

Workshop on innovative business models making
use of flexibility in industrial electricity demand

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Applicability of the business models in the current regulatory & market framework

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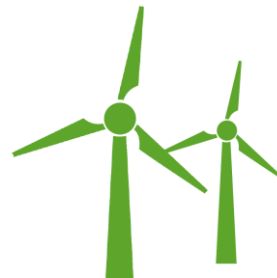




Agenda



- A. Feasibility of innovative business models making use of **opportunities to reduce the energy bill** of energy intensive industries
- B. Feasibility of innovative business models **offering services to the power system**, creating additional revenue streams for energy intensive industries



A. Reduced energy bills



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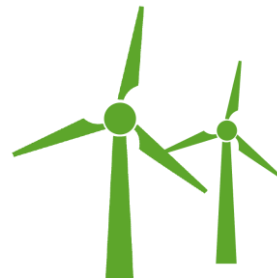


A. Reduced energy bills

Business models



- **A.1 TOU retail prices**
- **A.2 Dynamic retail prices**
 - **A.2.1 Supplier and FID**
 - **A.2.2 Supplier owning VRE and FID**
 - **A.2.3 Supplier and FID with on-site VRE**
- **A.3 FID (with/without on-site VRE) exposed to wholesale RTP**
- **A.4 FID (with/without on-site VRE) reducing peak load in response to network charges**



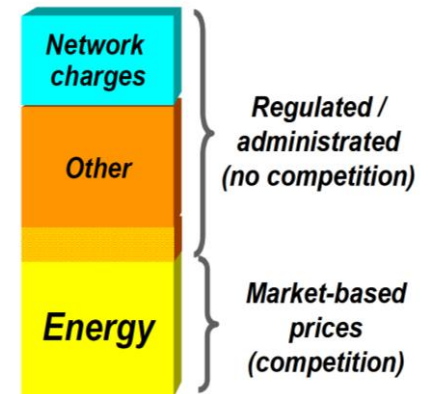
A. Reduced energy bills

Market and regulatory framework

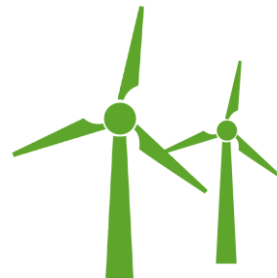
- Retail electricity prices for industrial consumers



- Relative relevance of **price components**
- **Network tariffs**
- Incentives to **self-consumption**
- FID **direct access to the market**



- VRE participation in the market
- Competition vs. **support schemes**
- **Bilateral agreements** with consumers

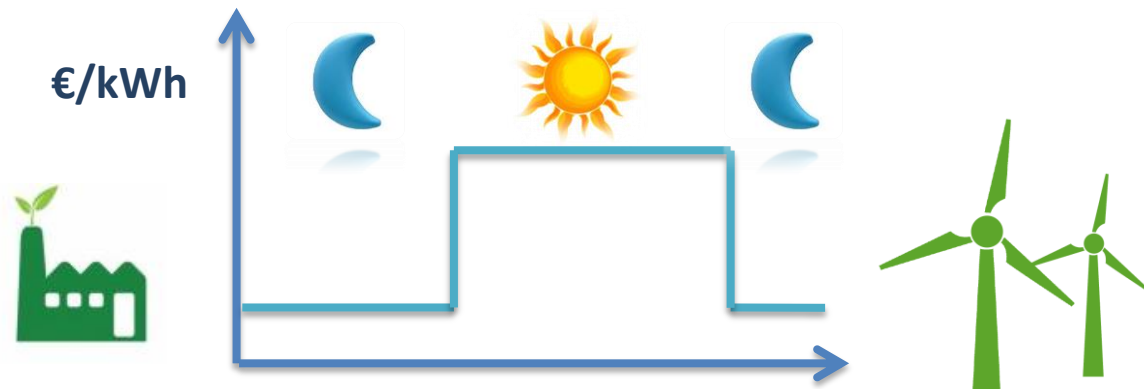


A. Reduced energy bills

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
A.1 TOU retail prices	●	●	●	●	●	●
A.2.1 Supplier and FID	●	●	●	●	●	●

- **Barriers:** regulated flat tariffs, low retail market competition and/or transparency



A. Reduced energy bills

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
A.2.2 Supplier owning VRE and FID	●	●	●	●	●	●

- **Barriers:** impossibility of balancing demand and generation
- Long-term bilateral contracts between suppliers with VRE and FID are unlikely in all countries

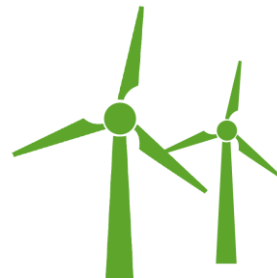


A. Reduced energy bills

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
A.2.3 Supplier and FID with on-site VRE	●	●	●	●	●	●

