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Business models for activating industrial demand response

IndustRE Project
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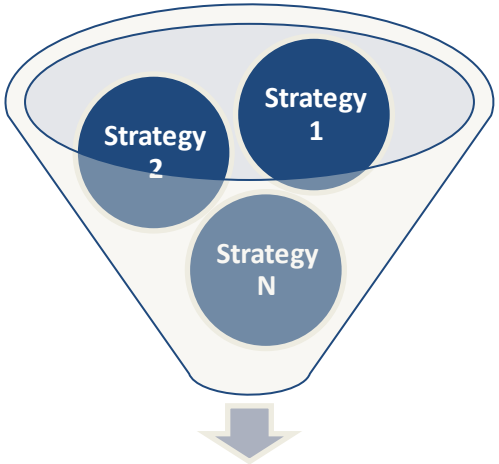
Business Models

Available tools

	Flexible demand only	+ contract with offsite VRE	+ contract with onsite VRE
Savings: Energy costs			
Savings: Network and other regulated costs			
Revenues: System services			

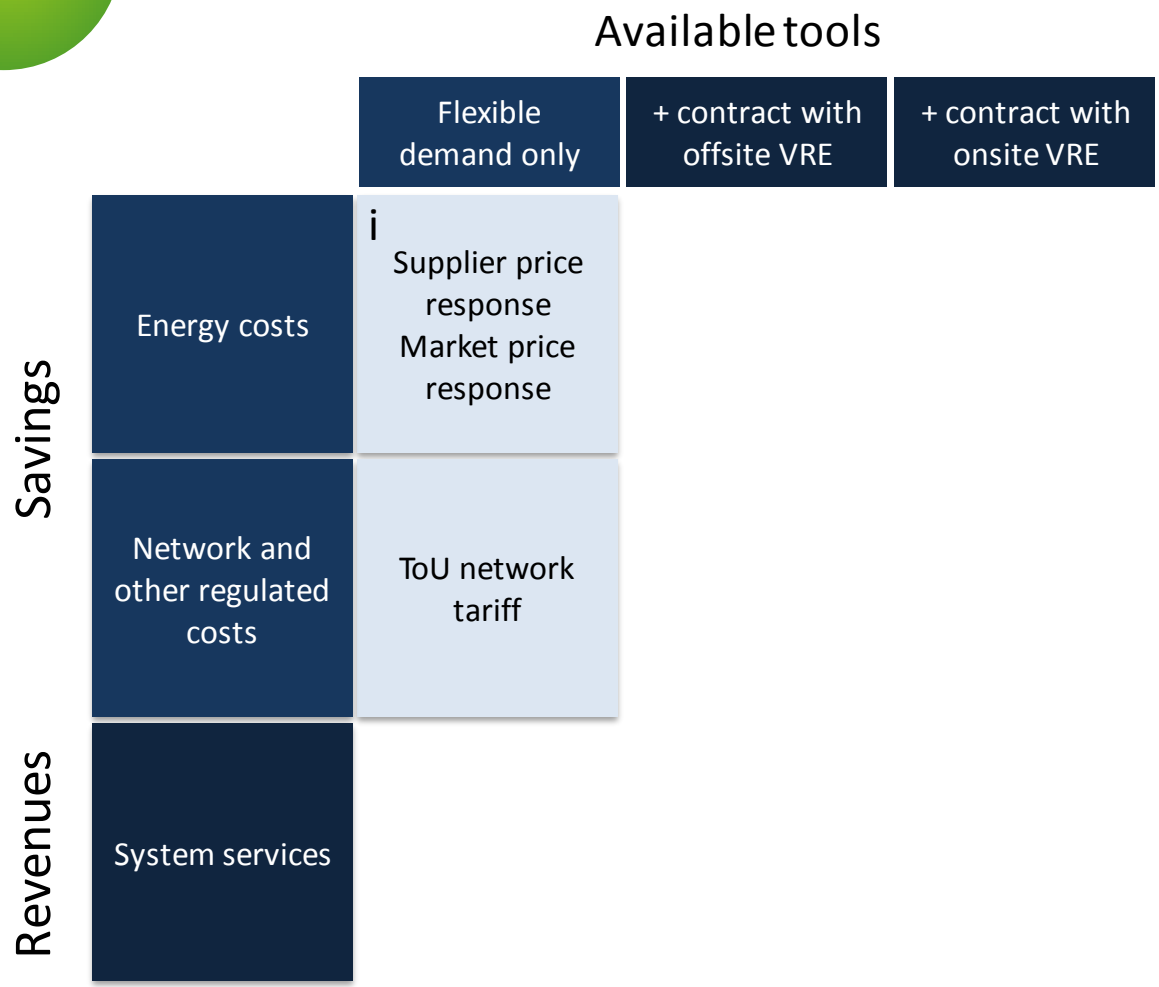
Flexible Industrial Demand (FID)

