



Market participation of renewable production and evolution of French support scheme

Christophe Dervieux, France,  Réseau de transport d'électricité

Workshop – „Large Disturbances – System operation and Market Performance Perspectives”
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PRESENTATION CONTENT

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- 02** Driving Events
- 03** Outcome
- 04** Lessons, Opportunities



Development of renewable energy sources (RES)

EU Objectives

- ❑ 2020 : Reduction of CO2 emissions by 20%
With RES → 20% of UE energy consumption (14.2% in 2012)
- ❑ 2030 (in consultation) : Reduction of CO2 emissions by 40%
With RES → 27% of UE energy consumption

French Objectives

- ❑ Previous Law for 2020 UE objective :
RES → 23 % of French energy consumption
- ❑ New French Energy Model Law :
RES for 2030 → 40% of French electricity generation by RES
32% of French energy consumption

Grenelle Target :

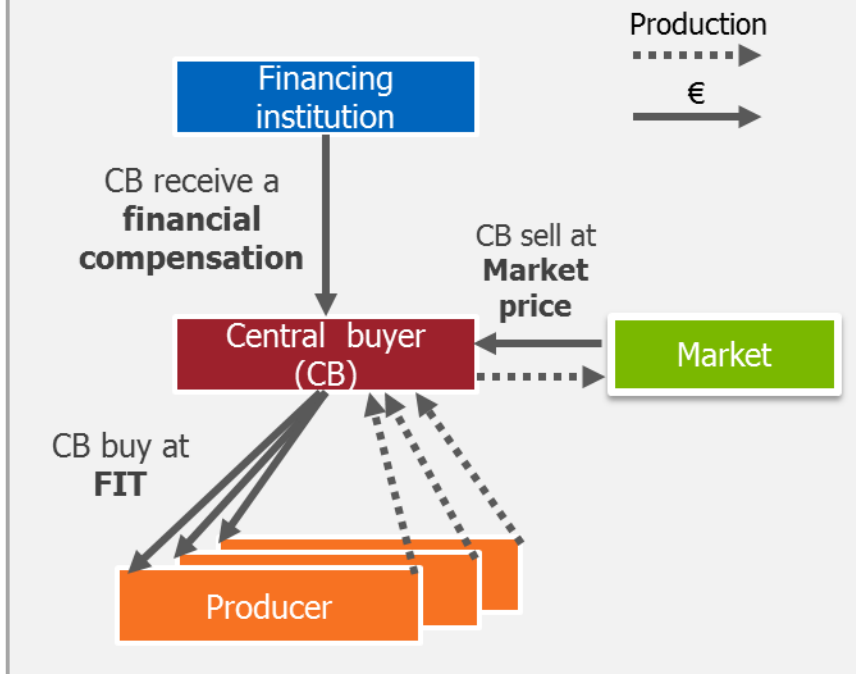
Wind : 25GW
PV : 5 GW
Biomass : 3 GW



Development of RES based on subsidies

Current design of RES support scheme

Current arrangement in France: Feed in tariffs (FIT) system



- $FIT_{WIND} = 82\text{€/MWh}$
 $140\text{€} < FIT_{PV} < 280\text{€/MWh}$
- Financial compensation is proportional to (FIT – SPOT price)
- No matter what, producers earn FIT.
→ RES producers are apart from the market
- Moreover, exemptions exist for RES producers preventing them to participate in short term mechanism (i.e Balancing)
→ RES producers do not receive any incentive regarding responsibilities toward the system

