

COOLING SECTORS PROFILES

Demand Side Sector



Demand Response is a critical resource for achieving an efficient and sustainable electricity system at a reasonable cost. Demand Response is widely recognised as an important enabler of security of supply, renewables integration, improved market competition and consumer empowerment.

160 GW

The amount of Demand Response potential by 2030, according to European Commission figures.

67 BIL

Optimising energy control systems can save Europe 67 billion euros per year.

500 BIL

Is the energy saving potential of flexible energy demand in Europe.



MACROECONOMIC BENEFITS TO ECONOMIC AND SOCIAL BENEFITS

Currently, Europe is making use of 20GW of its Demand Response potential, limited only to a few markets and services. The opportunity is enormous, however, with the European Commission placing the potential at 100 GW today, rising to 160 GW in 2030. In general, optimising energy control systems in Europe can save 67€bn/yr.

Moreover, according to a report by the Commission, net benefits of around €4bn by 2030 could be achieved through using smart grids to facilitate demand side response at the consumer level. Furthermore, in the Commission's recent Impact Assessment on electricity market design, a demand response increase by 52% could which will lead to system benefits of over 1.2 billion Euros per year by 2030. Lastly, the Commission believes that creating a full fledged smart energy system, could reap more than EUR 80 billion in savings, a significant part of which would be attributed to demand side flexibility.



Electricity demand-response programs have been proven to have a positive impact on the electricity grid. They reduce the required investment in the electricity grid capacity through reducing grid congestion, deferring investment in networks, and provide network stability. They also cut significant distribution losses. For example, for the UK alone, the Committee on Climate Change (CCC) cites that savings in the operating and investment costs from the application of flexible technologies could reach £8bn/year in 2030.



In the case of district heating and cooling demand response programs, there is a significant potential for investments and cost savings in terms of unit peak capacity requirement at building level and the decreased need for additional electricity peak production units at system level. The proper application of building automation could conservatively save 15-22% of the total energy consumption in European buildings.



Due to the fact that heating or cooling during very cold or hot periods is typically done with peak-load marginal electricity, estimates show that building automation could contribute to a reduction of 260 to 419 million tons of CO₂ and would reduce Europe's emissions from fuel combustion of 8-13% by 2035.



BEST PRACTICE EXAMPLE

An Independent Aggregator partners with a leading health foods company in the UK to create value from flexible power:

A leading health foods company that processes a wide range of freshly harvested fruit and vegetables into fresh frozen products (vegetables, herbs, fruit and vegetable-based culinary preparations) for all the major supermarkets, food service providers and industry is working closely with the engineering team at an independent aggregation company identified the site's compressors and fans as sources of flexible power. Using innovative technology, the compressors and fans are now able to automatically curtail within the 30-minute request period of the Demand Response programme with no impact on asset performance and maintenance.