Variable Renewable energy (VRE)



Business Model

Business Models

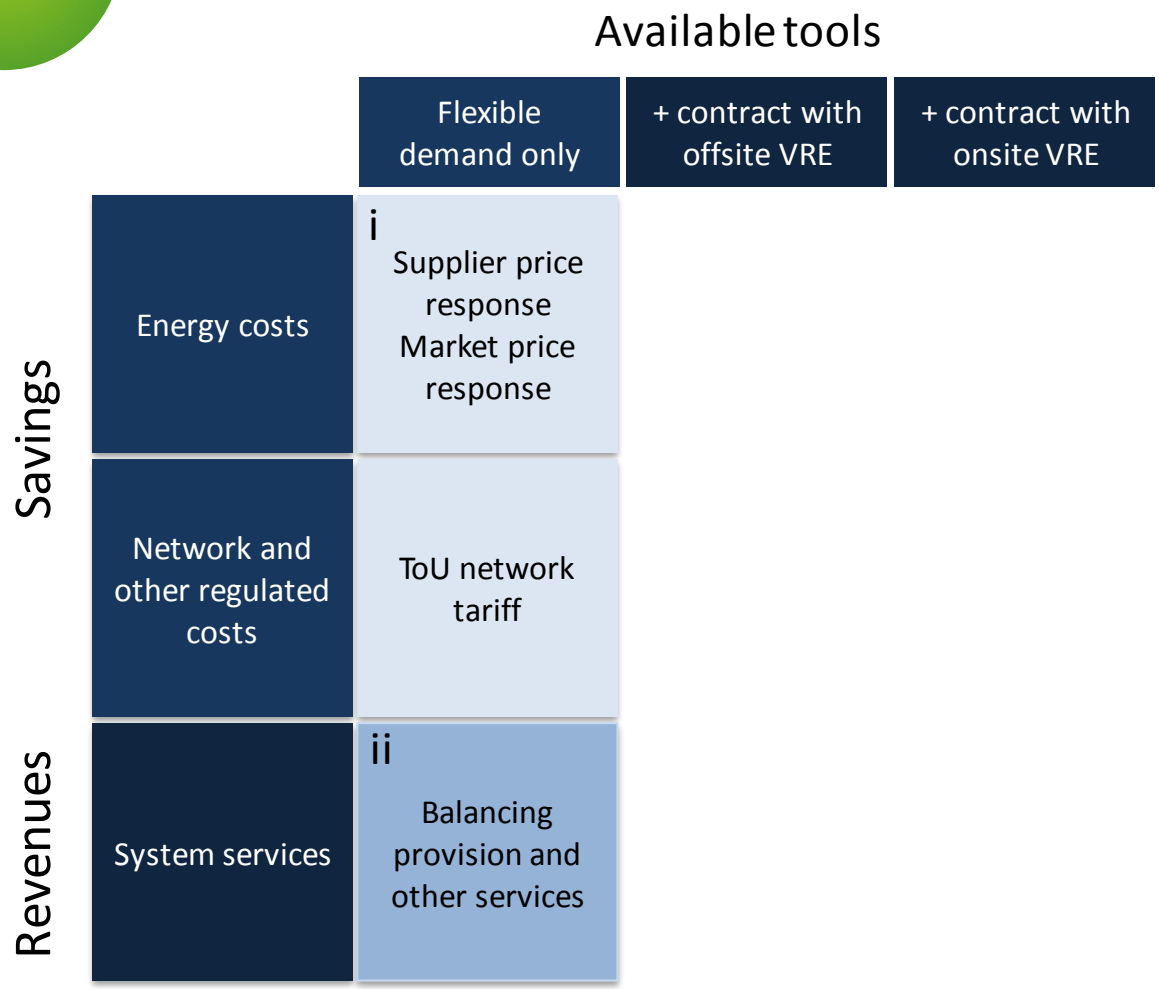


Model I

Electricity Bill reduction:

feasible and implemented in all target countries.

