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The end of coal in France : Political opportunity or miscalculation ?

Sascha Perroux

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Octobre 2023



Why stop using coal?

National Climate Strategy 2018 (SNBC) : **carbon neutrality** by 2050

→ Closure of coal-fired power stations by 2022 :

- Plan Climat (2017)
- Programmation Pluriannuelle de l'Énergie (2018)
- Climate-Energy Law (2019)

**Carbon
neutrality
by 2050**



**28% of the
electricity sector's
CO2 emissions
(2019)**

Le Havre



EDF

Cordemais

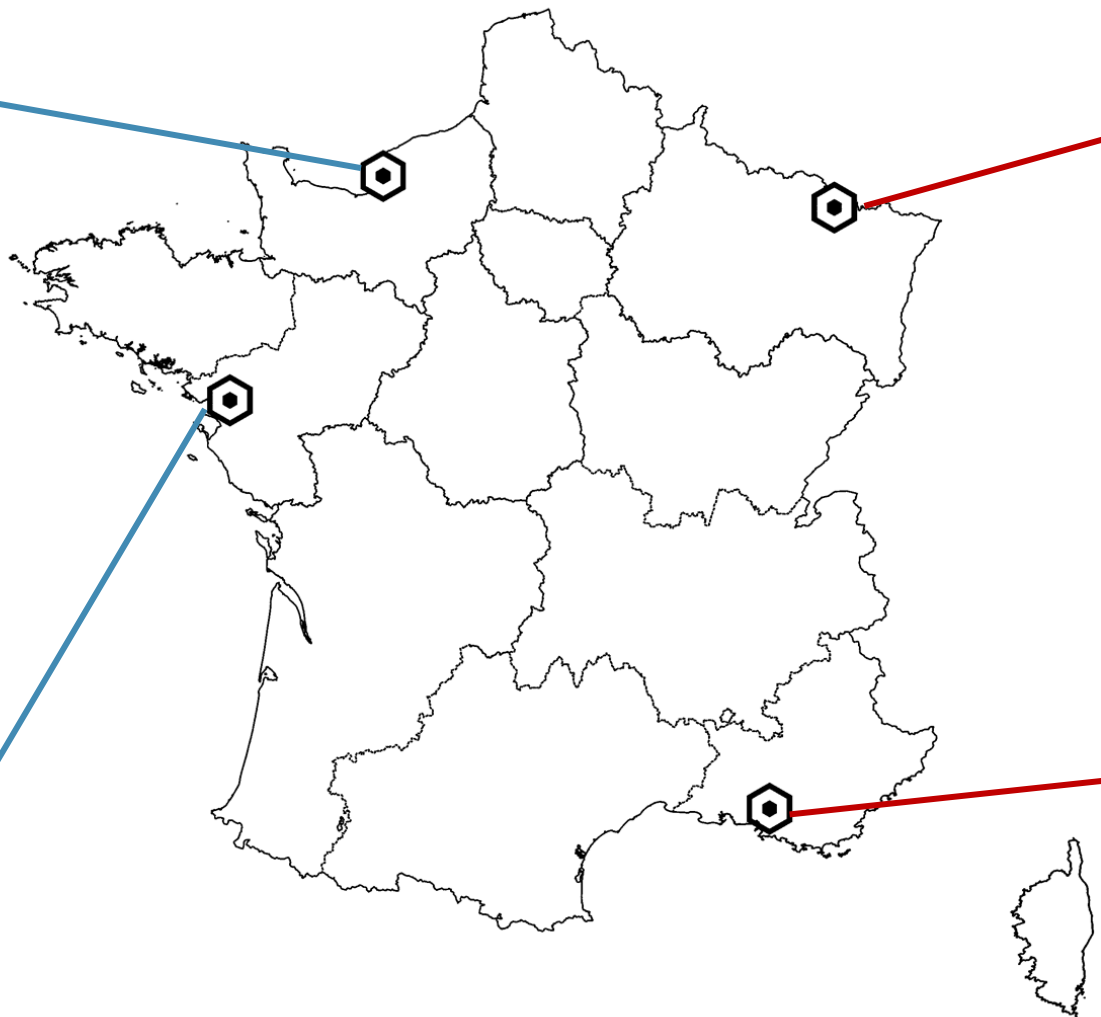


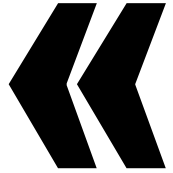
Saint-Avold



Gazel Energie

Gardanne-Meyreuil





The impacts on the electricity grid of the political decision to shut down coal-fired power stations were insufficiently anticipated and have led to a disruption in the energy transition of these four territories towards a "post-carbon regime".



