

# Business model challenges for energy firms

# ANALYSIS OF MARKET DESIGN BARRIERS FOR THE IMPLEMENTATION OF INNOVATIVE BUSINESS MODELS IN THE ENERGY SECTOR

Lena Holzner, 29<sup>th</sup> June 2017

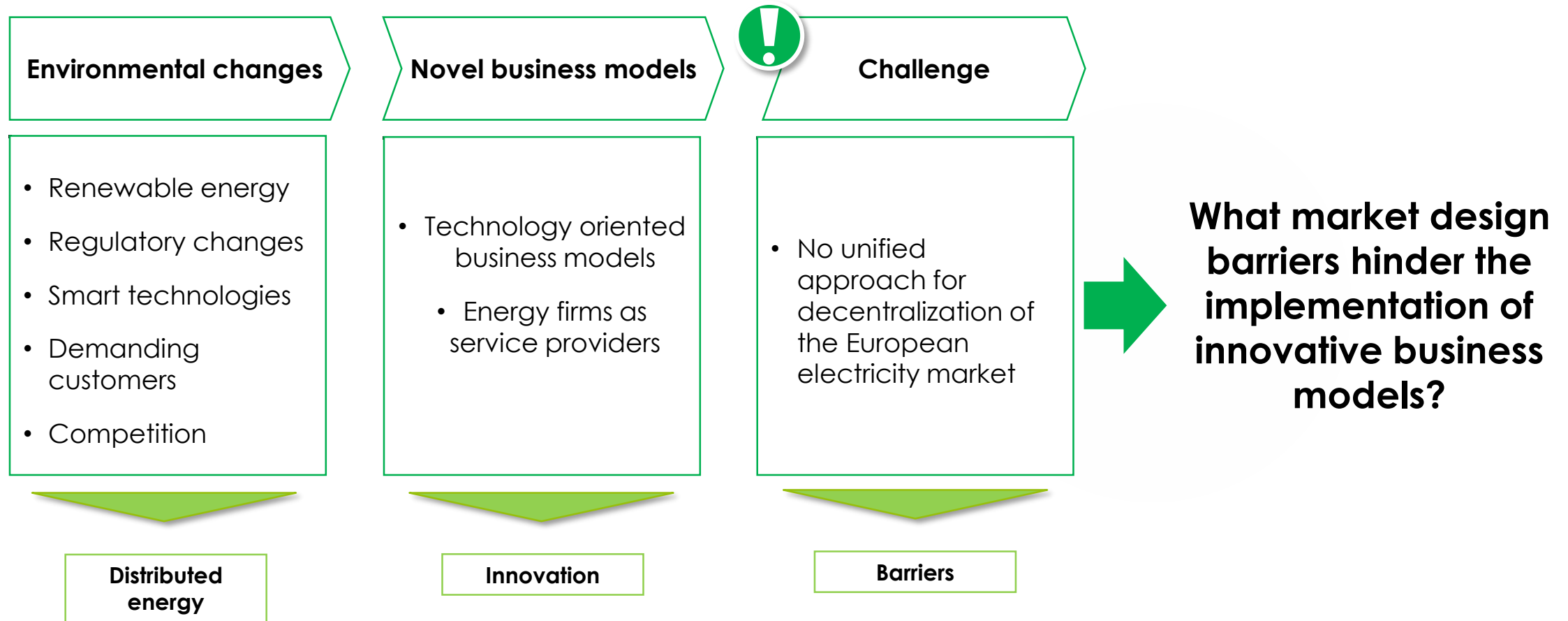


## Agenda

1. Introduction
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3. European electricity market design
  1. Industry structure
  2. Politico-institutional factors
  3. Socio-institutional factors
4. Methodology
5. Results & Discussion
6. Conclusion & Future research
7. *Proposal – Market Design Canvas*



## Introduction



## Business model innovation

*"The successful deployment of the energy transition relies on a deep reorganization of the energy market. Business model innovation is recognized as key driver of this process." (Facchinetti et al., 2016, p.1)*