Business Models

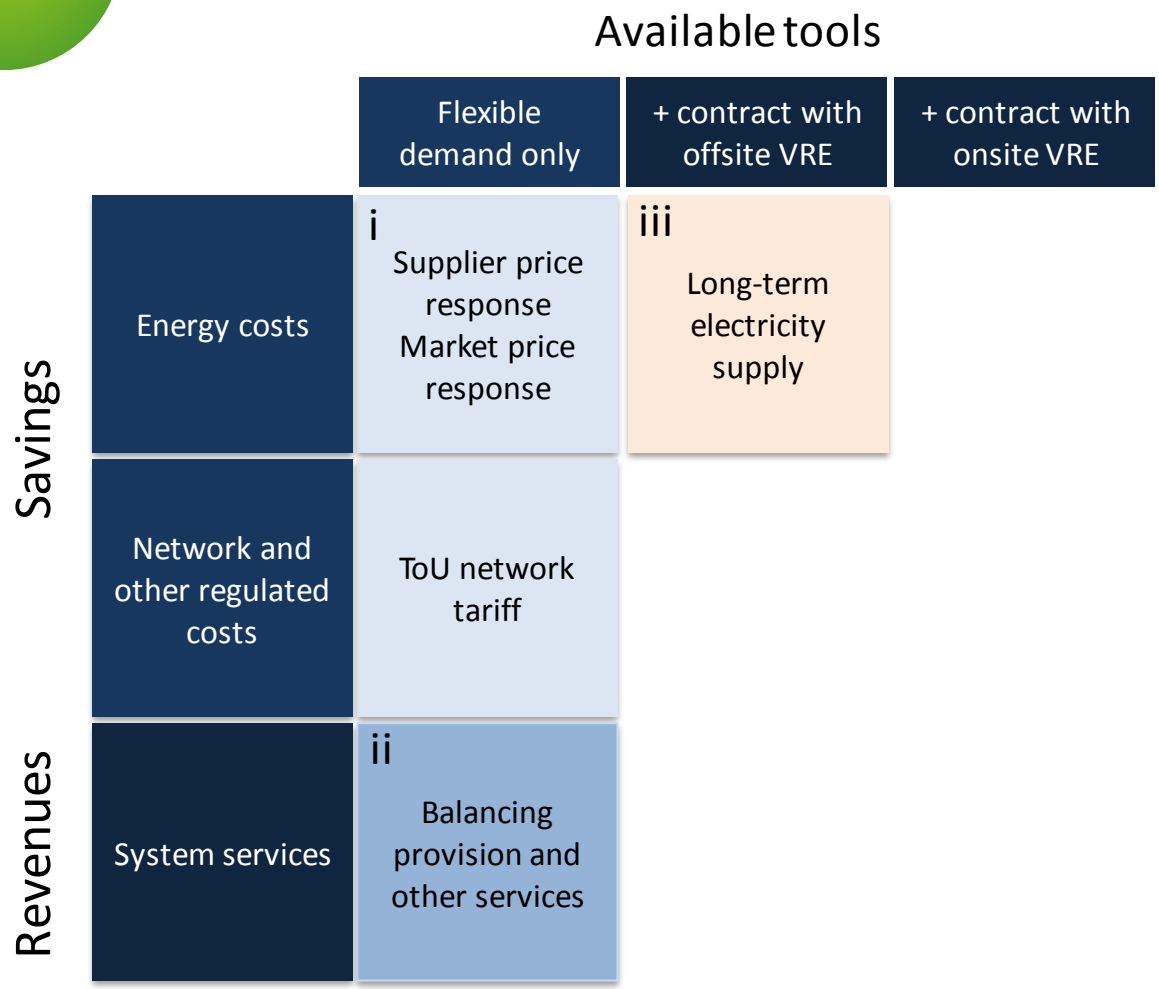


Model II

System Service Provider:

- Growing EU trend to modify the design of ancillary services and balancing energy markets to allow the participation of demand-side resources but **some barriers remain**.
- Capacity remuneration mechanisms gradually introduced.
- Load interruptibility programs present in all target countries (significant source of income for industrial consumers).