Consequences on the national supply security



Feasibility of a territorial relay to 2022

Two theoretical approaches

Timeframe of the energy transition

- **Widely varying temporal dynamics** (Fouquet, Pearson 2012)
- **Non-linearity of transition processes** (Labussière, Nadaï, 2020), which follow **chaotic rythmes** (Grubler, 2012)
- **Currently, a transition wanted and coordinated by the public authorities** (Sovacool, 2016): What does it entail ?

Pathways and branching points

- **The result of a multitude of decisions** (Foxon, 2010, 2013; Rosenbloom, 2017)
- **The role of organisational structures** (Durand et al., 2022; Lapostolle, 2021)
- **“Branching points” as decisive moments in the construction of new trajectories** (Foxon et al., 2013) through the **realignment of stakeholders' visions** (Fotopoulos et al., 2019)

Methodology : qualitative approaches



Report analysis

RTE/EDF balance sheets,
territorial planning documents

What is the state of the electricity network before and after the political decision ?

What are the recommended transition paths ?

What is the technical legitimacy of the political decision?



Analysis of legislative changes

Publication of decrees and legal acts

How does the law reflect the difficulties in implementing the energy transition over time ?



Research interviews

Site owners, local stakeholders,
government officials, employee representatives

What are the local impacts of the closure and reopening of coal-fired power stations ?

How is perceived the decision to phase out coal-fired power stations by 2022 ?



Non-participatory observation

Immersion at the sub-préfecture of Aix-en-Provence, near Gardanne-Meyreuil

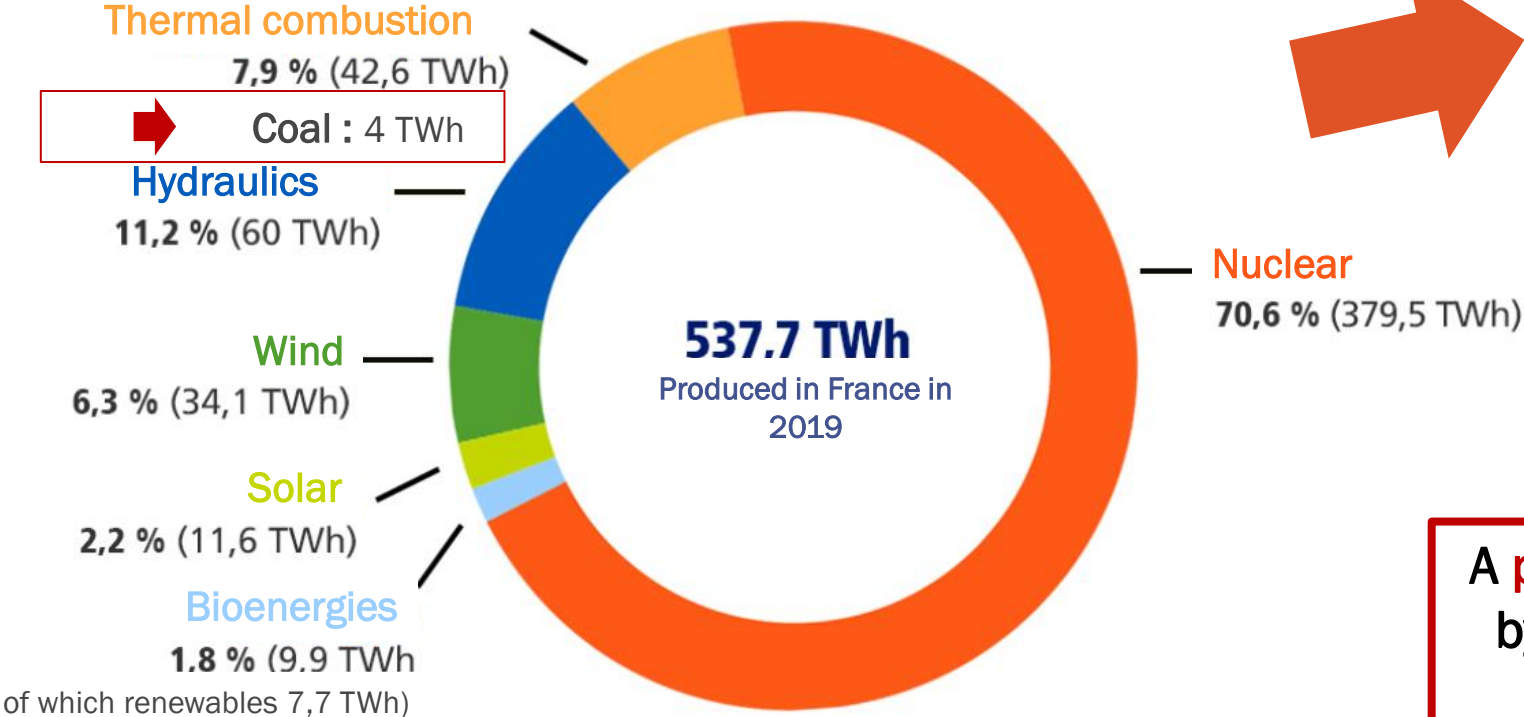
How does local public action interact with national political decisions?