### Advantages

- Accommodation of renewable energy assets
- Digitization of the electricity system
- Adaptation to energy policy and regulation



### Disadvantages

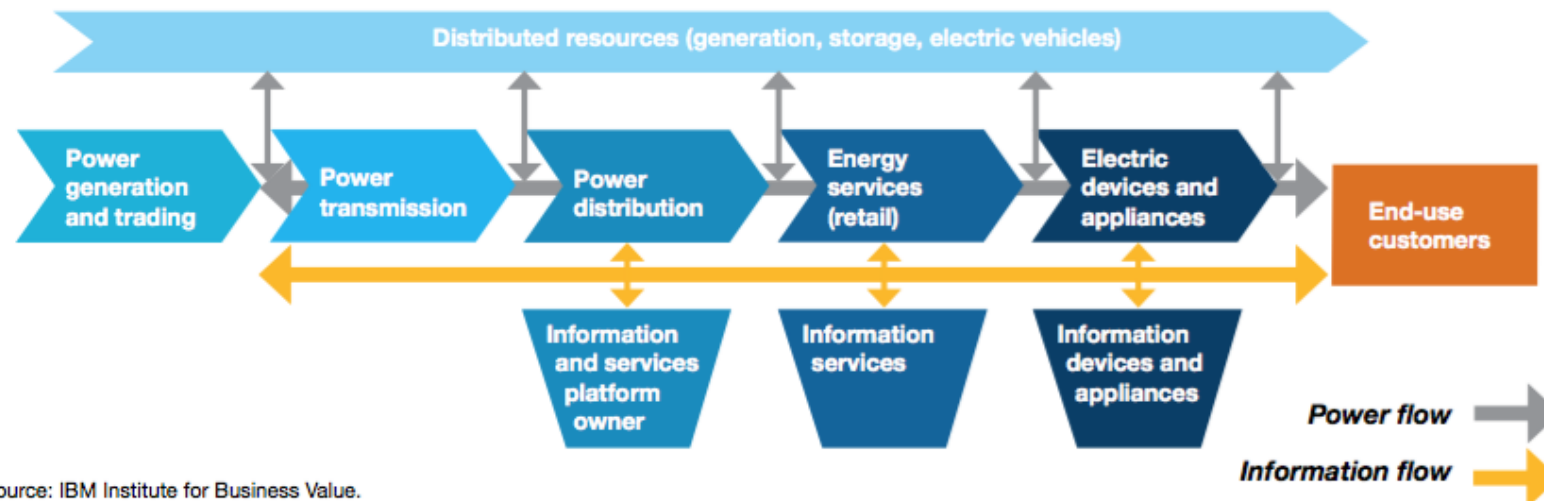
- Asset transformation
- Lack of competencies and systems for innovation management
- Path dependency

## Business model innovation

### Traditional electricity value chain



### Emerging electricity value chain



Source: IBM Institute for Business Value.

# A diverging EU electricity market creates new barriers for business model innovation

## European electricity market design

### 1. Industry Structure

- Increasingly liberalized, energy-only market with capacity mechanisms emerging with the rise of renewable energies

