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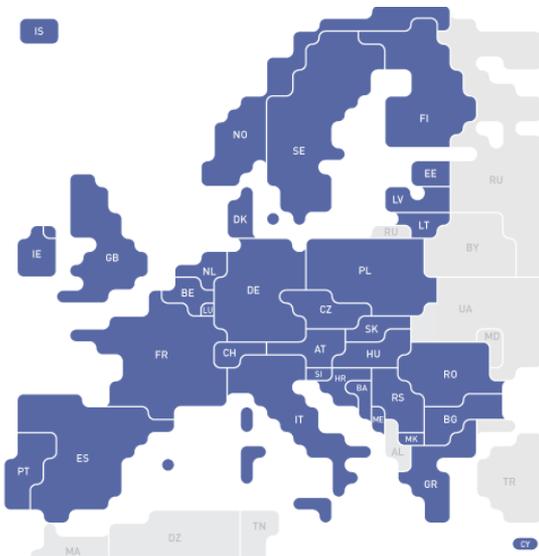
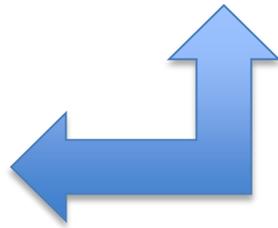
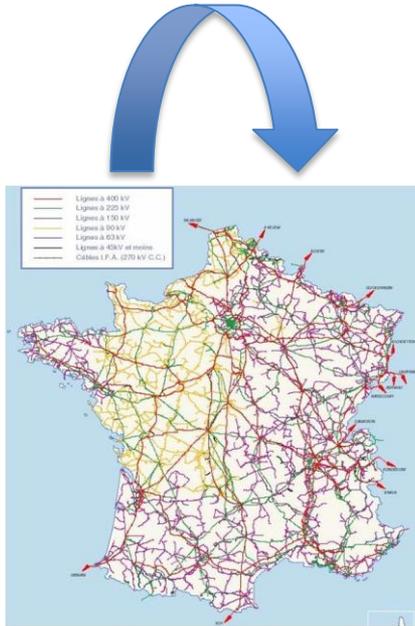
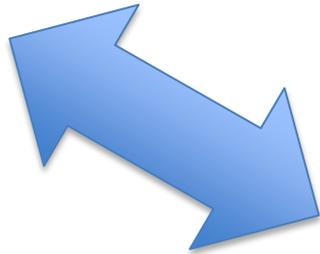
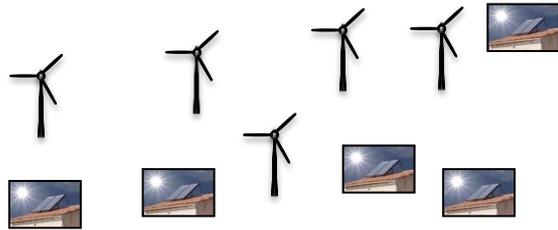


# More Flexibilities for TSOs to operate the Electric System

Michel BENA, SmartGrids Director

- It's a System Issue, involving all players
- Flexibility is the ability to react quickly to a given stimulus, in order to « optimize » the System Operating
- Flexibilities have a cost and provide benefits ; it's mandatory to be able to assess the CBA of the solutions to select the most relevant

# Flexibilities to be found on all the System stakeholders



# Different Levels to find Solutions

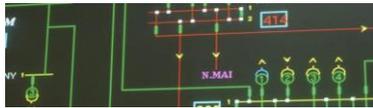
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Marché



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Exploitation du système



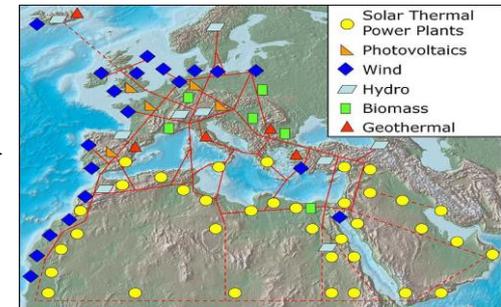
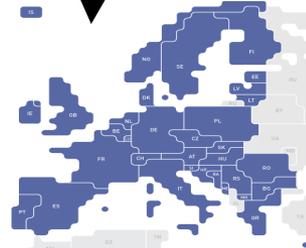
1.

Infrastructures



...fonctionnally...

...spatial issues...



# Take Advantage of RES Flexibilities



The screenshot shows the top portion of the entso-e website. The header includes the entso-e logo with the tagline "Reliable Sustainable Connected" and the text "european network of transmission system operators for electricity". A search bar is located in the top right. Below the header is a navigation menu with links for "ABOUT ENTSO-E", "MAJOR PROJECTS", "PUBLICATIONS", "DATA", and "NEWS & EVENTS". A banner image of power lines is visible below the menu. The main content area shows a breadcrumb trail: "ENTSO-E WEBSITE > MAJOR PROJECTS > NETWORK CODE DEVELOPMENT > REQUIREMENTS FOR GENERATORS". The main heading is "Network Code on Requirements for Grid Connection Applicable to all Generators (RfG)". To the right, under the heading "Within this section", there is a link: "> TEN-YEAR NETWORK DEVELOPMENT PLAN".

