Assessment of the economics of and barriers for implementation of improved aggregator BMs

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The BestRES project: objectives and progress

- Investigate the current barriers for aggregation and improve the role of energy aggregators in future electricity market design:
  - First stage: identify existing European aggregation BMs and related benefits and barriers → 2016 and finished
  - Second stage: develop improved BMs and decide if BMs are ready for implementation → First half 2017 and finished
  - Third stage: test and implement BMs including development of recommendations → Second half 2017 to 2019 - ongoing

Topic of this presentation

The BestRES project: partners

Improved BMs (BestRES D3.2): 13 cases in 9 countries

Aggregator	Improved business model
Good Energy (UK)	Automation and control (BM1)
	"Peer-to-peer" (local) energy matching (BM2)
Next Kraftwerke Germany (Germany)	Dispatch flexible generation under changing market design on multiple markets (BM3)
	Supplying "mid-scale" customers with time variable tariffs including grid charges optimization (BM4)
Next Kraftwerke Germany (France)	Providing decentralized units access to balancing markets (BM5)
Next Kraftwerke Germany (Italy)	Market renewables on multiple market places (BM6)
Next Kraftwerke (Belgium)	Trading PV and Wind power (BM7)
	Using flexibility of customers as third party (BM8)
Oekostrom AG (Austria)	Demand Side flexibilization of small customers (BM9)
	Invest and market distributed generation of customers in apartment houses (BM10)
EDP (Portugal)	Activation and marketing of end user's flexibility (BM11) - Day-ahead energy sourcing optimization - Imbalance optimization
EDP (Spain)	Activation and marketing of end user's flexibility (BM12) - Day-ahead energy sourcing optimization - Imbalance optimization
FOSS (Cyprus)	Pooling flexibility for local balancing market and energy service provision (BM13)

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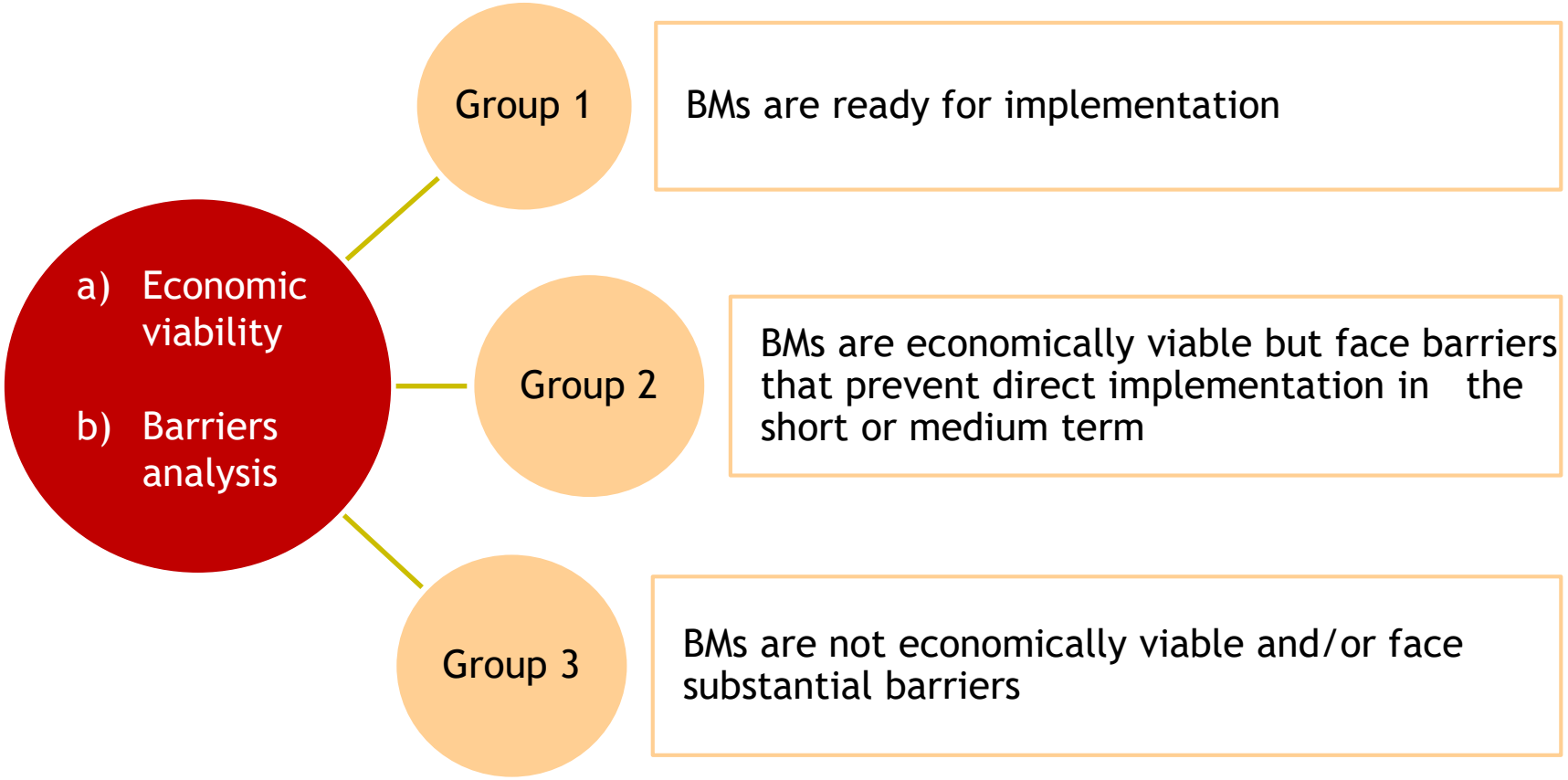
How to decide if improved BMs are ready for implementation?