**THE ROLE OF COAL
IN THE FRENCH
ELECTRICITY GRID**

How much did coal weigh in the french electricity mix ?

FRENCH ELECTRICITY GENERATION IN 2019



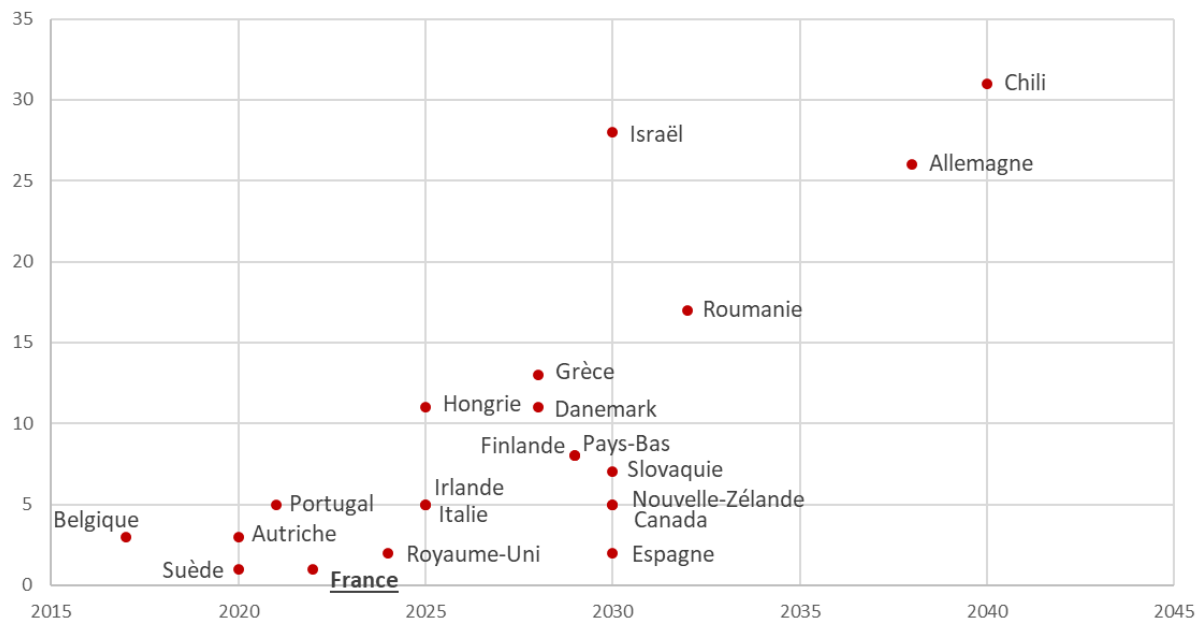
Coal
28% of the electricity sector's CO2 emissions (2019)

A **political decision** motivated by an **ecological argument**, with a low impact on the electricity network at first sight

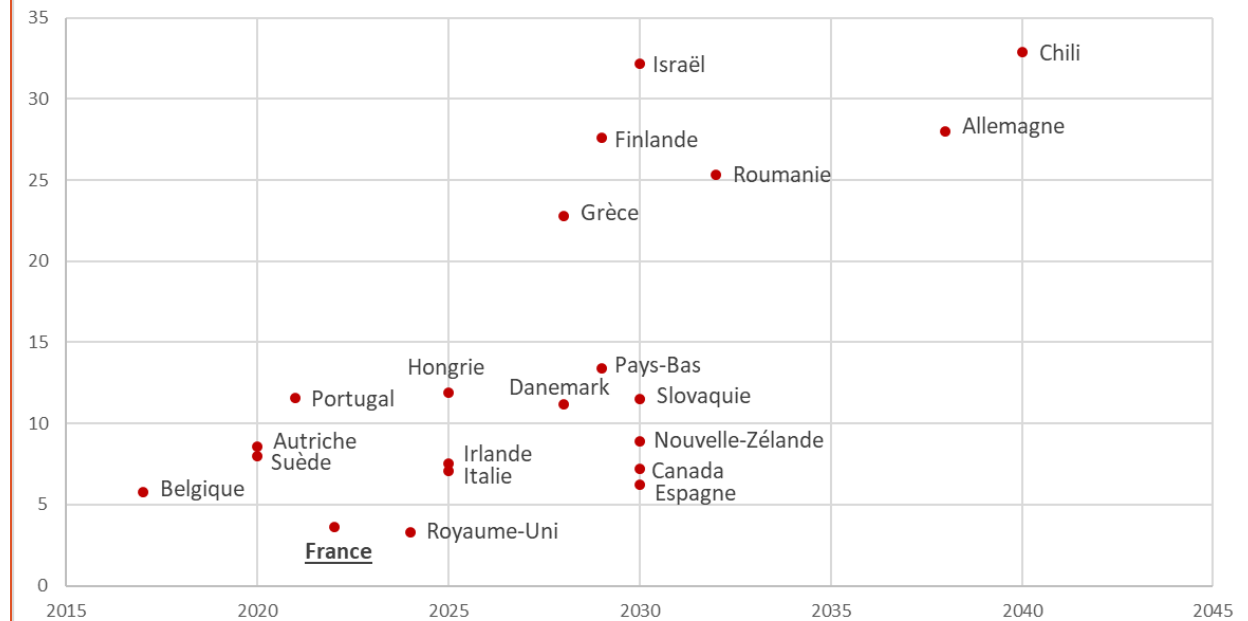
Breakdown of French electricity generation in 2019 by type of energy. Source : RTE, Bilan électrique 2019

