



CROSS BOrder management of variable renewable energies
and storage units enabling a transnational Wholesale market

EMERGING BUSINESS MODELS AND ENERGY MARKET MODELS



University of Ljubljana

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OBJECTIVE: WHY?



- To analyze, model, and control European grids, we need to **understand** them first.
- We need an **overall picture** of the
 - **legal, social and market framework,**
 - existing and emerging **business models,**
 - in the context of the local and **European smart grids.**
- The approach:
 - Study the existing **legislation** and **regulatory frameworks**
 - Analyse the existing and emerging **business modelling**
 - Identify the **social and ethical** issues and challenges
- We want to
 - Identify **trends, gaps, barriers and challenges** of the existing European energy framework
 - Provide **recommendations** to achieve an integrated EU energy market, more democratic, secure and affordable for EU citizens.
- Focus: Europe, with special emphasis on the SEE region participating in the project.

1. TRANSMISSION GRIDS, ENERGY MARKET LEGISLATION AND REGULATORY FRAMEWORKS



- Analysis of the **existing legislation and regulatory frameworks** of energy markets at the national and regional levels
- Focus: energy legislation and energy policies, **targeting 2030 and 2050**.
- Aim: to detect the **implementation barriers** and to identify the regulatory **challenges** for the European Smart grids.
- Activities:
 - Meetings with the 5 NRA members of the project User Group, and the Energy Community
 - Monitoring of regulatory framework throughout the project.
- Output: **Report** analysing the existing legislation and regulatory frameworks implemented in the energy markets at the national and regional levels.

2. EMERGING BUSINESS MODELS AND ENERGY MARKET MODELS



- Analysis of the emerging **smart grid business models** and **energy market model**
 - Scenario: **high renewables penetration**, using demand response and storage in electricity, heat and cold.
- Development and integration of **new business models**
 - Executed during the demonstration and impact phase of CROSSBOW project.
 - Starting point: Analysis of existing smart grid business models
- Examination of EU energy market situation
 - Detect trends and potential constraints, opportunities and challenges.
 - Essential for the creation of viable and sustainable business models.
 - Analysis will complement the regulatory study from a business perspective of the previous task.
 - Monitoring of business perspective throughout the project.
- **Report** to analyse of the emerging and innovative smart grid business models and energy market model.

LITERATURE REVIEW - COMPLETED



- Business models of 36 European projects
 - Different approaches to innovative smart grid business models
 - Business model canvas frequently used in the analyses
 - In the final report, some EU project business models will be briefly summarized
- Business models of 10 journal articles were reviewed
 - Various business models in the smart grids domain were proposed
 - Main focus on the theoretical approach without actual implementation