Business Models

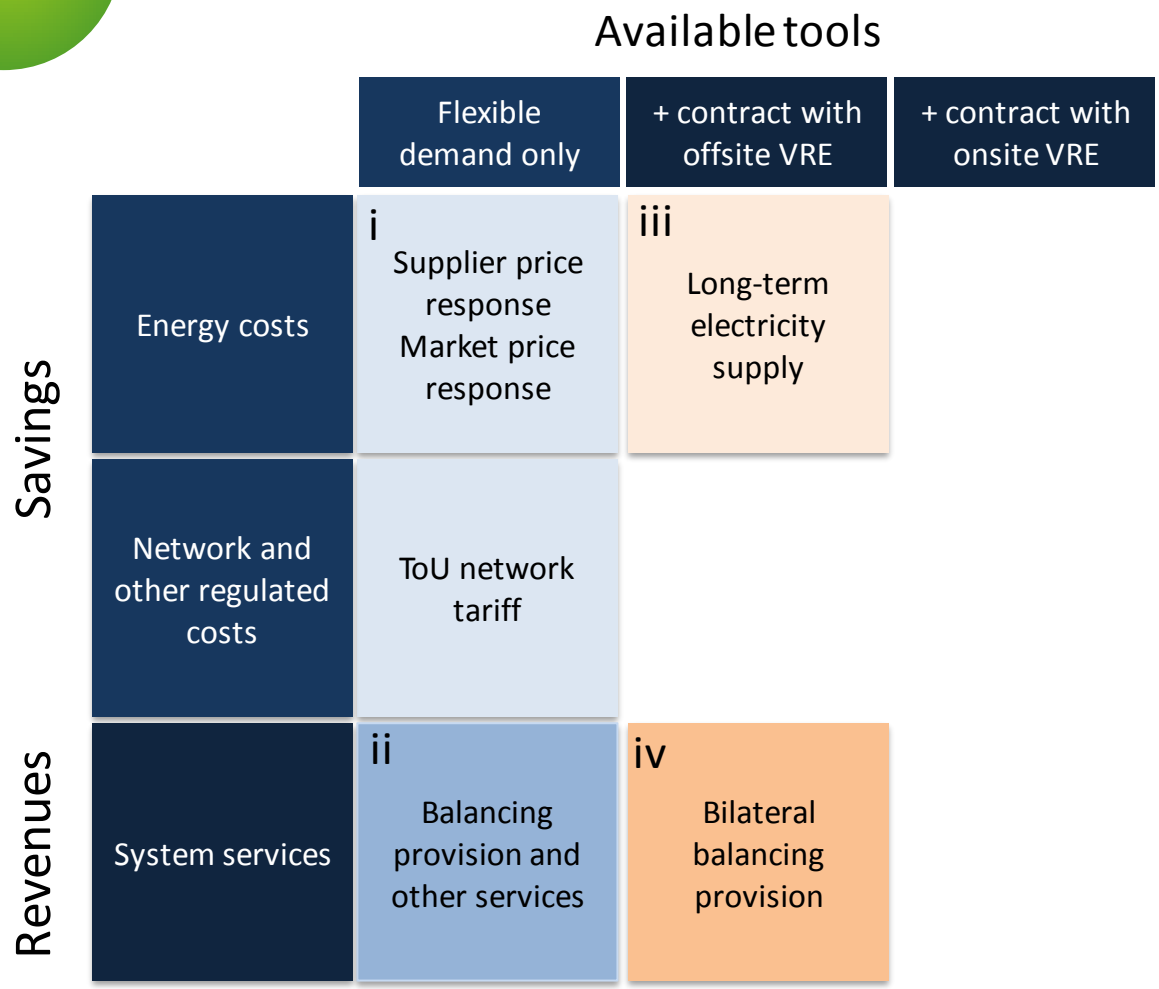


Model III

Electricity Supply Contract with off-site VRE:

feasible but still only **hypothetical** nowadays in the European context because of VRE support schemes.

Business Models



Model IV

Balancing Service Contract with off-site VRE:

even though VRE generators are balance responsible, **not** generally **possible or attractive** because of the design of imbalance settlement arrangements.

Business Models

Available tools

		Flexible demand only	+ contract with offsite VRE	+ contract with onsite VRE
Savings	Energy costs	i Supplier price response Market price response	iii Long-term electricity supply	v Long-term electricity supply
Savings	Network and other regulated costs	ToU network tariff		Volumetric tariff response
Revenues	System services	ii Balancing provision and other services	iv Bilateral balancing provision	

Model V

Electricity Bill Reduction with on-site VRE:

could be an **attractive** decision for the FID in some countries although exemptions from paying certain regulated charges on self-consumed energy are being gradually eliminated or cut down.

Policy recommendations

- **Model I: Electricity Bill Reduction**
  - Large consumers access to wholesale electricity markets
  - Ensure that tariff design for network costs is based on cost-causality
  - Network tariffs: fixed (€) + capacity time dependent (€/kW)
  - Non-electricity regulated charges out of the tariff

- **Model II: System Service Provider**
  - Allow participation of demand in reserve and balancing markets
  - Guarantee fair technical conditions for demand into these markets
  - Allow and facilitate consumer involvement in existing capacity remuneration mechanisms
  - Make load interruptibility mechanisms competitive