Why 2022 ?

Share of coal in the national energy production (2020, in %)



Share of coal in the national CO2 emissions (2019, in %)



Coal's share of national CO2 emissions and national energy production in countries that have planned to phase out coal, according to their scheduled date for stopping using this fuel. From : IEA, *Phasing-out unabated coal, Current status and three case studies*, 2021, p.12. Réalisation : S. Perroux, septembre 2023

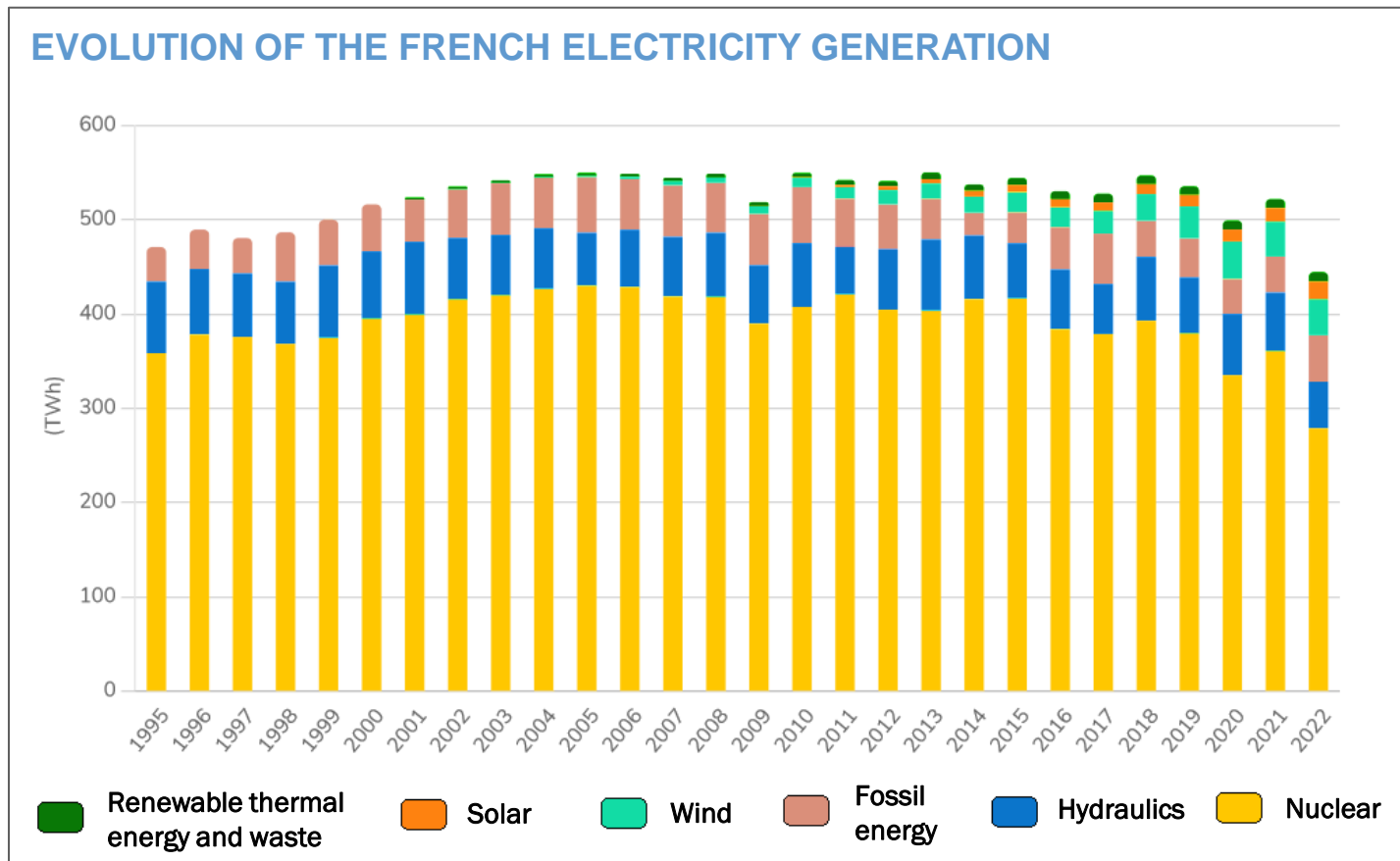
+ 2022 : end of the five-year term of President E. Macron = a symbolic act