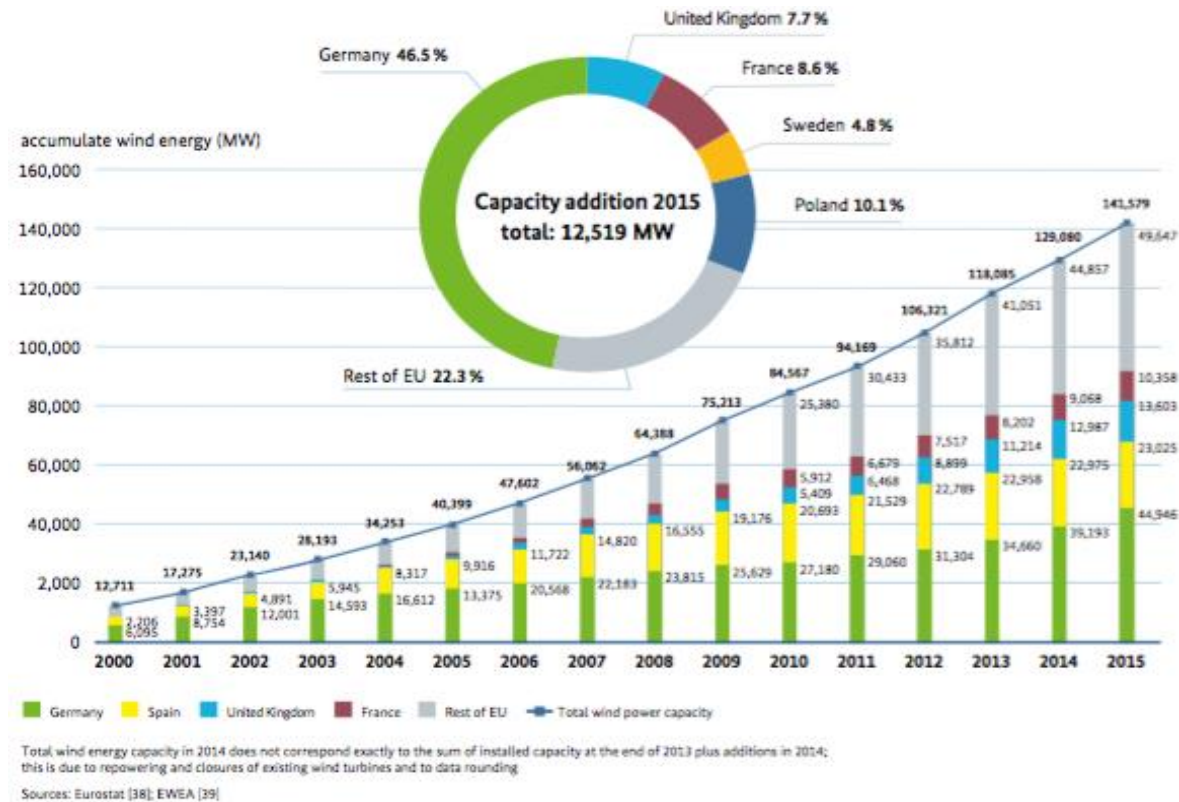
- Third Energy Package: increasing competition in wholesale markets, market coupling, renewable energy as key electricity source

- Differences in wholesale market electricity prices, trading volumes and renewable capacity remain

# EU electricity market design differences

## European electricity market design

### Wind energy capacity in the EU Member States



EU average wholesale baseload electricity prices, Q2 2016

Sources: BMWi, 2016, p.43 ; European Commission, 2016, p.10.

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## European electricity market design

