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**DEMAND RESPONSE BUSINESS MODELS IN ELECTRICITY
MARKETS.**

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Overview

In a market approach the responsible and active behaviour of the demand is highly desirable, due to its important role in price stabilisation, market power reduction and market efficiency. Moreover in electricity market the demand active response can contribute to system reliability reducing black out risks.

While on the one side market oriented approaches set the conditions for emerging Demand Response business, on the other side new technological solution enable these businesses and allow users' more active participation to energy markets. Nevertheless, several non technological barriers still prevent large demand participation to energy markets and business.

In the perspective of a wide European energy market, we need to set instruments and schemes able to describe and interpret, on the same common language, complex phenomena as those related to the participation of the electrical demand and referred to as *Demand Response*, *Demand Side Management*, *Load Management* etc. Common business models need to be shared in order to promote demand side business and technologies on continental wide markets. Barriers to Demand Response need to be individuated and country specific solution investigated for their removal.

Methods

Experiences and good practices carried out in different countries, markets, regulatory and technological contexts can be compared and shared in International Research Projects. The participation of countries at different level of market development are useful for lesson learning and solution exportability. The International Energy Agency Demand Side Management Programme (IEA DSM) created an annex called Task XIII: *Demand Response Resources*. Task XIII [1] is charged with reviewing DRR practices in various markets around the world and developed tools that can help integrate Demand Response into regular electric market activities. This paper is based on the work of the Experts of the twelve IEA member countries that have joined the Task and its results are applied, as a case study, to the Italian perspective.

Results

A wide recognition on Demand Response Programs and experiences has been carried out among the countries participating to the Task XIII Demand Response Resources Project. A database of DR programs has been collected and classified with respect to more than 40 characteristics, (as technologies used, power reduction, signals forecasted to customers,...) From this collection and with further economic and technological analysis, common business models have been drawn, major stakeholder and actors identified, role of market structures and typical barriers depicted.

One of the more interesting classification scheme defines *Market Led Programs* and *System Led programs* as those driven by price signals or emergency signals respectively (see fig.1).

Several tariff schemes are also studied with respect to the ability to induce demand response in short or long time intervals.
The models are applied to the Italian context, in order to individuate viable business cases.

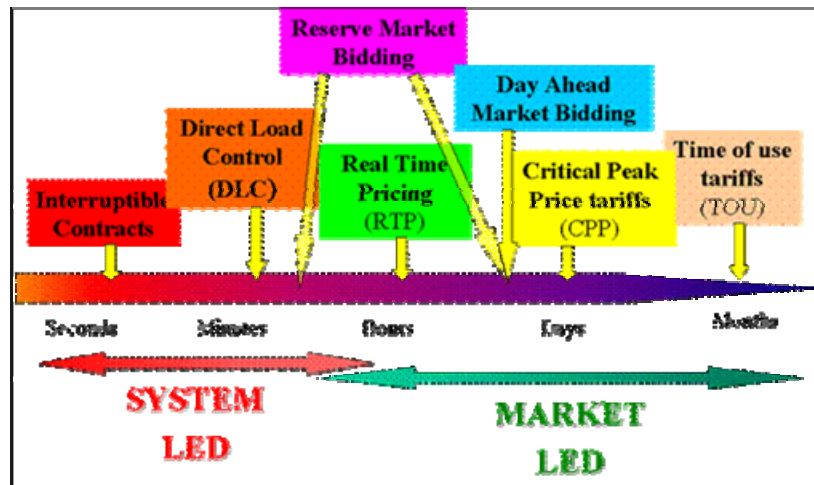


Fig.1: Classification schemes of demand response programs with respect to the operational time interval after signal receipt.

Conclusions

Sustainability of energy production, delivering and consume cannot avoid taking into account users' awareness and responsible behaviour and demand active role.

New technological solutions allow today more active participation of end users to energy market.

Market oriented approach develops emerging business models for activating Demand Response. Several market barriers are still present and can be related to market and regulatory structure.

The paper aims at giving an overview of Demand Response business models, depicting actors, products and fundamental features of enabling technologies.

References:

- www.demandresponseresources.com, or <http://dsm.iea.org/>.
C.Chemelli, W.Grattieri, "Metodi e strumenti per la modulazione della domanda", RdS Progetto EXTRA, CESI Report n. A5021621, www.ricercadisistema.it (in Italian).