What technical realities?

Significant reduction in drivable electricity generation capacity.

Major role in balancing supply and demand at times of peak demand.

Increased vulnerability of the electricity network in the event of major disruptive events.



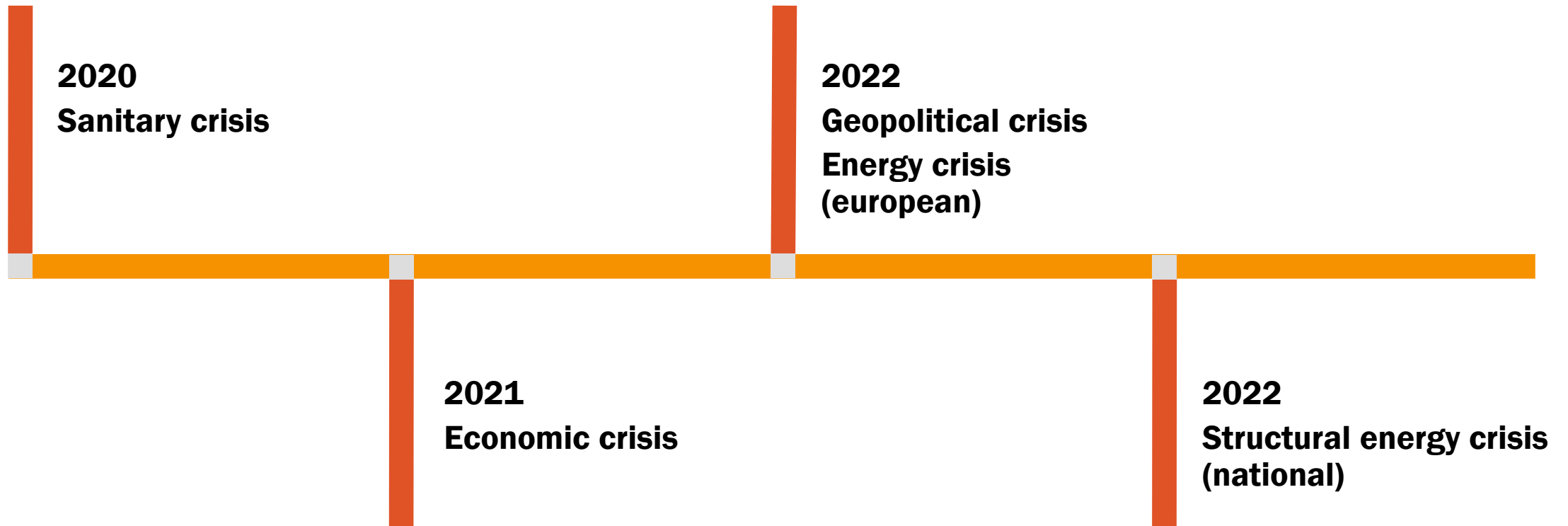
Electricity generation in France between 1995 and 2022. Source : RTE, *Bilan électrique 2022*