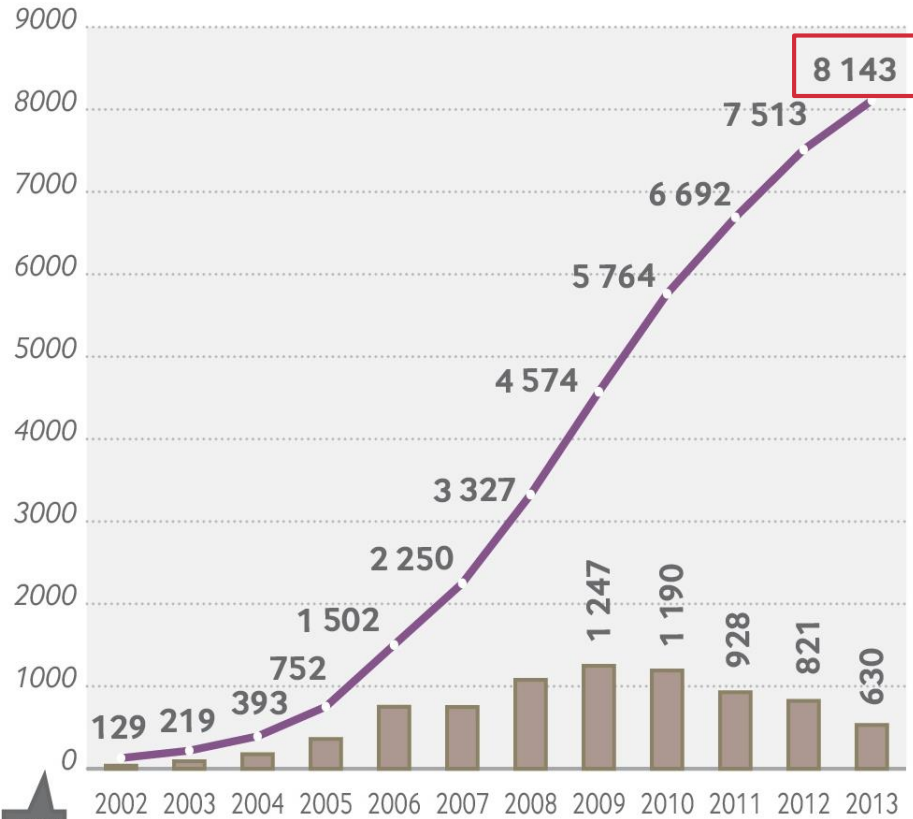
RES under FIT are integrated in Central Buyer portfolio

Central Buyer

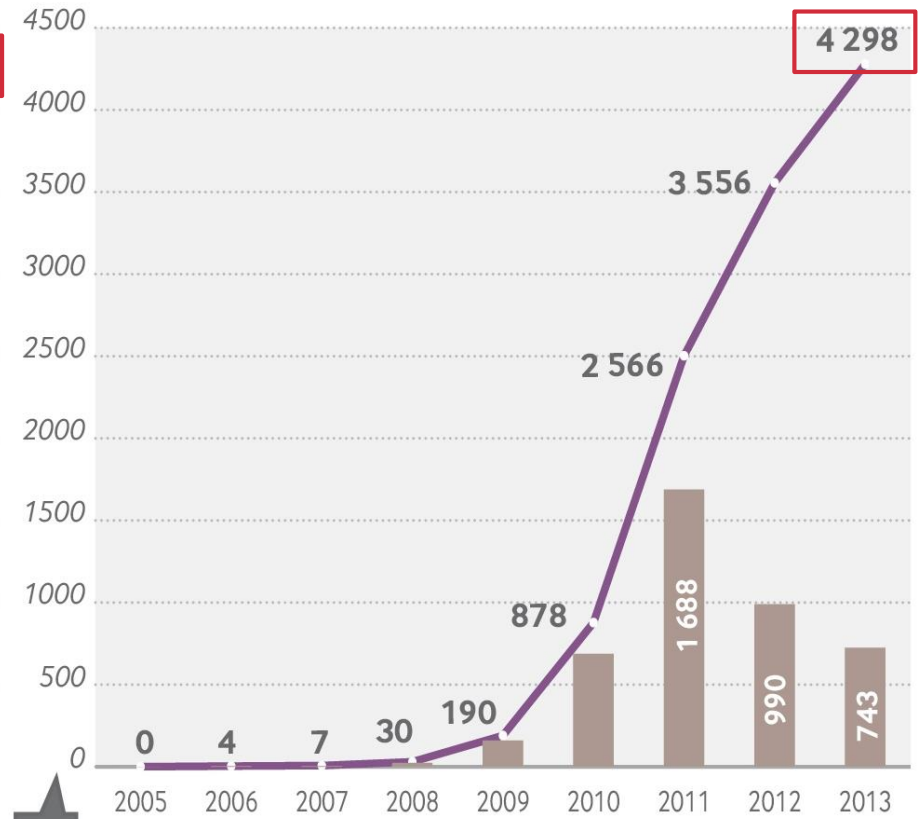
- Have to sell RES production on the market
- Is responsible for RES production, as balancing party.