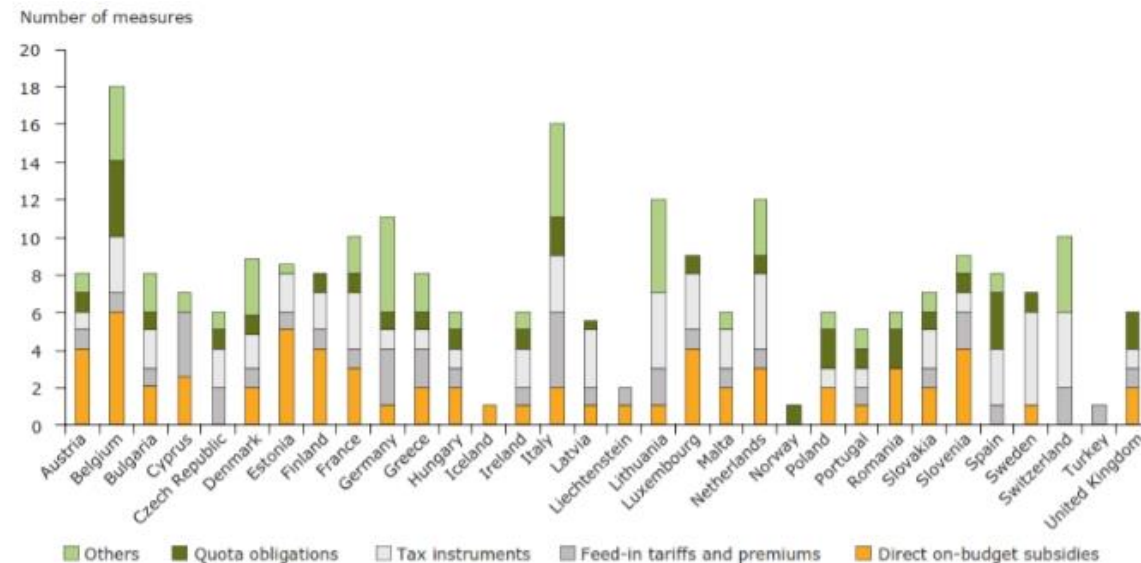
### 2. Politico-institutional factors

- Differences in regulatory cultures across European countries (Bohne, 2011)
- Divergent application in renewable energy support schemes and self-consumption policies
- Fragmented smart-metering roll-out across Europe

# EU electricity market design differences

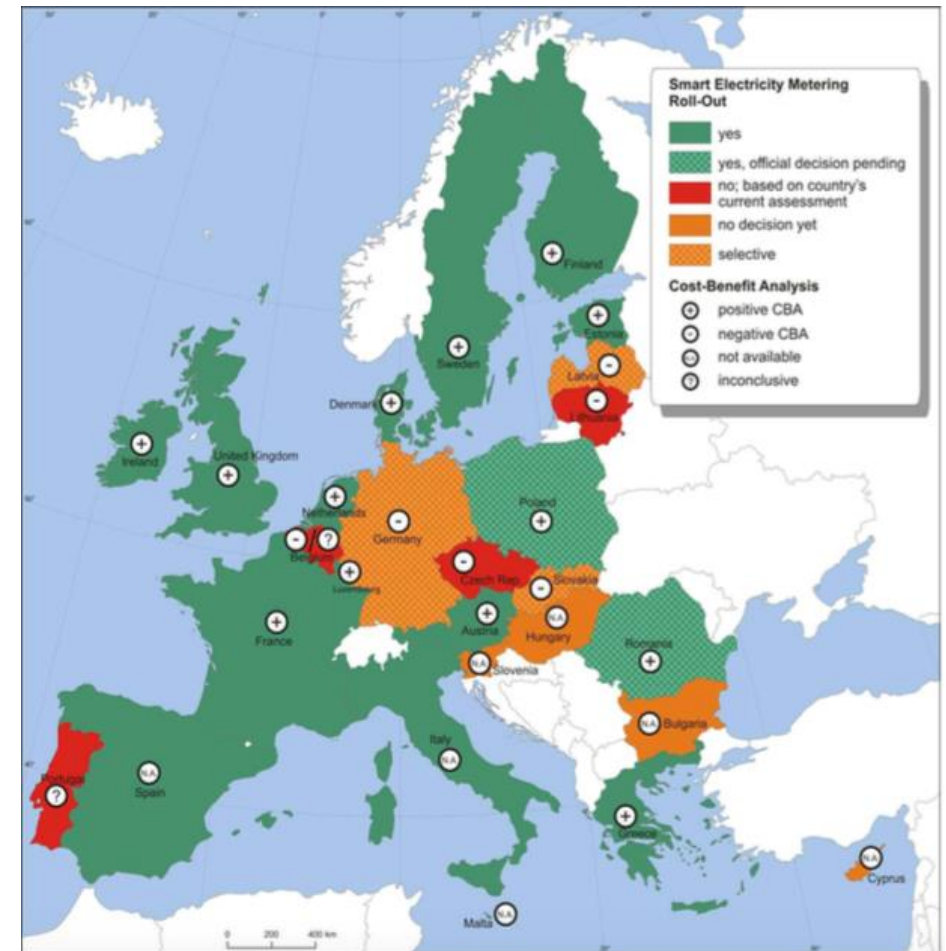
## European electricity market design

### Renewable energy support instruments implemented across EU countries



Source: [EEA Technical report No 21/2014](#), page 18.

