



Facing the climate and digital challenge: European energy industry from boom to crisis and transformation



Alte Midttun*, Proadpran Boonprasurd Piccini

BI Norwegian Business School, Nydalsveien 37, 0484 Oslo, Norway

ARTICLE INFO

Keywords:
Energy industry
Green transition
Renewables
Digital challenge
Business models
Policy challenges

ABSTRACT

This article contributes to the understanding of the current transformation of the energy industry in Europe and the interplay between greening policies and digital technological innovation.

It shows how, since the financial crisis, core players in the European energy industry ended up in a dualist limbo, between conventional and emerging business models. It documents how strategies and business models that delivered extraordinary financial performance in the first decade of the 21st century often failed dramatically after the 2008 financial crisis. Yet it finds that incumbents with 1) a greener energy mix, 2) smaller scale and, quite naturally, 3) better financial performance fared better than others

The study explores the emergence of new business models and finds that most of the emerging business models circle around the customer interface where digital solutions allow more flexible interplay between consumption and production of energy, and/or between several service alternatives to fulfill basic needs for customer home comfort.

The article also discusses important policy implications: For competition policy, it indicates a shift from challenges of scale and scope towards challenges of regulating networks and dominant platforms. Furthermore, it highlights new policy dilemmas concerning balancing and energy storage to accommodate intermittent supply from renewables.

1. Introduction

1.1. Objectives

This paper explores and analyses the dramatic transformation of the European energy industry as it faces the dual challenge of strong greening policies and digital technological transformation. A first part (Sections 3–5) focuses on how traditional strategies and business models that delivered extraordinary financial performance in much of the first decade of the 21st century, often failed dramatically in the period after the 2008 financial crisis. Core questions are: How did the dynamics in electricity supply in Europe between 2000 and 2016 affect the business strategy of incumbent electricity companies in Europe and why were some incumbents more successful than others? A second part (Sections 6 and 7) explores the emergence of new business models in the energy industry, and examines how they herald new approaches that combine green transition with digital innovation.

1.2. Background and context

The focus of the central energy incumbents at the turn of the millennium was generally on scale and scope, based on classical

arguments of cost advantage gained due to size, scale of operation and co-production (Besanko et al., 2013; Gaughan, 2002). Such arguments had traditionally played a central role in the energy industry, ever since de-regulation in the 1990s and early 2000s brought these sectors under competitive pressure.

The period following the 2008 financial crisis saw a dramatic shift in business conditions for the European energy industry. Motivated by the need to meet the climate challenge, extensive public funding brought considerable volumes of renewable energy on the market in the early 2000s. New application of information technology allowed installation of some of this capacity by consumers, leading to a trend of self-supply ‘prosumership’ in many EU countries (Schleicher-Tappeser, 2012; Bughin and Manyika, 2012; WEF, 2016).

Against this background, our analysis focuses on business models, both of incumbent energy industry and emergent new players. We here draw on a growing literature on business models (Osterwalder and Pigneur, 2010; Zott and Amit, 2013) that seeks to integrate core business functions, such as products and services, logistics key resources, activities, revenue streams, partnerships and customer relations into a holistic analysis at the firm level. This perspective provides a holistic framework for addressing central challenges to incumbent energy industry (in Part I), such as: How extensive changes

* Corresponding author.

E-mail addresses: alte.midttun@bi.no (A. Midttun), proadpran.b.piccini@bi.no (P.B. Piccini).

in policy contexts have affected the cost structure and revenue generation, and how they determine the bottom line of the energy industry? What the implications are for their value chains? And how this affects their customer relations? Addressing these are core stepping stones towards answering the core questions posed above, under *objectives*.

The business model perspective also offers central insights into the combination of factors that facilitate understanding of the emergent new energy business in part II. This includes insights into how energy products and services reconfigured, and how this is related to the value proposition to consumers? And, not the least, how the product and service – reconfiguration can be combined with revenue streams that match the costs.

1.3. Contribution to the energy policy literature

This article contributes to the understanding of the current transformation of the energy industry in Europe and the interplay between strong greening policies and digital technological innovation. It enriches our comprehension of strategic dilemmas faced during the transition to radically different business models. It highlights the effect of transformative policies on business performance and value creation and value destruction.

2. Methodology

As previously mentioned, our analysis falls into two parts: A first part that focuses on how traditional strategies and business models that delivered extraordinary financial performance in much of the first decade of the 21st century, failed dramatically in the period after the 2008 financial crisis. A second part that explores the emergence of new business models in the energy industry, and examines how they herald new approaches that combine green transition with digital innovation.

The first part is based on a combination of qualitative and quantitative data. It examines the commercial trajectories of nine major European energy incumbents through the turbulence of the first sixteen years of the 21st century. It does so by coupling a pragmatic textual analysis of strategic framing, with a statistical analysis of economic and resource indicators.