- **Enablers:** incentives to self-consumption, e.g. net-metering allowed

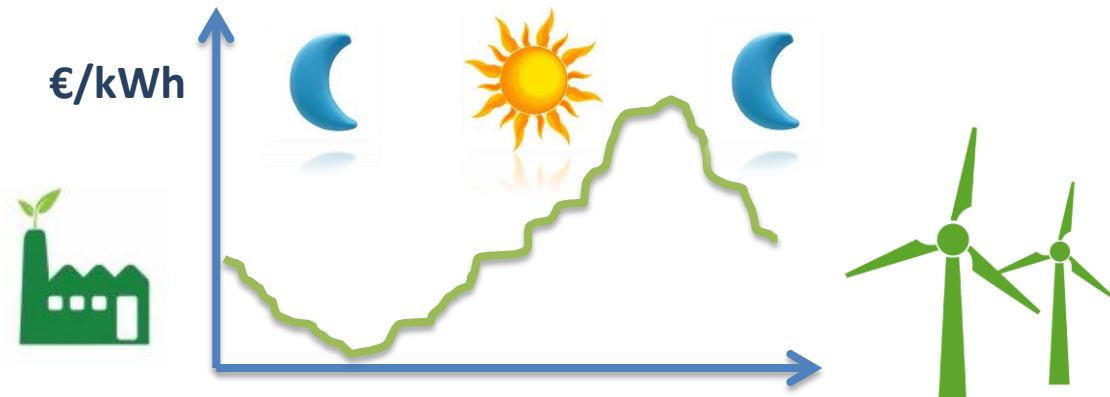


A. Reduced energy bills

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
A.3 FID (with/without on-site VRE) exposed to wholesale RTP	●	●	●	●	●	●

- **Enablers:** direct access to the market, retail competition, large share of the energy component in the final retail price



A. Reduced energy bills

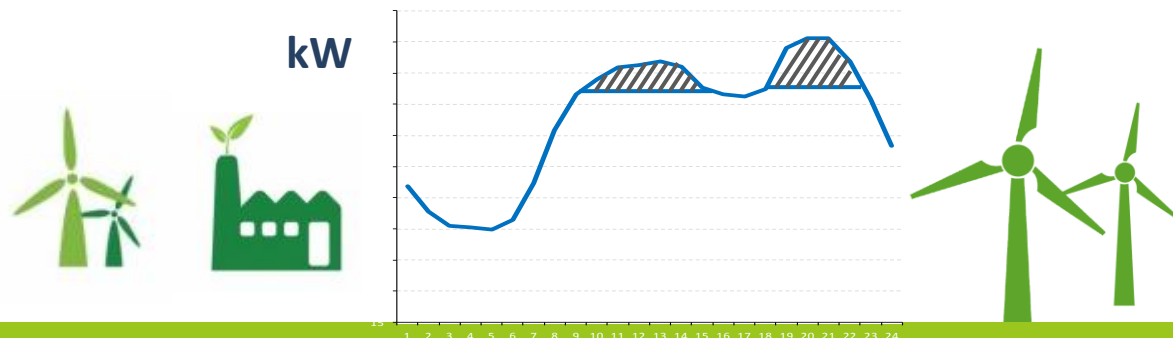
Feasibility of business models: our view

A.4 FID (with/without on-site VRE) reducing peak load in response to network charges

BE FR DE IT ES UK



- **Enablers:** capacity charges and TOU structure
- **Barriers:** low network charges for FID due to exemptions, tax reductions, etc.



Discussion



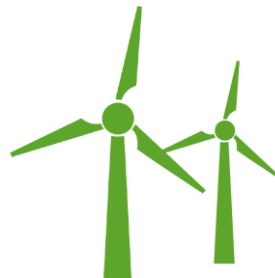
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A. Reduced energy bills

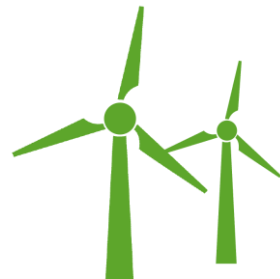
Discussion

1. Assuming there are no incentives for self-consumption, would it be interesting for FID to **install on-site VRE**? (A.2.3, A.3, A.4)
2. Does the current retail price structure make it attractive to **install on-site VRE** for FID? (A.1, A.2.1, A.4)
3. Under which conditions do you foresight that **long-term bilateral contracts** between VRE and FID would happen? (A.2.2)
4. Is current energy price volatility in the wholesale market attractive for **real time response** by FID? (A.3)



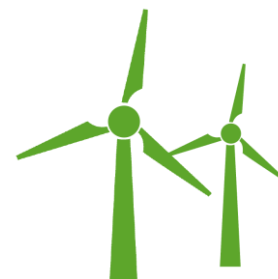


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B. Offering flexibility system services