SEVERAL EU PROJECTS ANALYSED



EMPCWER

Local Electricity Retail Markets
For Prosumer Smart Grid Power Services



FLEXICIENCY



FutureFlow

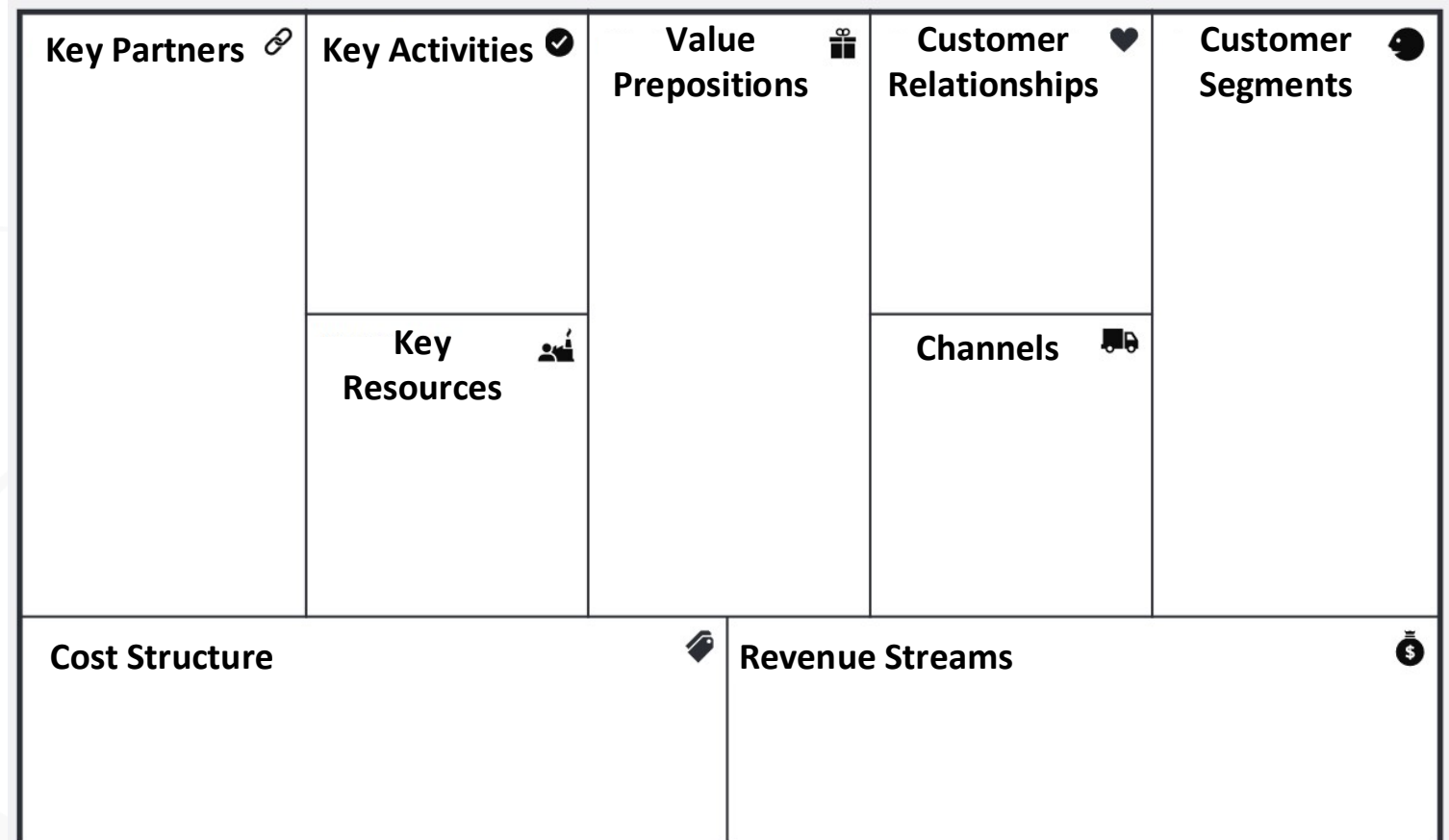
KEY IDEAS USED AS STARTING POINTS



- **Modified business model Canvas** – take the best practice from the analysis

- **9 building blocks**

- Key partners
- Key activities
- Customer relationships
- Customer segments
- Revenue streams
- Channels
- Value propositions
- Cost structure
- Key resources



BUSINESS MODEL CANVAS



- Most EU projects used Business Model Canvas or its modifications
- Design a business plan for all of CROSSBOW's 9 products
- Building blocks defined based on responses to questionnaires

QUESTIONNAIRE



- Questionnaire was sent out in May, answers by mid June 2018
- Questionnaire has 11 topics (9 building blocks, risks and barriers)
- 1st stage: Cover the general idea of the business model used
- 2nd stage: Detailed business model, including pricing and market potential

QUESTIONNAIRE: EXAMPLES OF QUESTIONS



- **Customer segments**

- Who are your most important customers?
- Who are you selling your products to?

- **Revenue streams**

- How does your business model produce recurring revenues?
- How do users of your services pay (License, Subscription, Fixed purchase of service)?

- **Cost structure**

- What are the most important costs in your business model?
- Are there any economies of scale or economies of scope?

- **Barriers**

- What are some barriers in your business model and how do you plan to overcome them?

- **Risks**

- Did you consider any political, financial or other risks associated with working in the current region?

3. SOCIAL AND ETHICAL ASPECTS



- Analysis of the EU Smart Grid challenges in the context of social, cultural and ethics aspects (e.g. consumer security, data privacy and equity).
- Methodology:
 - Evaluate the trends and challenges
 - Provide a democratic user centric European smart grids by empowering the people.
 - Investigate the role of aggregators, distributed RES and storage and DR, interaction between TSO and DSOs
- Report on the smart grids and energy market social, cultural and ethical context, such as security, data privacy and equity.

LITERATURE REVIEW



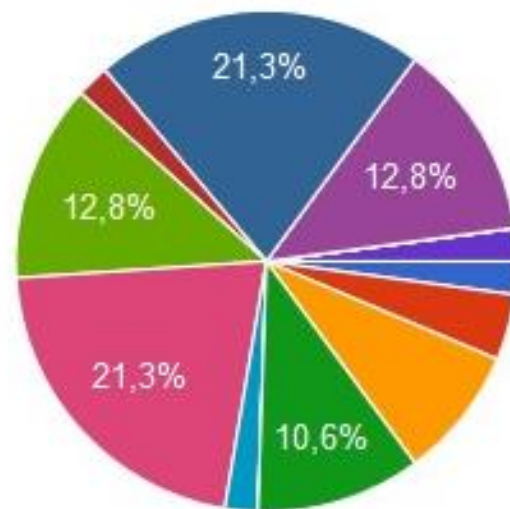
- Key aspects
 - Consumer security
 - Data privacy
 - Pricing, equity and ethical concerns
 - Lack of trust
 - Other socio-cultural aspects
- Lack of literature on this subject – Questionnaire input is vital
- 14th May, Questionnaire was sent to all CROSSBOW partners
 - Google Forms, approx. 10 mins
 - Most answers are click based, some require detailed answers
 - Each partner to include min. 10 Actors

QUESTIONNAIRE



Country of origin

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- Austria
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- England
- Germany
- Greece
- Macedonia

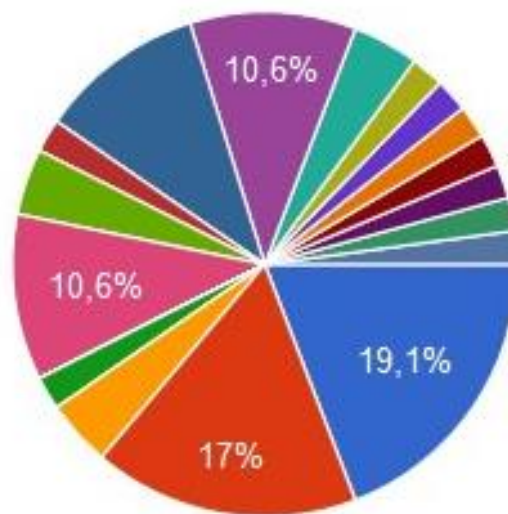
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QUESTIONNAIRE



Which utility are you representing?

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- TSO
- DSO
- Energy Agency
- Communications Agency
- Public information watchdog
- Consumer Association
- Supplier
- Aggregator

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NEXT STEPS



- Analysis of questionnaire responses
 - CROSSBOW products mostly target TSO/DSO as users and not end-consumers
 - Environmental awareness is relatively low in SEE
- Identification of risks associated with social, cultural and ethical differences directed at end-consumers



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