



Sim4Blocks

## ADDING FLEXIBILITY TO OUR ENERGY MARKETS

The EU has set ambitious targets to significantly **reduce energy consumption** and greenhouse gases by **2020**. One way to do this is by integrating renewable energy sources into electricity supplies. **Sim4Blocks** is an EU-funded project looking to do just that by developing strategies for flexible energy use.

**Demand Response (DR)** makes how electricity is used and capacity managed more flexible. Consumers choose to use appliances when the capacity of available energy through renewable sources is high and switch off when it is not – and by encouraging DR at the blocks of building scale, suppliers profit, too.

**Sim4Blocks** is analysing flexible energy models for residential and tertiary sectors in **six EU countries** to discover the best way of delivering DR services to the market and ensuring commercial viability for suppliers. The project has also identified a number of barriers to DR in these countries (*see next page*).

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### THE NEED FOR AGGREGATORS

A common challenge identified in all six countries is the need for aggregator firms to make DR work.

Aggregators act on behalf of a group, residential households for example, to obtain the best deal or contract and to remove the complexity of customers dealing with the market themselves. Aggregators secure commitments from these users to reduce their energy use at certain times and this megawatt reduction is then sold to the National Grid rather than the National Grid having to pay for increased power generation to meet peak demand.

In the UK, for example, it is estimated that up to **50 per cent** of capacity in the energy-balancing market will be achieved through DR strategies managed by aggregators as opposed to increased generation by **2020**.

**Sim4Blocks** has discovered, however, that aggregator regulation across Europe is very inconsistent or, in some cases, non-existent, making it a challenge for them to establish universal business models for the implementation of DR services in Europe.

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### BUSINESS MODELS

With detailed information on the electricity markets across Europe, **Sim4Blocks** is now looking into what can be done within these market frameworks and regulations to develop suitable business models for flexible energy use in blocks of buildings. One potential business model would be one based on the 'time of use' in order to create different tariffs depending on when you use your electricity.





# A PICTURE OF DEMAND RESPONSE IN EUROPE

## 1 GERMANY

Already **1.5 GW** of industrial load is operated under the interruptible load scheme which is a DR management service for buildings whereby they can reliably reduce their demand by a fixed capacity upon request. The potential for DR varies according to the studies for example, there is the potential for this to increase to **9 GW**.

### CURRENT BARRIERS

DR lacks active participation due to the lack of financial incentives, and current network fees affect electricity costs for consumers.

## 2 FRANCE

Since **2013** aggregators are able to contract consumers without waiting for supplier agreement making it easier to set-up DR services. In **2017** 750 to 1400 MW of DR capacity was contracted at the DR call for tenders.

### CURRENT BARRIERS

There are still some participation requirements which limit the participation of DR in the electricity markets, for example a minimum of 10 MW for mFRR (manual Frequency Restoration Reserve).

## 3 SWITZERLAND

Approximately **130,000** heat pumps are used to reduce the electricity consumption of heat production, and by **2020** it is estimated **400,000** heat pumps will be used. DR services currently provide 3 MW of primary and 10 MW of secondary reserves mainly coming from household boilers compared to the flexible loads from various industries such as, cement, chemical, paper and wood, provide 49 MW of tertiary reserve.

### CURRENT BARRIERS

The complete liberalisation of the market for DR has been postponed, limiting the final availability and application of DR to all end-users.

## 4 UK

The fourth auction for capacity mechanism saw **1400 MW** of DR bids accepted. Also, the total amount of demand-side flexibility participation within the balancing services, not including balancing mechanism, amounted to 2,634 MW in the financial year 2015/2016.

### CURRENT BARRIERS

There are a number of issues surrounding the clarity and monetary value of what DR means for consumers compared to their current services.

## 5 SPAIN

The government controls the electricity and does not allow aggregators to participate.

## 6 BELGIUM

Aggregators need an agreement from suppliers before a contract can be concluded with consumers, slowing and limiting the options for DR.



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