### Cost-benefit analysis for electricity smart metering large-scale roll-out



Sources: EPRS, 2016, p.11 ; European Commission, 2014, p.12 .

# A diverging EU electricity market creates new barriers for business model innovation

## European electricity market design

### 3. Socio-institutional factors

- Cultural issues and attitudes towards renewables
- Differences in European households with regards to electricity demand, usage and installed capacity due to different equipment, lifestyles and comfort levels (De Almeida et al., 2011)
- Different levels of social acceptance of smart meter technologies (Curtius, 2012; Lopes et al., 2016)

The following research question results from the previous findings

## Methodology

What market design barriers hinder the implementation of innovative business models in decentralized electricity systems at national and international scale?

Semi-structured interviews were conducted with ten European energy firms for this qualitative research

## Methodology

1

- **Explorative qualitative research:** *Why* do firms in the electricity industry fail to innovate their business model in changing market environments?

2

- **Semi-structured interviews** with ten European energy firms along the electricity value chain

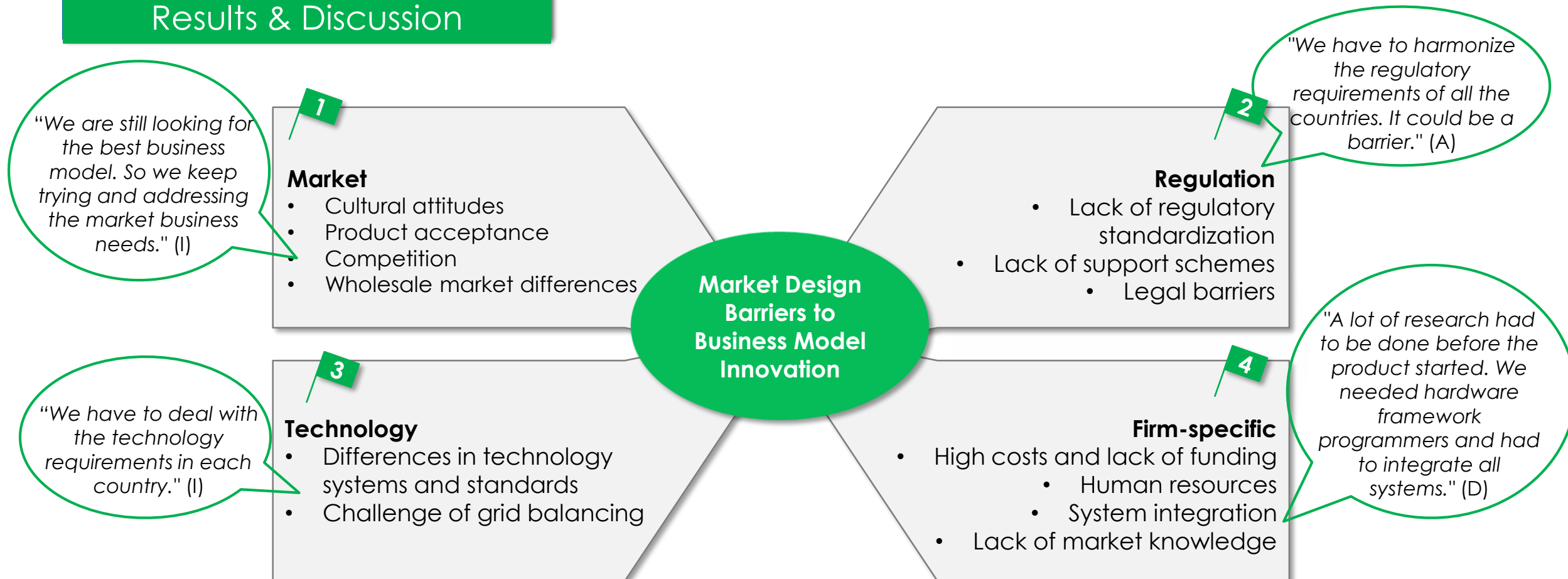
3

### **Three-step data analysis:**

1. Transcript analysis for recurring response patterns
2. Analysis of business model innovation and internationalization processes under the impact of market design changes
3. Analysis of resources and capabilities for business model innovation

