

Financial, Democratic and Institutional Challenges of the Ecological Transition: What matters most?

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David Cayla (Granem, Université d'Angers)

Two economic debates on green transition

◇ 1/ Public Policies Objectives

- Achieving a **cost-benefit tradeoff** (Nordhaus 2019).

The DICE model calculates an optimal strategy at +3.5°C by 2100. Other strategies are possible but require a higher carbon price and therefore an overall lower consumer welfare.

The carbon price is calculated in line with its **social cost**, which reveals an objective **shadow price**.

The unicity of the carbon price creates incentive into decarbonization of the economy through its effect on **demand**, **supply** and **innovation**. The carbon price reduces the **need for information**.

The calculation of the carbon price depends on numerous parameters (**damage evaluation** and **discount rate especially**).

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A deeper critique is that damage functions monetize all human and non-human activities, which is correct. People might not object to monetizing the losses of wheat that are replaced by soybeans, or houses damaged by hurricanes. But they have firmer grounds for moral objections when studies put a price on human health impairments or monetize the submergence of entire island cultures. The economists' response is usually that we attempt to put all costs and benefits in a common metric so that we can balance the losses in one area with losses in others. We should be attentive to imputing appropriate prices, but it is better to include some values on health damages than to omit them from the analysis. As Keynes may have said, it is better to be vaguely right than precisely wrong.

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◇ 1/ Public Policies Objectives



TABLE 2—DISCOUNTING AND THE SOCIAL COST OF CARBON

Discount rate (%)	Social cost of carbon 2018\$ per ton of CO ₂			
	2015	2020	2050	2100
0.1	970	966	917	665
1.0	497	515	614	657
2.0	219	236	349	544
3.0	93	104	179	361
4.0	44	49	93	207
5.0	23	27	55	126
DICE-opt	36	43	105	295

(damage evaluation and discount rate especially).

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◇ 1/ Public Policies Objectives

- To limit ecological damages with the **transformation of the economy**.
 - ✓ Stick to the Paris Accord of +2°C by 2100.
 - ✓ Refuse the cost-benefit calculation because of **non-substitutable natural capital** (Neumayer 2007).
 - ✓ Consider other environmental damages than GHG emissions.

Preference **for mandatory regulations** over market **incentive mechanisms**.

Agreement to **limit economic growth** in rich countries to avoid further ecological destruction (degrowth approach).

Two economic debates on green transition

◇ 2/ How to face the cost of the green transition?

Green transition implies an investment effort of more than 2% of GDP for at least one decade ([Pisany-Ferry Mahfouz 2023](#)). It means an overall reduction of consumer welfare ($Y = C + I$).

This investment growth is the consequence of three problems:

- Green investments are **less productive** than brown investments (electrification needs high infrastructure costs and electrified production goods are more expensive).
- Well-functioning **brown capital must be replaced** before maturity.
- **Bottlenecks effects** (for example the ability to produce more batteries depends on the availability of raw material). Cf. [Hache and Roche 2024](#).

Two economic debates on green transition

- ◇ 2/ How to face the cost of the green transition?
 - **Mainstream economics**: the carbon price will produce the necessary incentives to discourage the financing of brown projects and promote green investments.

The cost is limited to the **carbon price** (which goes from \$43 in 2020 to \$105 in 2050 in the optimal base model with limited damage).

Two economic debates on green transition

TABLE 1—SOCIAL COST OF CARBON ALTERNATIVE CONCEPTS,
DICE 2016-R3 MODEL (2018\$)

	Social cost of carbon 2018\$ per ton of CO ₂			
	2015	2020	2050	2100
Base	37	45	108	304
Optimal	36	43	105	295
Optimal (alt dam)	91	108	249	584
T ≤ 2.5 (200yr)	41	49	123	379
T ≤ 2.0 (200yr)	49	59	153	511
T ≤ 1.5 (200yr)	69	84	226	776
T ≤ 2.5 (100yr)	76	93	260	755
T ≤ 2.0 (100yr)	130	158	413	1,013
T ≤ 1.5 (100yr)	236	279	682	1,191
T ≤ 2.5	95	118	361	477
T ≤ 2.0	225	275	749	459
T ≤ 1.5	NF	NF	NF	NF

Notes: *Base* = no controls. *Optimal* = cost-benefit maximum with base and alternative damage function. T ≤ 2.5 (200yr) = temperature limited 2.5°C for a 200-year average (and the parallel notation for different temperature limits and averaging periods). T ≤ 2.5 is temperature limited to 2.5°C as a hard constraint. In the table, “NF” indicates not feasible.

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Two economic debates on green transition

