

## Chapter 73

# The Application of Crowdfunding to the Energy Sector

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### ABSTRACT

*Crowdfunding in energy begins as a response to reduced investments (both governmental and private) into the transition to decarbonized energy systems and to the spread of innovative business models and approaches conducive of greater participation of citizens and communities in distributed renewable energy projects. This chapter presents results of a worldwide overview of the use of crowdfunding in the energy industry. Evidence gathered from available energy crowdfunding platforms highlight a very new, but quite dynamic sector. The crowdfunding tool has been applied in most of its forms, ranging from peer-to-business lending to pure donation, with strong environmental and social mission and the explicit aim of increasing participation of citizens in sustainable energy investment. Evidence also shows that, despite maintaining their environmental and clean energy focus, some energy platforms have begun to move from niche, grass root initiatives into larger projects and collaboration with energy private sector and institutional finance.*

### INTRODUCTION

This chapter provides an overview and analysis of the development of crowdfunding within the energy industry. It looks into the trends and dynamics of this emerging sector and presents results of a worldwide review of energy crowdfunding platforms. It aims at providing a better understanding of the application of this innovative financing tool to the energy industry and of its performance to date. It intends to provide a reference analysis to policy makers, regulators as well as finance, industry and general public stakeholders about the state of the art of this emerging sector.

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## **ENABLING FACTORS**

One of the drivers behind the growth and spread of crowdfunding worldwide has been the reduced access to capital to citizens and firms for new investments due to the financial crisis and restricted access to credit since the second half of the 2000s. Indeed, crowdfunding platforms have begun to spread around the world in 2008, along with other emerging alternative finance instruments outside the traditional banking sector, including mini bonds, social impact bonds, microcredit, impact investing. A similar trend has affected the energy sector, with the financial crisis impacting on investments in energy projects and infrastructures. In particular, both governmental and private investments in sustainable transition have been decreasing (Geels, 2013), despite the growing need for financial resources to support clean energy projects in response to climate change reduction policies and strategies. Thus, as in other sectors, crowdfunding in energy could be seen as an answer to the need to mobilize financial resources, and support the transition toward cleaner energy systems.

Another important enabling driver to the use of crowdfunding in the energy industry is the strong transformation undergoing in the sector since the late 90s. The restructuring and liberalisation of the industry has allowed the entry of new stakeholders in the energy markets. Contextually, climate change mitigation strategies and the need to decarbonize energy systems by increasing the proportion of renewable distributed generation and reducing energy use through the implementation of energy efficiency measures has set the basis for a shift in the energy system paradigm, from a centralized “top-down” system to decentralized generation, a “bottom-up” system. An immediate difference between the two paradigms is the role of the energy end user, who in a decentralized generation system could become both investor and generator. The modularity of renewable energy projects has allowed smaller size investments (than centralized generation plants) and the entrance in the energy market of new generators and investors (including citizens, local authorities, small firms) previously set outside of the industry mainly dominated by large energy companies (Kempener et al., 2015). This trend has been particularly evident for small/medium scale renewables and energy efficiency measures which have generally higher transaction costs (and comparatively low equity return rates) which makes them less appealing for large companies. In addition, large companies often lack for experience with small scale projects and can have split incentives: decentralized generation and energy efficiency can have a negative competitive impact on their core business. These changing scenarios have thus left space for the entrance of new and smaller players in the energy industry.

The transition to clean energy systems is challenging the role of old generators and utilities’ business models. In Europe the share of renewables with dispatch priority in electricity markets is increasing which, in conjunction with post crisis reduction in electricity demand and fossil fuel generation overcapacity, has led to a reduction in wholesale prices and in the profitability of utility owned conventional power plants. Utilities are losing money on their electricity generation core business and gradually reducing their role of investors in energy systems.

Such transformation of the energy industry is also seen in the financial market. Utilities and large energy companies were traditionally seen as low risk investments by institutional finance (large investors, pension funds) as they operated in a regulated and stable market. However, the changing paradigm in the energy sector has seen the entrance of new players in the energy finance market and the development of new financing instruments, such as green bonds issued by development banks, corporate investors and municipalities or yieldcos (publically traded companies formed to own power plants and pass revenues to investors as dividends) (Frankfurt School-UNEP & BNEF, 2015). Utilities weight in the finance mar-

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