# Successful business model innovation is hindered by the external environment

## Results & Discussion



## Conclusion & Future research

### Policy Implications

- Harmonization of EU energy regulation
- Provision of market incentives for energy efficiency solutions
- Standardization of demand response schemas
- Regional cooperation and regulatory oversight
- Increasing consumer empowerment
- Adequate price signals to promote flexible resources

### Business Implications

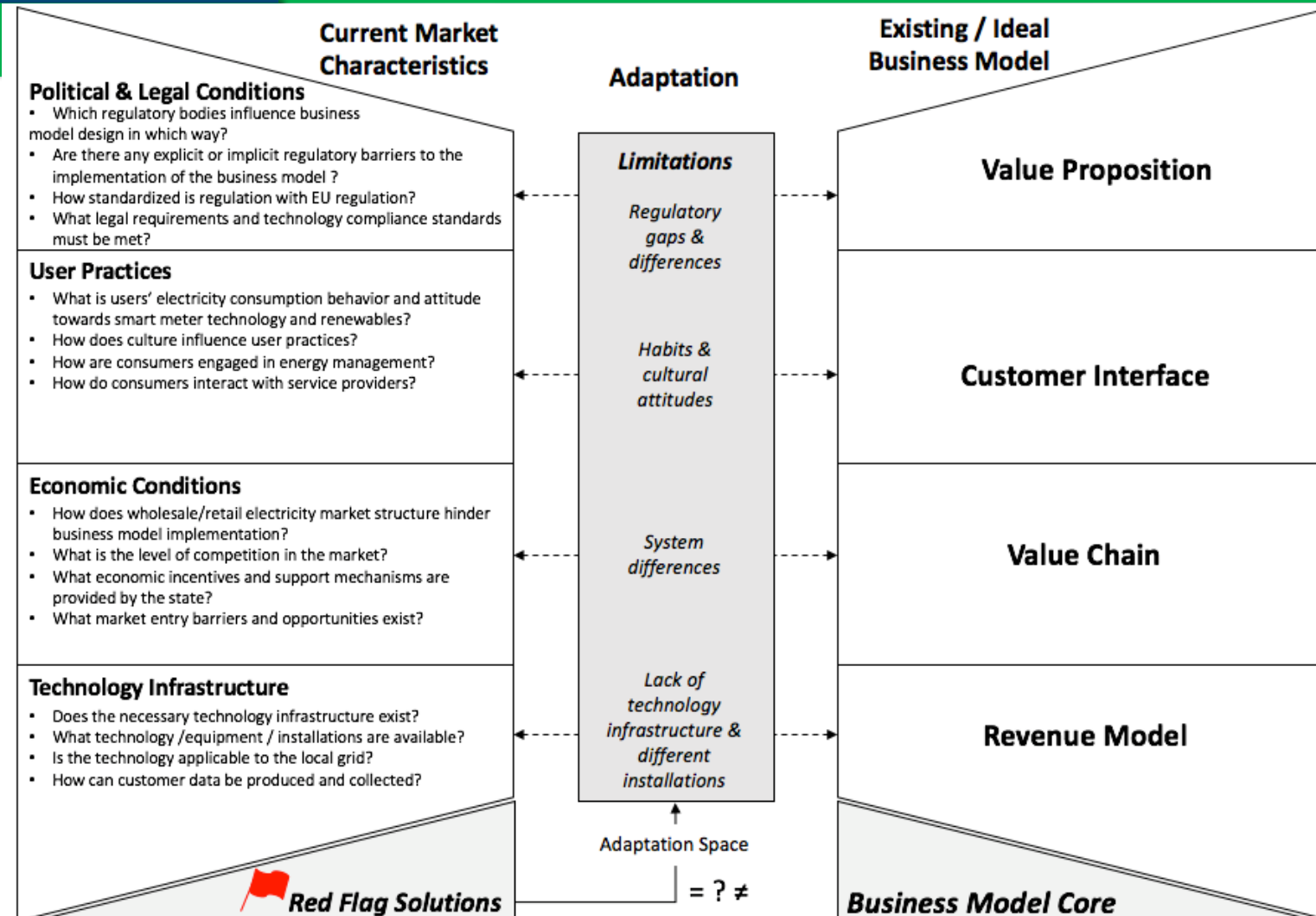
- Deep understanding of electricity market design as pre-requisite for successful business model innovation
- No *One size fits all* energy business model for all markets
- Market design as heuristic for business model innovation and internationalization