1) Economic viability

Negative economic assessment

* BM “Activation and marketing of end user’s flexibility” (BM12)

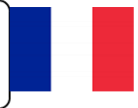
* BM “Pooling flexibility for local balancing market and energy service provision” (BM13)

Positive economic assessment

* BM “Automation and control” (BM1)
* BM “”Peer-to-peer” energy matching” (BM2)

* BM “Dispatch flexible generation on multiple market places under changing market design” (BM3)
* BM “Supplying “mid-scale“ customers with time variable tariffs” (BM4)

* BM “Providing decentralized units access to aFRR” (BM5)



* BM “Market renewables on multiple markets” (BM6)

* BM “Trading PV and wind power” (BM7)
* BM “Using flexibility of customers as third party“ (BM8)

* BM “Demand Side flexibilization of small customers” (BM9)
* BM “Invest and market distributed generation of customers in apartment houses“ (BM10)

* BM “Activation and marketing of end user’s flexibility” (BM11)

2) Barriers: no substantial barriers

- For 8 out of 13 BMs, aggregators face barriers that can be directly impacted by them to proceed to implementation

Aggregator: BM	Principal challenges
Good Energy (UK): BM1	*Unstable regulatory environment
Next Kraftwerke Germany (Germany):BM4	*Grid tariffs currently incentivise a steady consumption instead of flexibility *BM is quite complex
Next Kraftwerke Germany (Italy):BM6	*Pooling is restricted to certain areas but modifications are being discussed
Next Kraftwerke (Belgium):BM7 and BM8	*Volume of renewable generators looking for a contract could be limited *Regional certificate systems are complex
Oekostrom AG (Austria): BM9	*Limited number of interested clients with smart meters (5-10% of all metering points)
EDP (Portugal and Spain):BM11 and BM12	*Limited number of interested clients

2) Barriers: presence of barriers

- For 5 out of 13 BMs, aggregators face barriers that cannot be directly impacted in the short or medium term

Barriers that prevent direct implementation in the short to medium term:

Aggregator	Principal barriers group 2
Next Kraftwerke Germany (Germany): BM3	*No clear how exactly prequalifications for aFRR will change until 2018
Oekostrom AG (Austria): BM10	*The current legal situation does not allow auto-consumption by multiple parties in apartment blocks

Substantial barriers:

Aggregator	Principal barriers group 3
Good Energy (UK): BM2	*No mechanisms that allow for the local settlement of generation and demand portfolios
Next Kraftwerke Germany (France): BM5	*Market power of conventional power plants operators who are obliged to participate on aFRR
FOSS (Cyprus): BM13	*No existing framework for aggregation or for offering grid services. Such a framework will not be avialble before 2019

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3) Allocation of BMs: BMs ready for implementation (group 1)

Good Energy	* BM “Automation and control” (BM1)	
NEXT KRAFTWERKE	* BM “Supplying “mid-scale“ customers with time variable tariffs including grid charges optimization” (BM4)	
NEXT KRAFTWERKE	* BM “Market renewables on multiple markets” (BM6)	
NEXT KRAFTWERKE	* BM “Trading PV and wind power” (BM7) * BM “Using flexibility of customers as third party“ (BM8)	
oekostrom AG	* BM “Demand Side flexibilization of small customers” (BM9)	
edp	* BM “Activation and marketing of end user’s flexibility” (BM11)	

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3) Allocation of BMs: BMs not ready for implementation (group 2 and 3)

Improved BMs economically viable but with barriers that prevent direct implementation (group 2)

- * BM "Dispatch flexible generation on multiple market places under changing market design" (BM3)
- * BM "Invest and market distributed generation of customers in apartment houses" (BM10)

Improved business models that are not economic or face substantial barriers (group 3)

- * BM ""Peer-to-peer" energy matching" (BM2)
- * BM "Providing decentralized units access to aFRR" (BM5)
- * BM "Pooling flexibility for local balancing market and energy service provision" (BM13)
- * BM "Activation and marketing of end user's flexibility" (BM12)

Conclusions: group 1 BMs

- Aggregators with BMs ready for implementation (group 1) generate revenues in many different ways

Aggregator	Improved business model
Good Energy (UK)	Aggregator manages to decrease sourcing costs and costs to customer
Next Kraftwerke Germany (Germany)	Aggregator optimizes wholesale and network tariffs
Next Kraftwerke Germany (Italy)	Aggregator generates revenues from activation fees on reserve power markets
Next Kraftwerke (Belgium)	Aggregator generates revenues from capacity and activation fees on reserve power markets and on intraday and day-ahead markets
Oekostrom AG (Austria)	Aggregator manages to decrease sourcing costs and costs to customer
EDP (Portugal)	Aggregator decreases imbalance penalties own portfolio

Conclusions: group 1 BMs

- A wide variety of BMs ready for implementation (group 1) is to be found in the BestRES project
- Almost all BMs that have no significant barriers for implementation are ready for implementation
- Major challenges for aggregators with BMs ready for implementation:
  - Acquisition of sufficient number of interested clients/providers of flexibility (that have smart meters)
  - Regulatory changes and unclarities
  - Unfavorable/unstable price evolutions

Conclusions: group 2/3 BMs

- EDP can currently not implement the BM in Spain because of low imbalance tariffs

- For all other BMs that are not yet ready for implementation, the main hurdles are related to regulation:
  - Regulatory barriers in the short to medium term: group 2
  - Regulatory barriers in the long run: group 3

Conclusions: need for support actions for group 1 BMs

- Providing appropriate support actions (D4.2 BestRES) will be key for the success of the implementation of the BMs:

D4.2: Documentation of pilot business model implementation and results

Available on bestres.eu soon

Thank you

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