This book elucidates what it means to transition to alternative sources of energy and discusses the potential for the energy transition to be a more democratic process. The book dynamically describes a recent sociotechnical study of a number of energy transition processes occurring in several countries - France, Germany and Tunisia, and involving different energy technologies - including solar, on/off-shore wind, smart grids, biomass, low-energy buildings, and carbon capture and storage. Drawing on a pragmatist tradition of social inquiry, the authors examine the consequences of energy transition processes for the actors and entities that are affected by them, as well as the spaces for political participation they offer. This critical inquiry is organised according to foundational categories that have defined the energy transition - ‘renewable’ energy resources, markets, economic instruments, technological demonstration, spatiality (‘scale’) and temporality (‘horizon(s)’). Using a set of selected case studies, this book systematically investigates the role these categories play in the current developments in energy transitions.

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Preface ....................................................................................................................................................8
In revisiting our current compass for the energy transition, this book elucidates both what it means to transition to alternative sources of energy and the potential for undertaking a more democratic energy transition.

The book dynamically portrays a recent sociotechnical study of a large number of energy transition processes underway in several countries (France, Germany and Tunisia) and involving different energy technologies (solar, on/off-shore wind, smart grids, biomass, low-energy buildings, and carbon capture and storage). Drawing on a pragmatist tradition of social inquiry, the authors pay attention to the consequences of energy transition processes for the actors and entities that are affected by them, and the spaces for political participation they offer.

This critical inquiry is organised according to foundational categories that have defined the energy transition -- resources (‘renewable’ energy resources), markets, economic instruments, technological demonstration, spatiality (‘scale’) and temporality (‘horizon(s)’). The book systematically investigates, through the set of well-selected case studies, the role these categories are playing in the conduct of energy transitions.

**Contents & Abstracts**

**Chapter 1. How to inquire about energy transition processes?**  
*By Olivier Labussière, Alain Nadaï*

This chapter introduces the aims and method of the book. It starts with the assumption that the current conduct of the energy transition raises issues of democracy and sets the book the task to address these by inquiring into actual energy transition processes. The chapter draws on the philosophy of pragmatism in outlining its *inquiry*, defined as an investigation based on a large set of case studies attending to the consequences of energy change processes so as to make these consequences explicit to actors. The chapter then explains how the book addresses the current conduct of the energy transition by inquiring into its key dimensions, namely making new energy resources, passing through markets, economic instruments, technological demonstration, and the spatialities and temporalities of energy transition processes.

**Chapter 2. New energy resources in the making**  
*By Alain Nadaï, Olivier Labussière*  
*With the contributions of Vincent Banos, Christophe Chauvin, Béatrice Cointe, Jeoffrey Dehez, Antoine Fontaine, Thomas Reverdy, Antoine Tabourdeau*
The social sciences have foregrounded the importance of the materiality of fossil energies in the political construction of democracies. Recently, they have begun to challenge the idea that renewable energies were naturally associated with more democratic political ideals. Building on these developments and on the premise that (renewable) energy resources are not simply given as such by nature, the chapter proposes a framework to explore the material assemblage of energy resources in four different cases–wind, solar, biomass energy and distributed load shedding. Importantly, the chapter points out the diverse ways in which these resources are assembled and highlights the related political effects. It shows that the democratic dimension of renewable energies should not be regarded as one of their inherent attributes, but as a possibility that depends on their socio-material assemblage.

Chapter 3: Transitioning through markets
By Catherine Grandclément, Alain Nadaï
With the contributions of Béatrice Cointe, Vincent Banos, Jeoffrey Dehez, Olivier Labussière, Thomas Reverdy

This chapter offers a critical examination of the conduct of market-based energy transition. Drawing on four case studies from France - tree stumps as conventional fuelwood, non-residential PV production, the development of ‘smart home’ infrastructure, and the market valuation of residential load shedding – the chapter takes a market studies approach and offers fine-grained accounts of how markets work in practice. Unsurprisingly, the four cases presented here illustrate ways in which markets can lead to positive or negative outcomes in both energy change achievements and participation in steering these changes. They suggest that the potential of markets in relationship to the energy transition depend notably on what the state decides to make of them.

Chapter 4: The Politics of Some Policy Instruments
Béatrice Cointe, Alain Nadaï
with the contributions of Olivier Labussière, Edith Chezel, Michel Deshaies, Antoine Fontaine, Laurence Rocher, Eric Verdeil.

This chapter offers a detailed sociological perspective on the role of investment-oriented policy instruments (subsidies, fixed tariffs, tenders) in triggering and shaping the recent development of renewable energies in three countries (France, Germany and Tunisia). Bringing together recent developments in STS (concerned markets, capitalisation), it shows that, despite their economic framing, these instruments trigger processes which deal with multiple
values. They also sustain the emergence of collectives concerned with their effects – called their ‘milieu’ - which they become co-dependent upon.

