



Business Strategies in Sustainable Energy

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ENGLISH SUMMARY

Moving towards a more sustainable energy future is widely regarded as one of the key challenges for the decades to come, related to the negative economic, political, environmental, and social externalities associated with fossil fuel dependence. The international diffusion of technologies which enable more sustainable modes of energy production and consumption across the world is a central factor in this respect. For energy production, this implies that major investments in renewable energy technologies (RETs) are needed to replace fossil fuel-based technologies as a source for power generation; for energy consumption, this entails the widespread deployment of technologies which enable energy-intensive economic activities to become more energy efficient. This dissertation examines the strategies of firms in developing and marketing technologies for sustainable energy production and consumption in heterogeneous empirical contexts, with specific attention for the role of multinational enterprises (MNEs) as they are crucial and powerful players in addressing global sustainability issues.

The dissertation consists of six chapters which explore business strategies in sustainable energy, informed by business and management theories. It seeks to contribute insights into the strategic responses of business to the diffusion of technologies for sustainable energy production and consumption, guided by two interrelated research questions. The first research question, *how do MNEs strategically address the diffusion of renewable energy technologies for energy production and of energy efficiency technologies for energy consumption?*, is examined in chapters 2, 3, and 4. Each of these chapters provides an organizational-level, industry-specific analysis, focused on MNEs with established positions in their respective industries. Chapter 2 explores how firms in the information and communication technology (ICT) industry strategically approach the market for smart city technologies, and assesses their role in addressing energy consumption in cities and urban areas on a global scale. Chapter 3 focuses on electric utilities with established positions in the European electricity market, and examines how technology-specific investments in power generation technologies are shaped by transformative changes in the institutional environment. Chapter 4 examines the strategic investments of European firms in the oil industry in developing and commercializing RETs to diversify their power generation portfolio, taking both internal resources and capabilities and external industry dynamics into account.

The second research question, *how does business address challenges related to the scalability, affordability, and accessibility of solutions for sustainable energy production and consumption?*, is addressed in chapters 5 and 6. Chapter 5 focuses on access to energy in developing countries, and explores business models of entrepreneurial firms to introduce RET-based solutions in rural areas without access to the national electricity grid. Chapter 6 identifies

which dimensions and conditions affect the potential for urban energy efficiency solutions to be scaled up beyond pilot projects, and examines how business-led approaches can create a broader environmental and social impact beyond the local level. Finally, chapter 7 reflects on the wider contributions of each chapter to the debate on business strategies and the transition towards more sustainable modes of energy production and consumption, and discusses limitations and areas for further research.