Agreement
ETS	Emission Trading System
EU	European Union
EUA	European Union Allowance
EU ETS	European Union Emission Trading System
GHG	Greenhouse Gas
HFCs	Hydrofluorocarbons
ICAO	International Civil Aviation Organisation
ICE	Intercontinental Exchange
KP	Kyoto Protocol on Climate Change
MRR	Mandatory Reporting Regulation
MtCO ₂	Mega Tonnes of Carbon Dioxide
MW	Megawatt

N ₂ O	Nitrous Oxide
NF ₃	Nitrogen Trifluoride
OTC	Over-the-Counter
PFCs	Perfluorocarbons
QEA	Quebec Emission Allowances
RGGI	Regional Greenhouse Gas Initiative
RGGI COATS	RGGI CO ₂ Allowance Tracking System
SF ₆	Sulfur Hexafluoride
tCO ₂	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change

Chapter 1

The EU ETS: The Pioneer—Main Purpose, Structure and Features

1.1 Introduction

Since its introduction, the European Emission Trading System (EU ETS) immediately gained attention from scholars and policy-makers as it was the first trans-boundary cap and trade scheme and the largest air ETS in the world. For these reasons, it was commonly regarded as a “prototype” for the other ETSs established at national level around the world (Ellerman 2010).

Through the years, the EU ETS has progressively gained a paramount position within the EU climate change legislation and currently represents the most striking flagship in this sector, with more than 11.000 installations covered by the scheme. In parallel, the EU ETS has paved the way for the establishment of many other ETSs in several jurisdictions. Such schemes are now recognised worldwide as the “cornerstones” of the climate change policy, especially in the view of the lengthy and difficult process of the international climate change multilateral negotiations.

This chapter presents and analyses the EU ETS in a legal and economic perspective, with the view to assess whether it has truly represented a prototype for the other ETSs established around the world. To this end, the analysis firstly focuses on the most relevant legislative framework and technical aspects of the EU cap and trade scheme, in order to better understand its purpose, structure and features (see Sects. 1.2–1.9). Secondly, the evolution of carbon price and the economic and environmental effectiveness of the EU ETS are examined, so as to assess the real performance of the EU ETS and evaluate its suitability to act as a model for other national or regional ETSs (see Sects. 1.10 and 1.11). Finally, attention is devoted to the structural reform proposals that have been advanced to improve the functioning of the EU ETS in response to the difficulties encountered by the system in the last few years (see Sect. 1.12).