

The Social Dynamics of Carbon Capture and Storage

Understanding CCS
Representations, Governance and
Innovation

Edited by
Nils Markusson,
Simon Shackley and
Benjamin Evar



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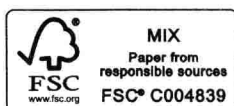
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DEDICATION

This book was conceived in 2010 as a result of discussions between ourselves and Dr Stewart Russell. Stewart, Deputy Director of Science, Technology and Innovation Studies at the University of Edinburgh, was to have been one of the editors. As the project progressed, Stewart fell seriously ill and died in September 2011. We miss you greatly as a friendly soul and a stimulating colleague and collaborator! We dedicate this book to you – it could have been a better one with your insights.

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Nils Markusson has 15 years' experience in the area of innovation and technology studies. After working for the Swedish government, he undertook a PhD at the University of Edinburgh on cleaner technology and firm organisation. He currently works as a Research Associate at the Scottish Carbon Capture and Storage research centre at the University of Edinburgh on several projects on aspects of CCS innovation. Throughout he has sought to understand how we use technology in society with as little environmental impact as possible, and what policy is needed to that end. He has published in journals such as *Global Environmental Change*, *Energy Policy* and *Journal of Cleaner Production*.

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ABBREVIATIONS AND ACRONYMS

ACC	anthropogenic climate change
ACCSEPT	Acceptance of CO ₂ Capture, Storage, Economics, Policy and Technology project
ACF	advocacy coalition framework
AEP	American Electric Power
AIDS	auto immune deficiency syndrome
ANT	actor network theory
BECCS	biomass energy with carbon dioxide capture and storage
BUND	Bund Für Umwelt und Naturschutz Deutschland (FoE Germany)
CATF	Clean Air TaskForce
CCGT	Combined Cycle Gas Turbine
<i>CCJ</i>	<i>Carbon Capture Journal</i>
CCS	carbon dioxide capture and storage
CCSA	Carbon Capture and Storage Association
CDM	clean development mechanism
CFC	chlorofluorocarbons
CH ₄	methane
CHP	combined heat and power
CO ₂	carbon dioxide
COP	Conferences of the Parties
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSLF	Carbon Sequestration Leadership Forum
CSP	concentrated solar power
DECC	Department of Energy and Climate Change
DNV	Det Norske Veritas
DOE	US Department of Energy
DTI	Department of Trade and Industry

xxii Abbreviations and acronyms

EC	European Commission
ECBM	enhanced coal bed methane recovery
ECN	Energy Research Centre for the Netherlands
EEPR	European Energy Programme for Recovery
EGR	enhanced gas recovery
ELSI	ethics, legal and social implications
EMR	Energy Market Reform
ENDS	Environmental Data Service company
ENGO	environmental nongovernmental organisations
EOR	enhanced oil recovery
EPA	US Environmental Protection Agency
EPA/IRIS	US Environmental Protection Agency Integrated Risk Information System
EPS	emissions performance standard
EPSRC	Engineering and Physical Science Research Council
ERRG	Energy Research Review Group
ERU	Emission Reduction Unit
ETF	Environmental Transformation Fund
ETI	Energy Technologies Institute
ETS	emissions trading scheme
EUR	euro
FGD	flue gas desulphurisation
FoE	Friends of the Earth
G8	Group of Eight [major economies]
GCCSI	Global CCS Institute
gCO ₂	gram CO ₂
GET	The General Environmental Technos Ltd
GHG	greenhouse gases
GHGT	Greenhouse Gas Control Technology
Gt	gigatonne
GW	gigawatt
HCSTC	House of Commons Science and Technology Committee
HMG	Her Majesty's Government
ICCDR	International Conference on Carbon Dioxide Removal
ICEPT	Imperial College Centre for Energy Policy and Technology
IEA	International Energy Agency
IEA CCC	IEA Clean Coal Centre
IEAGHG	IEA Greenhouse Gas R&D Programme
IED	Industrial Emissions Directive
IGCC	integrated gasification combined cycle
IPAC-CO ₂	International Performance Assessment Centre for Geologic Storage of Carbon Dioxide
IPCC	Intergovernmental Panel on Climate Change
JCOAL	Japan Coal Energy Centre

KEPCO	Kansai Electric Power Co.
KLIF	Norwegian Climate and Pollution Agency
kWh	kilowatt-hour
LTS	large technical system
m ³ /day	cubic metre per day
MAC(s)	marginal carbon abatement cost(s)
MACC	marginal abatement cost curve
METI	Ministry of Economy, Trade and Industry, Japan
MHI	Mitsubishi Heavy Industry Ltd
MIT	Massachusetts Institute of Technology
MLP	multi-level perspective
MPE	Norwegian Ministry of Petroleum and Energy
MRCSP	Midwest Regional Carbon Sequestration Partnership
MW	megawatt
NDMA	N-Nitrosodimethylamin
N ₂	nitrogen
NER	new entrants reserve
NETL	National Energy Technologies Laboratory
ng/m ³	nanogrammes per cubic metre
NGO	nongovernmental organisation
NILU	Norwegian Institute for Air Research
NIMBY	not in my back yard
NIPH	Norwegian Institute of Public Health
NMF	Norwegian Ministry of Finance
NMTI	Norwegian Ministry of Trade and Industry
NOAH	FoE Denmark
NOK	Norwegian krona
NO _x	nitrous oxides
NPD	Norwegian Petroleum Directorate
NSM	new social movement
NUMBY	not under my back yard
NZEC	Near Zero Emissions Coal project
OECD	Organisation for Economic Co-operation and Development
Ofgem	Office of the Gas and Electricity Markets
OSPAR	Oslo and Paris Convention for the Protection of the Marine Environments of the North-East Atlantic
PIU	UK Cabinet Office's Performance and Innovation Unit
ppmv	part per million by volume
PTRC	Petroleum Technology Research Centre
PV	photovoltaics
R&D	research and development
RCEP	Royal Commission on Environmental Pollution
RD&D	research, development and demonstration
RDM	robust decision-making

xxiv Abbreviations and acronyms

REACH	EU Regulatory Framework for the Management of Chemicals
SACROC	Scurry Area Canyon Reef Operators Committee
SBSTA	UNFCCC Subsidiary Body for Scientific and Technological Advice
SCCS	Scottish CCS
SCOT	social construction of technology
SP	Scottish Power
SRCCS	IPCC Special Report on CCS
STS	science and technology studies
t/day	tonne per day
TCM	Test Centre Mongstad
tCO ₂	tonne CO ₂
TIC	Technology and Innovation Centre
TIS	technical innovation systems
TNS	Taylor Nelson Sofres PLC
toe	tonne of oil equivalent
TSB	Technology Strategy Board
TWh	terawatt-hour
UAE	United Arab Emirate
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute
WWF	Worldwide Fund for Nature
ZEP	Zero Emissions Platform
ZERO	Zero Emission Resource Organisation

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