Starting with the major German incumbents E.ON and RWE as core cases, our analysis extends to include Enel, ENGIE (former GDF Suez), EDF (Électricité de France), E.ON, RWE and Iberdrola, representing the largest European players based on power sales (Statista, 2016). We have also included SSE, based on the Forbes calculation of market capitalization, assets, sales and profit (Power Technology, 2016). In addition, two players have been included in the group of incumbents: Verbund, the Austrian hydropower company, and Fortum, the Finnish energy company. Verbund is included to represent a traditional renewables-based player, while Fortum is added because of its relatively high success.

Companies' annual reports, particularly letters to their shareholders, have proven to be a main source of information on how a company's top management frames company strategy. As this information is critically reviewed by auditors, analysts and investors, we argue that it would generally have to contain relevant and credible information – even though biased by top-management's visions and interests.

The overview of strategies and business models is juxtaposed with data on resource mix for generation, capacity, and financial performance, e.g. EBIT, net profit, dividend, financial ratios and share price development, etc., all computed over the 2000–2016 period or as long as they have existed. The use of share prices as a main indicator of company performance reflects its status as a result of the investors' and their experts' holistic evaluation of the firms.

The main sources for the quantitative data are from companies' annual reports and publications, Financial Times and Bloomberg's databases. The limited number of cases dictates fairly simple statistical

techniques such as the Pearson Correlation analysis and ANOVA group comparisons.

The second part explores development of renewables focused energy companies and emergent new players that utilize novel IT based approaches to energy industry.

The five companies in renewables group are selected to illustrate important new green business models in Europe, ranging from new green energy developers to green technology providers. The companies were selected in order to represent the span of variety among green European players, drawing on an explorative case design. Firstly, our selection includes two green electricity generators Enel Green Power (EGP) – the spin-off from the Italian Enel, and EDP Renovaveis (EDPR) – the spin-off from the Portuguese EDP (Energias de Portugal). In addition we have included European renewable technology suppliers encompassing the Danish Vestas Wind System - the world's largest manufacturer of wind turbines, its German peer Nordex and SolarWorld - the German solar panel manufacturer.

We have also surveyed a group of emerging actors with novel IT approaches in the energy market, in order to bring in some of the major crossover challenges to incumbent the energy industry from other sectors of the economy. The emerging actors have been selected to represent the span of variety in this field, as it has been described in specialized energy and IT media. Our sample includes companies such as Sungevity (decentralized solar power) Techem (real estate comfort and energy management), Qivicon (internet-based smart home platform), and Kiwigrid (an internet-based energy systems management company).

To structure our analysis of the energy industry's often complex strategic transition, we have developed an outline of the strategic 'opportunity space' in a two-dimensional format (Fig. 1). In this format the sectors within the circle indicate the sections of the economy that are potentially relevant to energy-related business reconfiguration, such as electricity, water/sewage, ICT and telecom, building, engineering and petroleum. Each sector is subsequently divided along a value-chain dimension into 'upstream' resource related activities towards the periphery, to 'downstream' customer-related activities in the centre. In the electricity sector, for example, conventional central station based generation is placed in the periphery, followed by transmission in the middle section and retailing towards the centre. Likewise, the petroleum sector includes upstream exploration and extraction, in the periphery, with gas grids and/or shipping & on land transportation in the middle section, and downstream retailing towards the centre. Other sectors of potential relevance to our analysis are described in the same way.

3. E.ON and RWE from supernovas to black holes

Many European energy-incumbents, started out the 21st century with remarkable economic success. However, following the financial

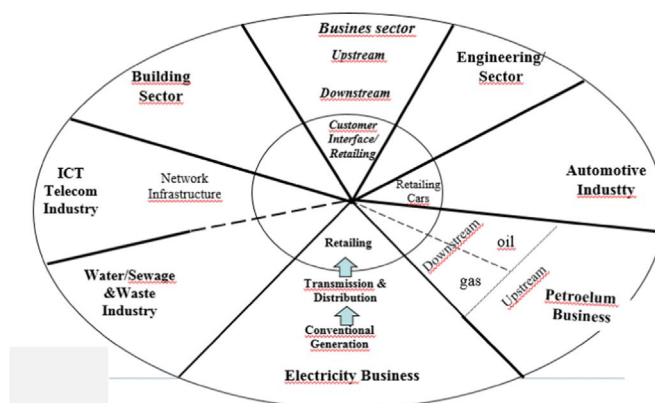


Fig. 1. The Opportunity Space for Business Configuration of the Energy Industry.

Download English Version:

<https://daneshyari.com/en/article/5105605>

Download Persian Version:

<https://daneshyari.com/article/5105605>

[Daneshyari.com](https://daneshyari.com)