Total electricity production 2010-2021 : - 5,1 %

→ with drivable production capacity : - 11 %

2022 : Electricity imports exceed exports for the first time since 1980

Some major disruptive events





Restart of the Saint-Avoid coal-fired power plant

Official closure on March, 31st 2022

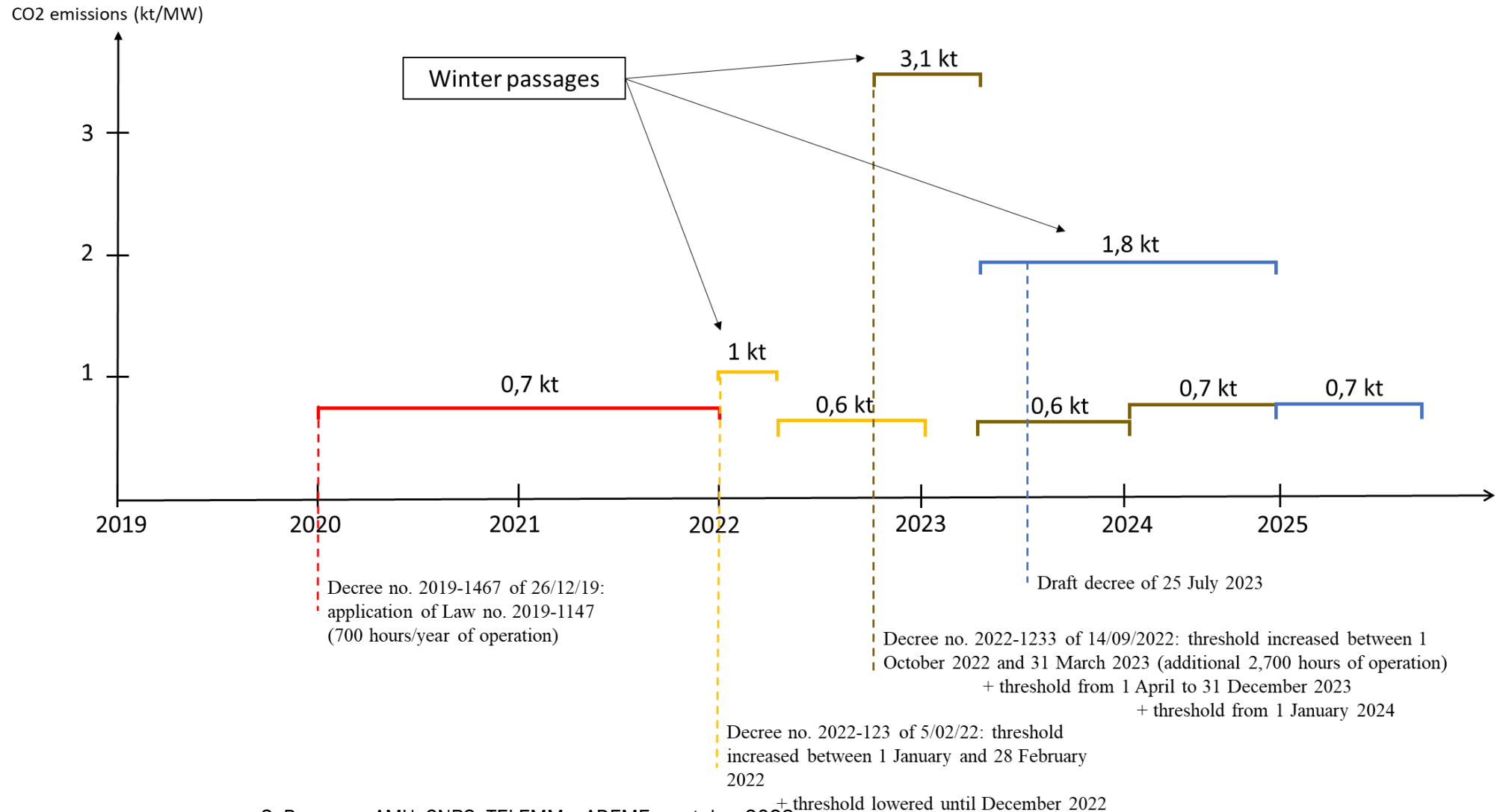
Recalled for winter 2022-2023

Recalled for winter 2023-2024

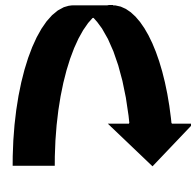
Navigation on sight → no medium-term planning

The law: a key to understanding the disruptive timing of the energy transition

Changes in CO2 emission thresholds in the French legislation

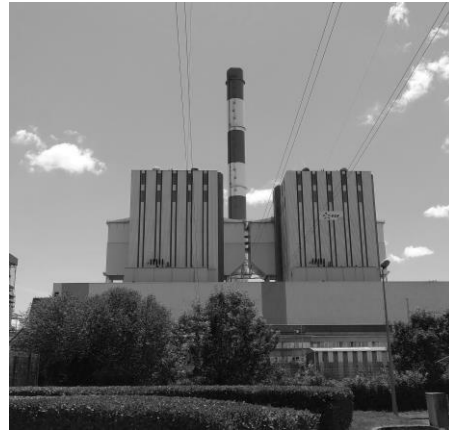


Carbon offset obligations...