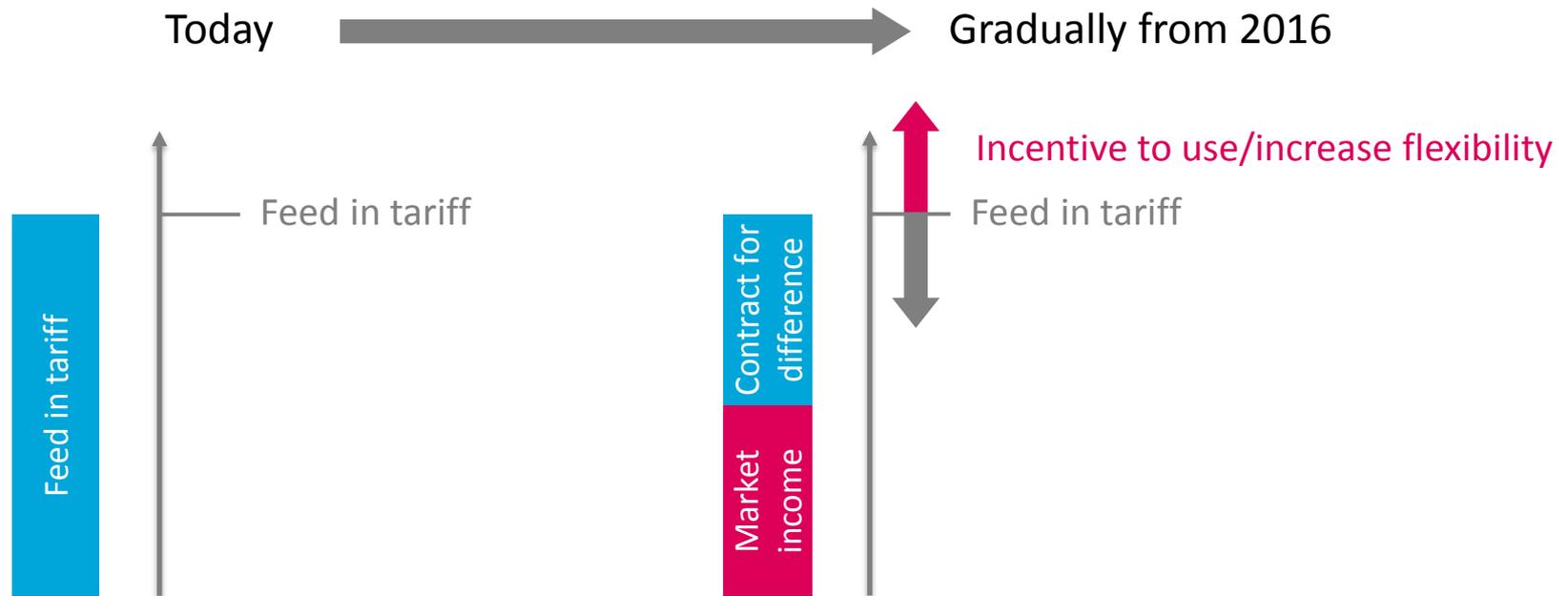
Generation connected to RTE grid are already required to provide voltage control

The extension of services (frequency, voltage, generation limitation) is under study/discussion with StakeHolders in France.

# France will continue to increase the participation of RES to short-term markets

## Better integration of RES:

- Revision of the French RES support schemes is on-going.
- RES will become balance responsible parties.
- **RES can be certified to participate to ancillary services and their participation to the balancing market could increase.**



## Regarding Demand Response, France has conducted an in-depth market reform

**From 2010 to 2015, RTE has implemented an ambitious program to address technical barriers and propose a new deal for aggregators.**

**This market reform allows DR to be effectively able to participate in all markets (day-ahead, intraday, balancing, ancillary services, reserves, capacity).**

- **Multi-tout aggregation:** DR operator can now aggregate capacities regardless of the BRP, the supplier, the size and the connection grid of consumers.
- **New control measures:** aggregation is encouraged through adapted control methods (baseline).
- **Use of DR operators' data:** data collected by DR operators can be used under a regulated regime in the absence of smart meter.

## Evolution of the ancillary services framework:

- A new version of the rules regarding the procurement of ancillary services will allow stakeholders to separate their upwards and downwards offers. **This provision is particularly favorable to flexible resources.**
- RTE is cooperating with its neighbors in order to discuss possible scenarios for XB exchanges of ancillary services.

# Europe

## 3 traditionnal sources of flexibility (current situation):

- Generation (mostly Hydro) in France
- **DR in France**
- **Flexible capacities outside of France**

## The French balancing market is already largely open to XB exchanges:

- Cross-border exchanges with Germany and Switzerland represent up to 30% to upward activated balancing energy bids and reduce the balancing costs up to 15 %.
- France exports FCR to Belgium.
- RTE is leading the TERRE project (early-implementation of the network code on Electricity Balancing). It touches more or less 80% of TSOs using replacement reserves and 50% of EU citizens.