Evolution of RES installed capacity

Installed Wind power



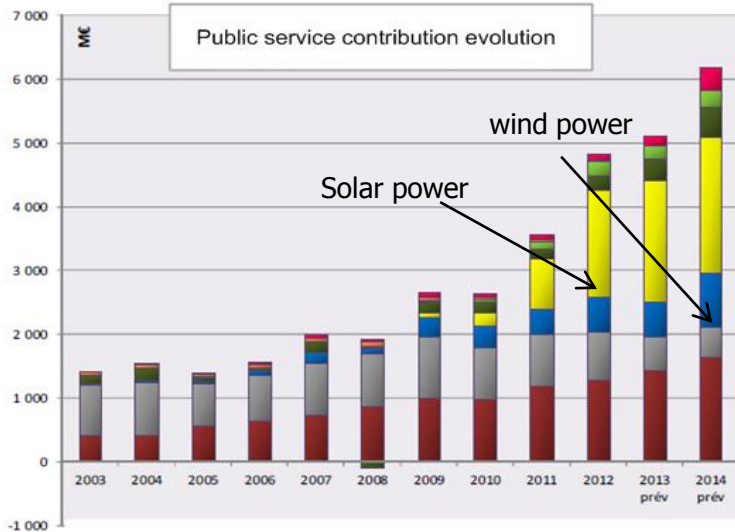
Installed PV power



Germany 2013 → 35 GW (Wind) – 36 GW (PV)



Why current design should evolved ?



French public service contribution (CSPE):

- 6 billions €
- 16,5 €/MWh (about 11% of household bill)

Objective is still to increase RES and cost must be controlled

→ **Current support scheme may not be up to date with recent evolutions**

Negative price events have become more frequent and profound since RES volumes are increasing

Several utilities have raised concerns about market dysfunctioning causing missing money for CCGT and deterring future investments

However, at the same time, RES intermittency requests back up capacity in case of coupled high demand and low RES production, such as flexible capacity for load following.



What is the economic rationale?

In itself, negative price is not an aberration

→ some unit with high stop and start costs prefers pay to maintain its production during a few hours than stop and go

But RES have near 0 marginal and stop and go costs

→ during negative prices, the economic rationale is curtailment.

Why this is not the case?