### Future Research

- Impact of market design on energy business models outside EU
- Market design barriers by company type
- Strategies for business model adaptation to overcome barriers

# The Market Design Canvas as useful tool for business model adaptation to market design changes

## Proposal



**Thank you for your attention!**

**Questions?**

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## References

- European Commission (2014). Cost-benefit analyses & state of play of smart metering deployment in the EU-27. Commission Staff Working Document, 17 June. Retrieved March 20, 2017 from <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014SC0189&from=EN>.
- European Commission (2016). Quarterly Report on European Electricity Markets. Market Observatory for Energy, DG Energy, 9 (2,3); second and third quarter of 2016. Retrieved March 19, 2017 from [https://ec.europa.eu/energy/sites/ener/files/documents/quarterly\\_report\\_on\\_european\\_electricity\\_markets\\_q2-q3\\_2016.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q2-q3_2016.pdf).
- European Parliamentary Research Service, (EPRS) (2016). Promotion of renewable energy sources in the EU: EU Policies and Members State approaches. 7 June. Retrieved April 22, 2017 from [http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS\\_IDA\(2016\)583810](http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_IDA(2016)583810).
- Facchinetti, E., Eid, C., Bollinger, A., and Sulzer, S. (2016). Business Model Innovation for Local Energy Management: A Perspective from Swiss Utilities. *Frontiers in Energy Research*, 4(31).
- IBM (2010). Switching Perspectives. IBM Global Business Services-Executive Report, IBM Institute for Business Value, March. Retrieved March 20, 2017 from [https://www-935.ibm.com/services/multimedia/Switching\\_perspectives.pdf](https://www-935.ibm.com/services/multimedia/Switching_perspectives.pdf).
- Bundesministerium für Wirtschaft und Energie (BMWi), (2016). Renewable Energy Sources in Figures. National and International development, 2015. Federal Ministry for Economic Affairs and Energy, 1 September. Retrieved March 14, 2017 from <https://www.bmwi.de/Redaktion/EN/Publikationen/renewable-energy-sources-in-figures.html>.
- Bohne, E. (2011). Conflicts between national regulatory cultures and EU energy regulations. *Utilities Policy*, 19, 255-269.
- Curtius, H.C., Künzel, K., and Loocke, M. (2012). Generic customer segments and business models for smart grids. *International Journal of Marketing*, 51 (2), 63-74.
- Lopes, M.A.R., Antunes, C.A., Janda, K.B., Peixoto, P., and Martins, N. (2016). The potential of energy behaviours in a smart(er) grid: Policy implications from a Portuguese exploratory study. *Energy Policy*, 90, 233-245.
- De Almeida, A.; Fonseca, P., Schlomann, B., and Feilberg, N. (2011). Characterization of the household electricity consumption in the EU, potential energy savings and specific policy recommendations. *Energy and Buildings*, 43, 1884-1894.