Such processes lead to iterative adjustments and developments that carry with them their own politics. While they sustain the emergence of political ends beyond those directly foregrounded by these instruments, they also prove to be very unevenly equipped to address emergent concerns.

Chapter 5: Technological Demonstration at the core of the Energy Transition

Alain Nadaï, Olivier Labussière
with the contribution of Catherine Grandclément

Demonstration projects gather research and industry actors around projects and organizational settings–‘demonstrators’/‘demonstration projects’ and ‘demonstration programmes’–aimed at accelerating innovation. They are increasingly used in the conduct of contemporary energy transitions, especially in the European Union.

This chapter addresses the democratic dimension of demonstration projects. Based on three cases of technological demonstration in the EU–CCS, smart grids, low carbon communities– it analyses the ways in which these demonstrations jointly construct their public, their object and the political principles that hold the two together.

The analysis shows that there are significant democratic issues associated with these demonstrations. It suggests that we should analyse demonstration projects in relationship to their broader institutional environment and the social forces that challenge their ends.

Chapter 6. The spatialities of energy transition processes

Olivier Labussière, Vincent Banos, Antoine Fontaine, Eric Verdeil, Alain Nadaï
With the contribution of Jeoffrey Dehez, Laurence Rocher

This chapter explores the role of spatiality and how it is constructed in energy transition processes. Space is part of different operations for channelling, assessing and controlling material flows to turn them into energy resources and ensure a predictable production. The chapter proposes the idea of a ‘politics of volumes’ to describe how an energy volume is calculated, delineated and controlled, how sharing it and living together within it is made possible, and how it is (re-)configured when being connected to a pre-existing large sociotechnical assemblage (such as an electrical grid). These explorations offer new insights about the strategic combinations of energy and non-energy volumes, the influence of social and spatial heritage in the making of energy volumes, and the power relationships at work.
Chapter 7. The temporalities of energy transition processes  
*Olivier Labussière, Alain Nadaï*  
*with the contributions of Edith Chezel, Michel Deshaies*

This chapter provides a critical inquiry into the processes of time-making and agreeing upon collective horizons for the energy transition.  
A broad range of academic literature looks at the energy transition as an interval, a ‘matter of timing’ (historical drivers, pace of the transition), in which distant futures and anticipatory attitudes steer the way in which to bridge a gap.  
Different from this, this chapter develops a pragmatic framework which approaches the energy transition as a process of change in which new assemblages and new durations are performed.  
Analysing different case studies in France and Germany, it shows that ‘nearness’ (recent past and near future) has a major influence on the steering of energy transition processes because it is a disputed zone for selecting, renaming entities from different times, and agreeing upon new enduring assemblages.

Chapter 8. Energy transitions and potentials for democratic change  
*By Olivier Labussière, Alain Nadaï*

This chapter sets forth the critical (in)sight made possible by the book’s inquiry into current conduct of energy transition. Placing the sights derived from our inquiry side by side, it shows that ‘renewable energy resource’, ‘market’, ‘economic instrument’, ‘technological demonstration’, ‘scale’ and ‘horizon’ should all be regarded as constructed categories, which incorporate and foster definite and situated politics. While revisiting what transitioning means, the chapter makes clear that a relational analysis has a systemic reach because it allows acknowledgment of the consequences of this politics and engagement with the implications of current energy transition processes. It concludes with proposing the idea of ‘transition potential’ and suggesting ways of sustaining energy transition potentials that are more democratic.

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Preface

The approach proposed in this book emerged during a study of wind power policies and developments in several European countries (France, Germany and Portugal) between 2006 and 2010. The changes in landscapes induced by these developments enticed us to pay attention to the proliferation of sociotechnical collectives that were embarked on these processes and concerned by them. Dorle Drackle, Oliver Hinkelbein and Werner Krauss from Bremen University (Germany), and Ana Isabel Afonso and Carlos Mendes from the Universidade Nova de Lisboa (Portugal), were important research partners in this early phase of research work.

The present volume is the outcome of a research project that drew on the first phase of research and proposed to explore energy transition processes in a more systematic way, focusing on the collectives of actors (human and non-human) that were associated with these processes. The project was entitled the COLLENER (‘ENERgy Transition and Socio-technical COLLectives’) Research Project (2011-2015) and was funded by the French National Research Agency (ANR) under Grant n° 2011-SOIN-003-01.

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Finally, all our best intentions to express ourselves in clear and simple English would have amounted to little without the conscientious linguistic and proofing skills of our longstanding collaborator Jonathan Uhlaner and our first-time collaborator Paul Reeve. To both our thanks.