Le Havre

Closed on March, 31st 2021



Cordemais

In operation until 2026



Saint-Avold

Closed in 2022

Then reopened



Gardanne

Closed on June, 31st 2021

... And social consequences

- Recall of early-retired employees
- Refusal to train new staff due to lack of medium-term vision



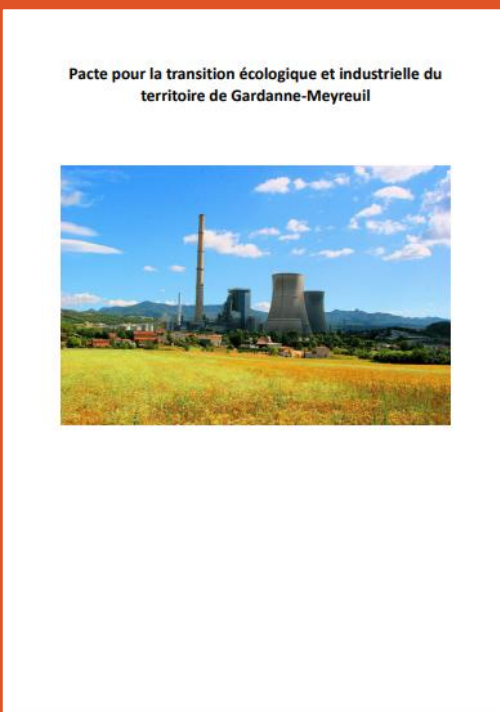
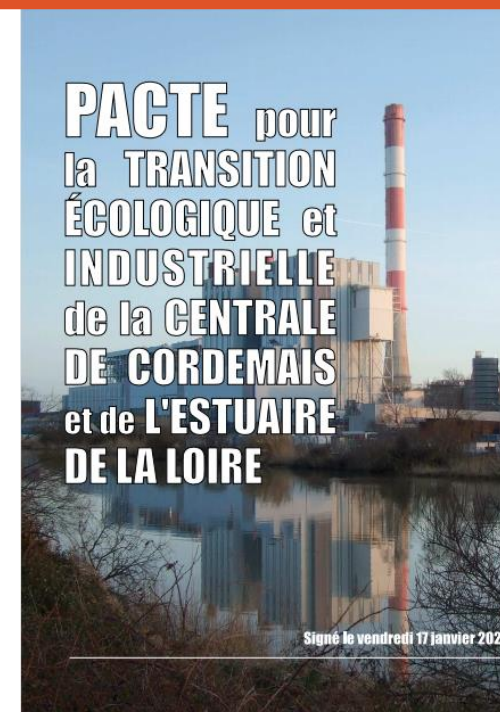
**WHAT IS THE
TIMEFRAME FOR THE
ENERGY TRANSITION
OF THE SITES?**

A political commitment to the industrial conversion of the sites

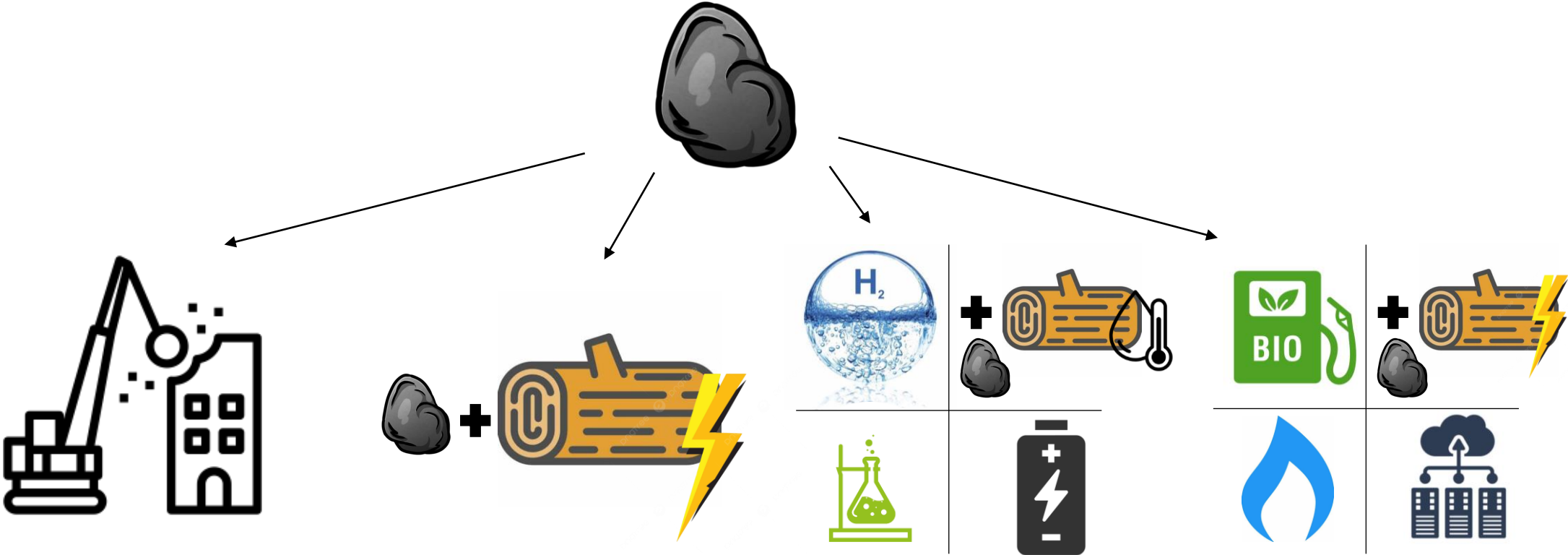
Signed in 2020 between the State, local authorities, the sites owners...