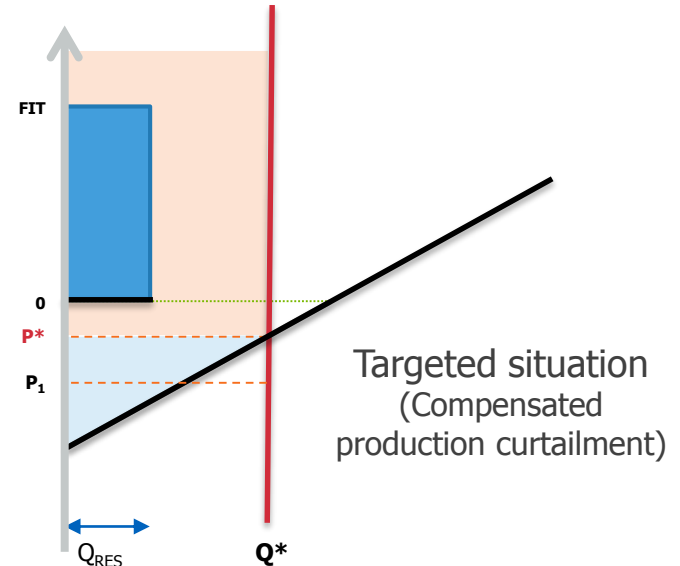
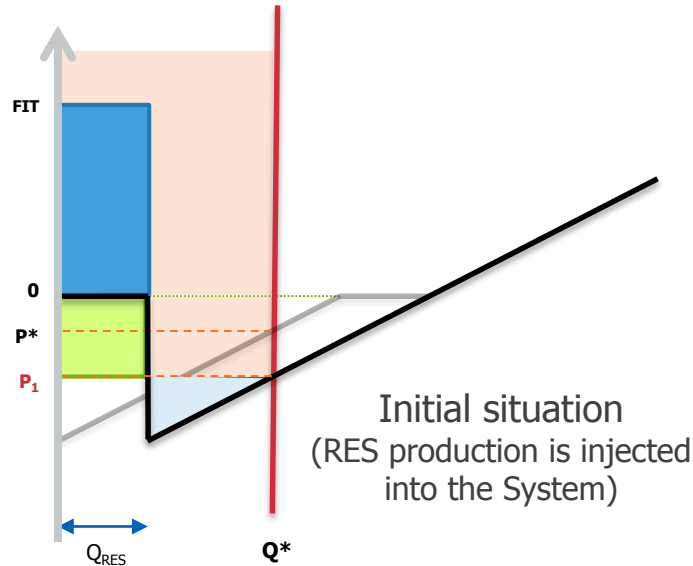
Due to the current support scheme (FIT & priority dispatch),
RES Operators do not receive wholesale price but a fixed revenue in €/MWh, whatever the period.

RTE studies on support scheme market designs :

- *In december 2013, wind curtailment would have led to no negative prices.*
- *It is optimal to curtail production but continue to pay FIT to producers*



Positive modification of collective surplus by compensating RES production curtailment



Sign convention: $\Delta \text{Surplus} = \text{Targeted Surplus} - \text{Initial Surplus}$

RES producers	ΔS_{RES}	$= 0$	-
Consumers	ΔS_{cons}	$= - Q^* \cdot (P^* - P_1)$	< 0
Non-RES generators	ΔS_{gen}	$= (P^* - P_1) \cdot (Q^* - Q_{\text{ENR}} / 2)$	> 0
Central Buyer	ΔS_{CB}	$= - Q_{\text{ENR}} \cdot P_1$	> 0
Social Suplus	ΔS_{ss}	$= - Q_{\text{ENR}} \cdot (P_1 + P^*) / 2$	> 0

Current regulation is being questioned at EU and national level

At EU level



Guidelines on State aid for environmental protection and energy 2014-2020



European Commission guidance for the design of renewables support schemes (*Accompanying the Communication from the Commission "Delivering the internal market in electricity and making the most of public intervention"*)

Support schemes should adjust - reform process – toward market integration.

At French level : Consultation led by the Ministry of Energy

- Question potential evolution of support scheme design. (How? When? What type of design should be relevant?)
- Aim to prepare new law on Energy

→ 2 issues tackled : Market & System

Various panel of respondents :

- Regulator , EPEX SPOT,
Non-RES producers, RES producers...
... and TSO (RTE)



→ Every participant is concerned and gives its position

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Principle - To reconcile market and physics of power system

Overview of 'system issue' proposal

RES producers must be responsible for their imbalance

Set RES on equal footing with other generators in terms of regulatory obligations:

- Production measurability and controllability (at least at substation level)
- Obligation to send day-ahead production forecasts to system operators
- Obligation or incentive to offer flexibility services for balancing and ancillary services for frequency and voltage

Benefits : avoid hidden costs, free new flexibilities

Option : give additional incentive for prevision quality



About support scheme proposal

Consensus → Feed In Premium scheme

Support scheme should evolve toward a **more market integrated design**, such as a fixed ex-ante premium or variable ex-post premium like contract for difference (CFD). The fine design should be assessed carefully as it can be computed on an ex-ante or ex-post basis, resulting in different incentives.