## RTE will publish a roadmap dedicated to the evolutions of the French balancing market

- The draft network code on Electricity Balancing offers a number of options for transposition which need to be properly assessed (incl. regarding the integration of flexibilities).



To pave the way towards the full implementation of the code, **RTE is going to publish a roadmap which includes: a work program for the next years + an economic analysis of different options (incl. a benchmark with European countries.** This study will include evaluation from academics and consultants.

RTE will be particularly careful in order to ensure that future evolutions of the balancing market do not lead to step backwards regarding to the current participation of flexible resources.

**Dynamic Line Rating : Dynamic Capacities depending on the Weather**

**Automatic Fault on Transmission Lines : Detect and React more quickly**

**Smart Substation**



**RES Generation Prediction, Optimization of DC Links (FR/ES , FR/IT)**

## 3<sup>rd</sup> challenge: increase the visibility on potential business cases for investors

**In 2014, the French government has mandated RTE to lead a workgroup in charge of:**

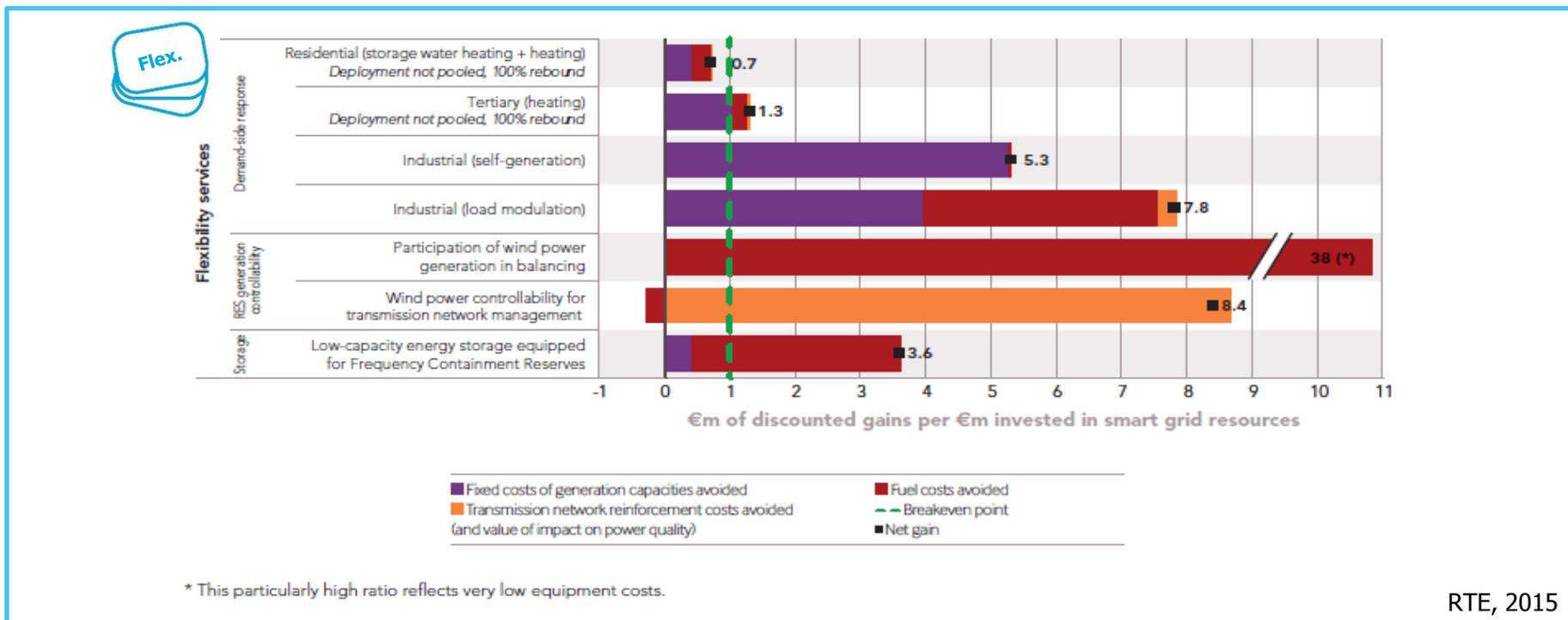
- Defining a reference methodology that can be used to assess and compare the value of flexible resources (incl. RES, storage, DR).
- Providing a 1<sup>st</sup> cost-benefit analysis related to the deployment of those technologies in the French power system.

The aim was to provide robust economic studies for stakeholders (and to go beyond the mere intuition that flexible resources provide added-value to the power system) through **a specific effort in modelling short term markets**

This study was published in July 2015.



# Flexible resources have a positive CBA for the power system



**A 2<sup>nd</sup> round of studies will be conducted by RTE and ADEME. They will notably assess the effective business cases for stakeholders and identify remaining regulatory barriers to the deployment of those resources.** This report will be published in Summer 2016.



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