  - Promote an active network management by DSOs with provision of local services by FID

Policy recommendations

- **Model IV: Balancing Service Contract with off-site VRE**
  - Require VRE generators to bear imbalance responsibility
  - Move towards a single/double efficient imbalance pricing system
  - In the case of remaining in a dual imbalance pricing system, allow aggregation and imbalance compensation

- **Model V: Electricity Bill Reduction with on-site VRE**
  - Abandon net-metering policies and allow self-generation for on-site VRE

- **EU Harmonization**
  - Harmonization of flexibility mechanisms across the EU

Policy recommendations

- Define the role of independent aggregators and allow them to access consumers directly **without the permission of the consumer's BRP** and make sure that they can participate in all the different markets**.**
- Considering the **technical requirements for ancillary services**, the following recommendations are provided to facilitate the involvement of consumers in these markets (National Grid 2017):
  - Reduce minimum-bid sizes.
  - Separate the procurement of balancing capacity and balancing energy.
  - Bring the procurement of ancillary services closer to real time

Policy recommendations

- **Make sure that regulated charges** (the renewable obligation, feed in tariff, climate change levy and the hydro benefit) are based on the cost-causal principle and not purely volumetric.
- Progressively abandon **net-metering** policies and allow self-generation from on-site VRE ensuring an adequate network tariff design. In this sense, network tariffs should provide end users with efficient economic signals based on net hourly consumption/injection (regardless of what is behind the meter) and on their contribution to the actual utilization of the grid.

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