RTE analysis of RES support market design

Important criteria

Provide security for investments

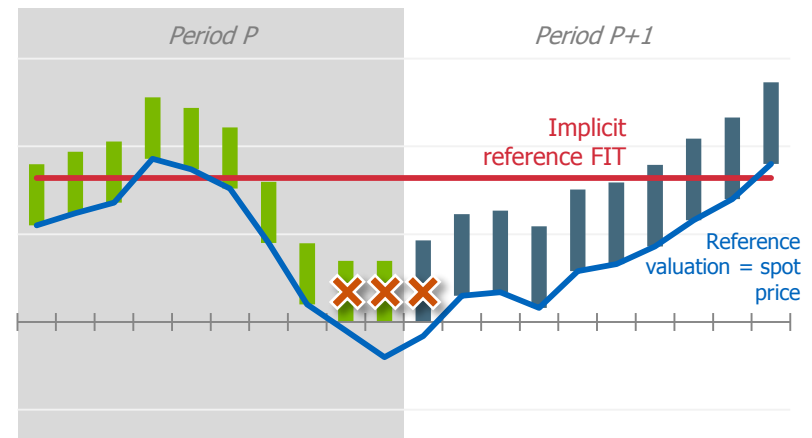
Prevent energy market distortions

Prevent investment decision distortions

Yearly adjusted ex-post CFD

- ✓ Stable during each year
- ✓ Adjusted every year based on realized production valorisation
- ✓ Set to zero in all hours where the system price is negative

→ Aiming at stabilizing global revenue (market+premium) in the LT

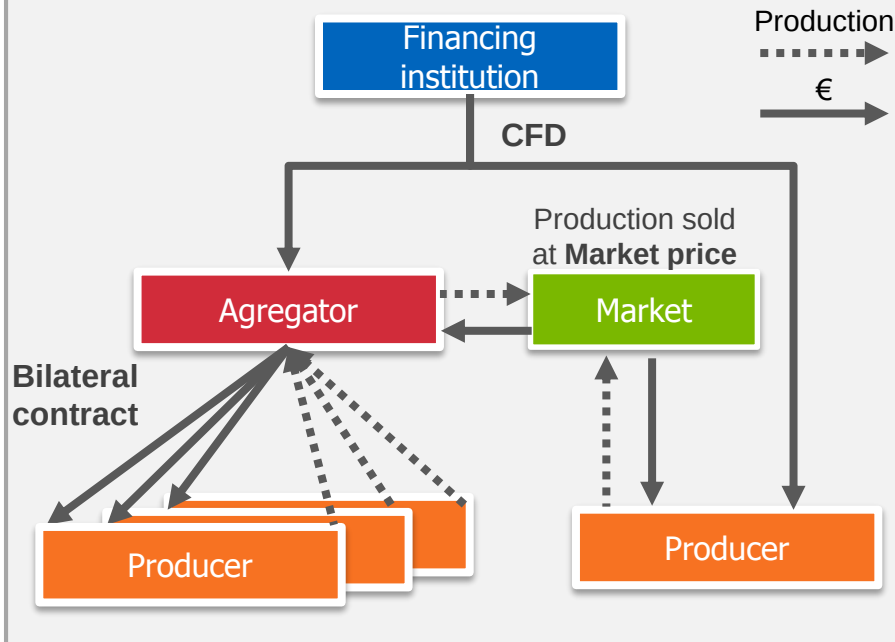




RTE proposal on governance : create the conditions for aggregators to enter the market

RTE proposal:

open the access to direct subsidy to all the actors (alternative “aggregators” or generators) to benefit from the subsidy by themselves



- Support scheme is complementary to market value
- Producers or aggregators have to price their production – Support is just adding a premium on market value
 - ➔ RES producers receive market signals (directly or indirectly by aggregators)
- Producers or aggregators are responsible to the system as balancing parties
 - ➔ Opportunities for short term valorisation



THANK YOU

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