To prepare for the post-coal phase through the conversion of sites, territories and employees

- What are the transition trajectories at these industrial sites? How are they constructed?
- Temporality of the energy transition: is the energy relay guaranteed to ensure the security of supply of the electricity network?



The industrial conversion seen as branching points for new transition pathways



Le Havre

No industrial conversion

Cordemais

Electricity

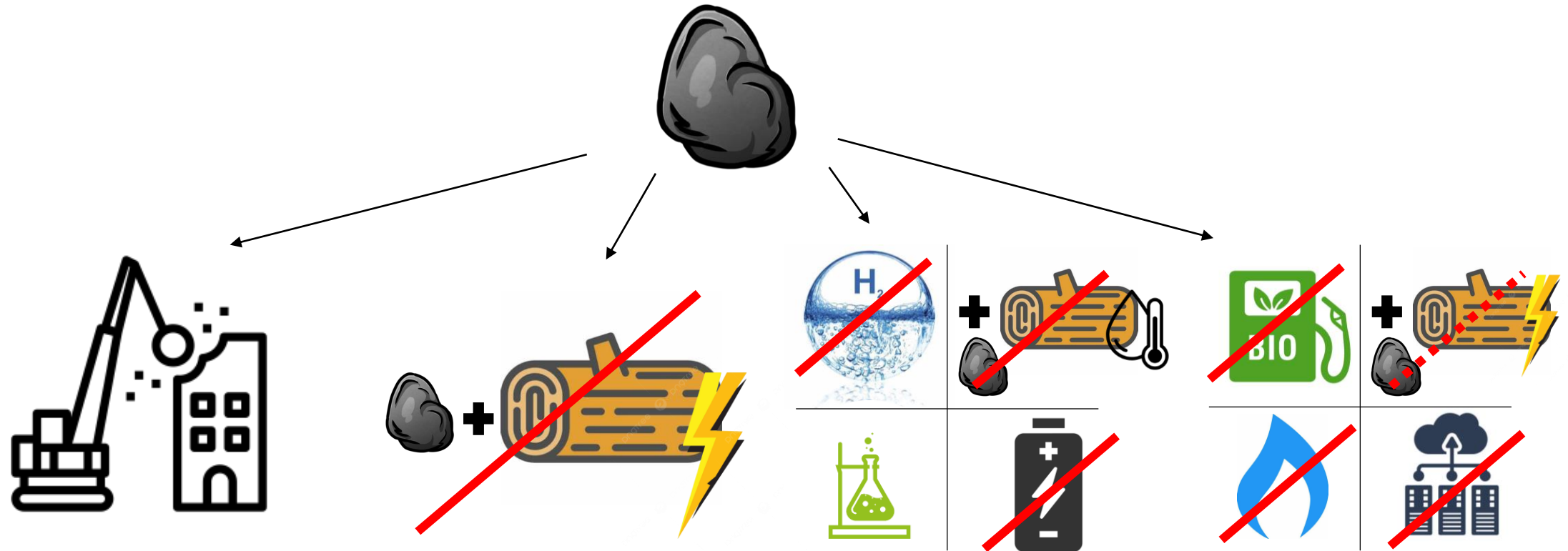
Saint-Avoid

Electricity, hydrogen,
electricity storage,
biochemicals

Gardanne

Biofuels, electricity,
gas, data centers

Which relay at the end of 2023?



Le Havre

Cordemais

Saint-Avoid

Gardanne

→ When politics meets the territory : administrative delays, social conflicts, local oppositions, economic opportunities

S. Perroux - AMU, CNRS, TELEMMe, ADEME - octobre 2023

Conclusion

1

No electrical relay for the closure of coal-fired power stations

Need to prioritise the issues of decarbonisation and securing the energy supply.

2

Limited peak operating capacity

None of the conversion projects is an equivalent substitute for coal-fired power stations in terms of contribution to the electricity grid.

3

Far too short a conversion period

The time for spatial planning is not the time for political planning : the energy transition is constantly disrupted by territorial realities.

4

A lack of strategic planning



Thank you



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