

# CRE's experience with regulating nuclear power

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**01.**

**Context**

## 1.1 The French nuclear policy

### A few statistics :

- In 2023, nuclear power accounted for **64.8% of the French electricity mix** (320 TWh).
- France has **56 operational pressurized water reactors** and is currently building another one.
- The government has launched a new nuclear program to **build at least 6 new reactors**.

## 1.2 The long-standing nuclear energy regulation mechanism

In 2010, France introduced an **economic regulation mechanism for nuclear power plants already in service** : the so-called “ARENH”. This historical scheme was set for 15 years and will come to an end on December 31, 2025.

The mechanism covers **100 TWh every year**, regardless of the level of nuclear power generation (417 TWh in 2015, 279 TWh in 2022, 320 TWh in 2023).

ARENH requires the nuclear power producer (EDF) to **sell this volume of energy at a regulated price (€42/MWh) to other suppliers**.

This "upstream" operation is intended to meet a **dual objective** "downstream":

- **promoting competition in the retail market**
- **passing on to consumers the low cost of nuclear generation** they have financed.

CRE is tasked with the implementation.

## 1.3 A valuable tool for consumers' protection

During the crisis, ARENH fulfilled an extremely significant role in protecting French consumers.

It **shielded 50% the consumer's final bill from the price explosion** observed on the wholesale electricity markets. In particular thanks to the exceptional provision of an additional 20 TWh of ARENH, for which CRE verified that suppliers passed on the benefit to the end consumers.

Consumers were able to benefit from the some of the best prices in Europe at **no excessive cost to the national budget**.

On the other hand, it has been costly for EDF, which unfortunately experienced a crisis in production during the crisis.

**02.**

# Operational takeaways

## 2.1. The benefits of dynamic regulation

**Schemes that adapt as closely as possible to real time have a real added value.**

- In the French mechanism, the system of annual volume forecasts and ex-post adjustments the following year leads to large-scale financial transfers with a timeframe that can be inconsistent with market dynamics and the reality of nuclear operations.
- It should also be possible to update the regulated price in line with changes in actual production costs.

## 2.2. Regulating the producer : our upstream takeaways

Producer regulation relies on **two key parameters** : the **volume under ARENH regulation** and the **price of this regulated volume**.

**They are political choices that the regulator may have to inform through impartial and transparent references. The regulator should stick to producing figures based on transparent calculation methods.**

- When the regulator is asked to produce such figures, the legal framework must also allow access to the necessary data.

**It is more comfortable to comment on the volume under ARENH regulation when the regulator's missions and the objectives of the system are clearly defined:**

- Indeed, the volume of production under ARENH regulation leads to a trade-off between conflicting objectives, such as the producer's investment capacity and consumer protection.
- The political authorities are best placed to set the objective, and the regulator can help parameterize the system accordingly.

**The price of the volume under ARENH regulation is another essential element in the overall economic balance.**

- Indexing the regulated price to inflation, or to an even more appropriate sector ind- -ex, is commendable.



## 2.2. Regulating the retail market: our downstream takeaways (1/2)

In France, **ARENH is allocated to suppliers**, who are then free to pass on their own supply conditions to consumers.

**A highly competitive retail market ensures that suppliers pass on the economic value of the mechanism to the consumer.**

**The method for allocating regulated electricity volumes between suppliers is also a structuring factor.**

In France, suppliers are allocated their shares of nuclear electricity at regulated prices on the basis of the consumption of their respective portfolios at a given time of year.

This can be virtuous, by providing the right **incentives in terms of supply-demand balance**.

But this leads to **side effects** (see next slide).

## 2.3. Regulating the retail market: our downstream takeaways (2/2)

Such side effects can be :

- i. *A major financial risk for players.* Some suppliers may have their annual entitlements reduced due to very occasional consumption "accidents" occurring during the period used for calculating their rights.
- ii. *Optimization* behavior on the part of a few players at odds with the spirit of the system

**Thus, it is crucial to guard against abuse on the part of suppliers, as some are tempted to hijack the system.** The regulator must be given **sufficient powers** to carry out an effective supervision.

→ *In France, such a need was not identified while market prices were reasonable. Once the crisis hit, volumes of electricity under ARENH regulation became even more attractive. The government therefore had to urgently confer new powers to the regulator so that CRE could better control the access to ARENH.*

Thank you for your attention