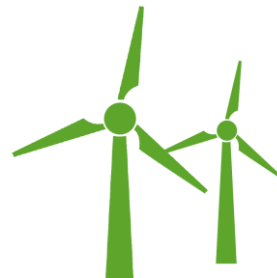
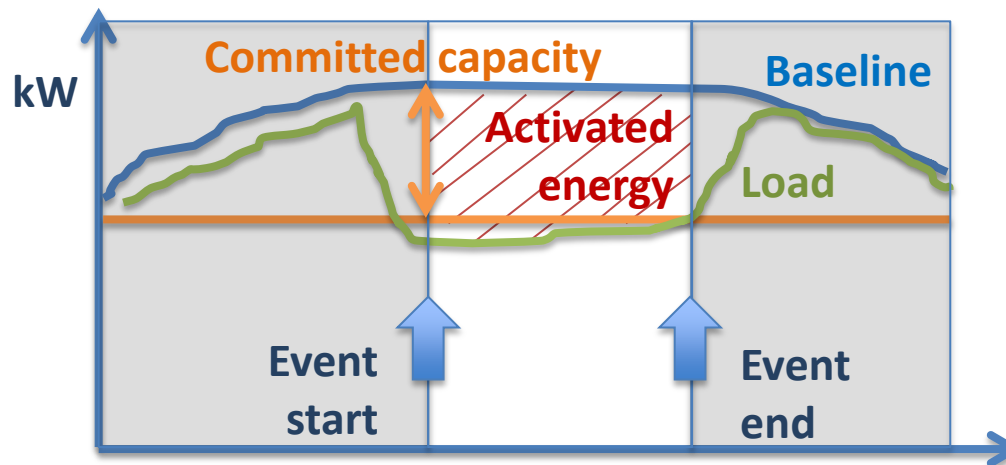
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B. Offering flexibility system services

Business models

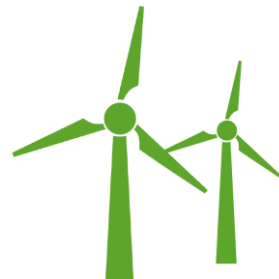
- **B.1** FID offering reserve capacity to the SO for frequency control
- **B.2** FID responding to BRP signals
- **B.3** Other services to the system (e.g. capacity markets, interruptibility, DSO services, etc.)



B. Offering flexibility system services

Market and regulatory framework

- **Balancing responsibilities** assigned to market players (is VRE responsible or not?)
- Definition and implementation of **flexibility markets and services** (secondary and tertiary reserve, balancing, capacity markets, DSO network services, etc.)
- **Requirements and technical conditions** for FID participation in flexibility markets

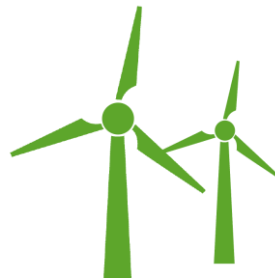


B. Offering flexibility system services

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
B.1 FID offering reserve capacity to the SO for frequency control	●	●	●	●	●	●

- **Enablers:** existence of differentiated reserve capacity and energy markets, specialized demand aggregators providing reserves
- **Barriers:** demand side response is not allowed to participate in those markets

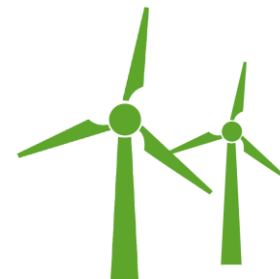


B. Offering flexibility system services

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
B.2 FID responding to BRP signals	●	●	●	●	●	●

- **Enablers:** possibility of BRPs to establish bilateral flexibility contracts with FID, single imbalance pricing favours FID to participate in imbalance markets
- **Barriers:** separate BRP for demand and generation



B. Offering flexibility system services

Feasibility of business models: our view

	BE	FR	DE	IT	ES	UK
B.3 Other services to the system (e.g. capacity markets, interruptibility, DSO services, etc.)	●	●	●	●	●	●

- **Enablers:** existence of interruptibility services managed by TSOs or DSOs, capacity remuneration mechanisms open to FID participation, DSO contractual agreements with consumers providing network services



Discussion



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B. Offering flexibility system services

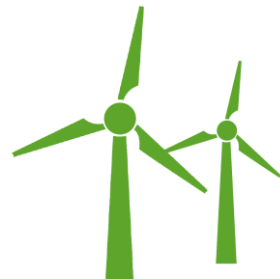
Discussion

1. Is it technically feasible for FID to provide **capacity reserve** in the timeframe of **seconds to minutes**? Is there a real business opportunity in it? (B.1)
2. Do increasing volumes of **RES** generation require more **balancing energy**? Can FID compete with current balancing providers? (B.2)
3. Do current **interruptibility mechanisms** represent an important revenue for FID? Is there any business opportunity for FID to participate in **capacity remuneration mechanisms**? (B.3)





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