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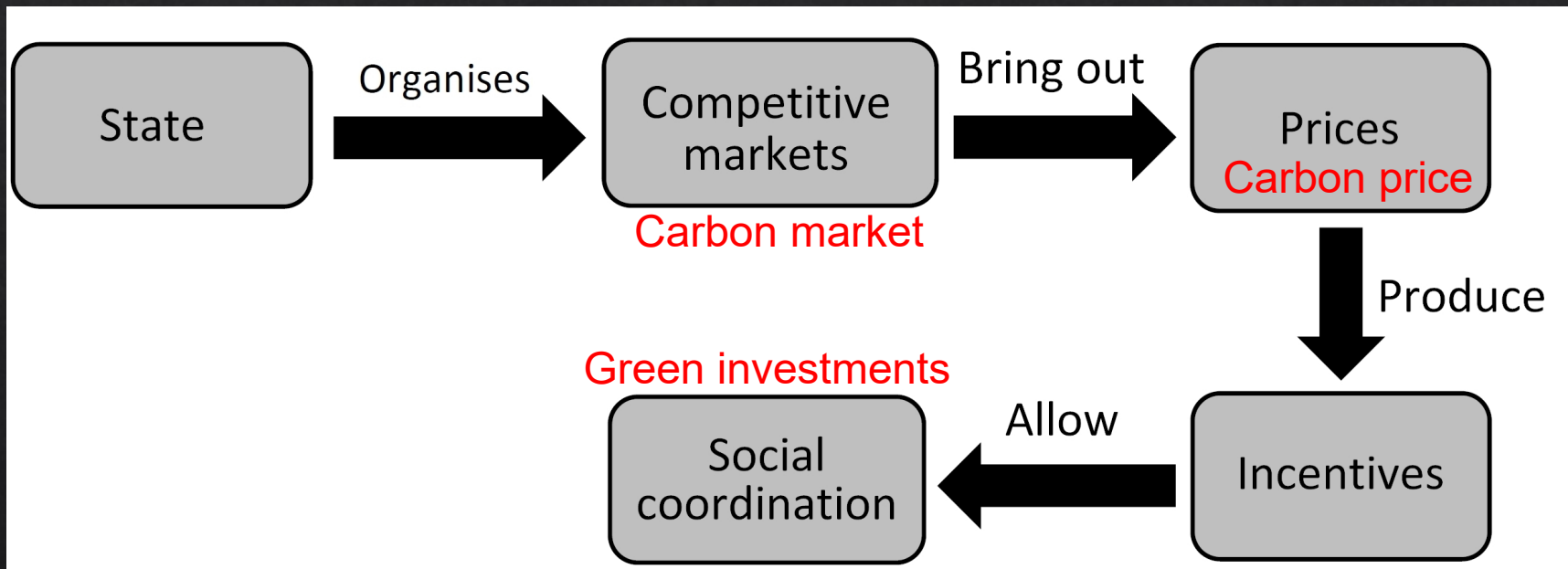
- **Heterodox economics**: the cost of the green transition necessitates an alternative financial and monetary system.

Green transition should be part of **monetary policies objectives** and central banks actions ([Scialom 2022, 2023](#)).

Money creation should help financing green investments ([Couppey-Soubeyran et al. 2024](#)).

The debate from an institutional perspective

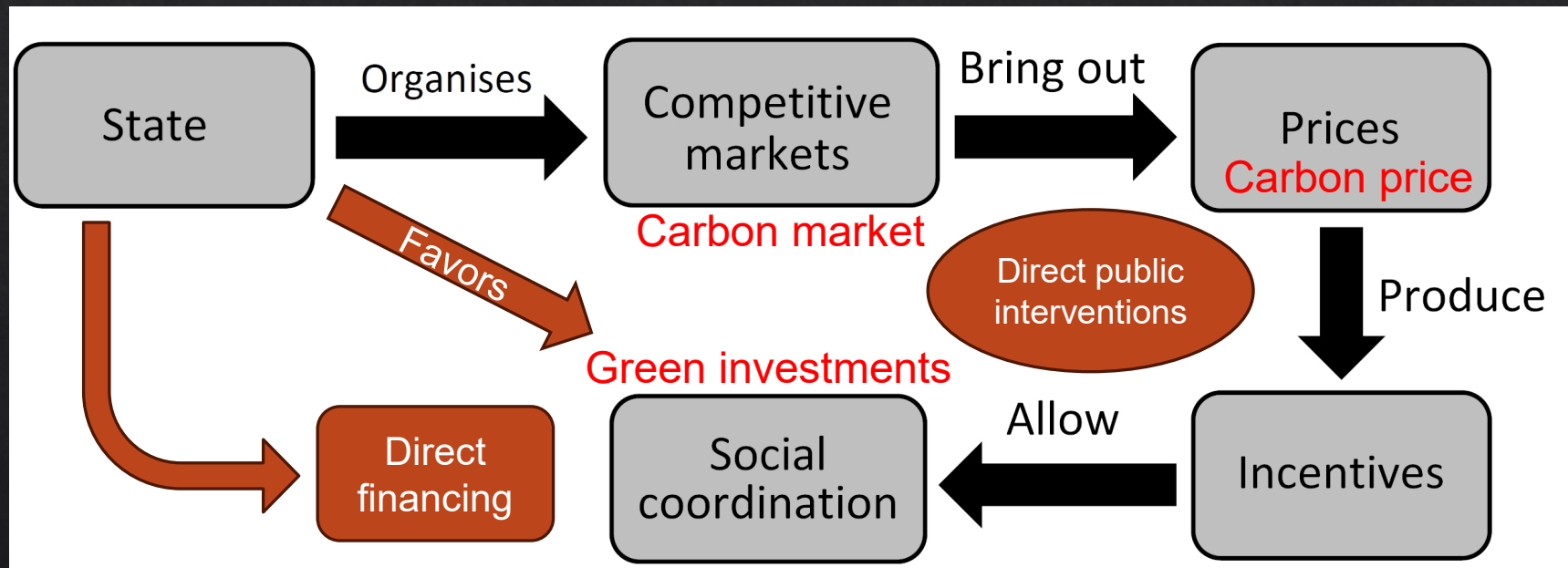
- ◆ The logic of a market economy and the **mainstream view**
 - A decentralized mechanism that produces collective decisions from individual market choices.



A representation of the **neoliberal logic** (Cayla 2023, p. 49)

The debate from an institutional perspective

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 - A decentralized mechanism that produces collective decisions from individual market choices.



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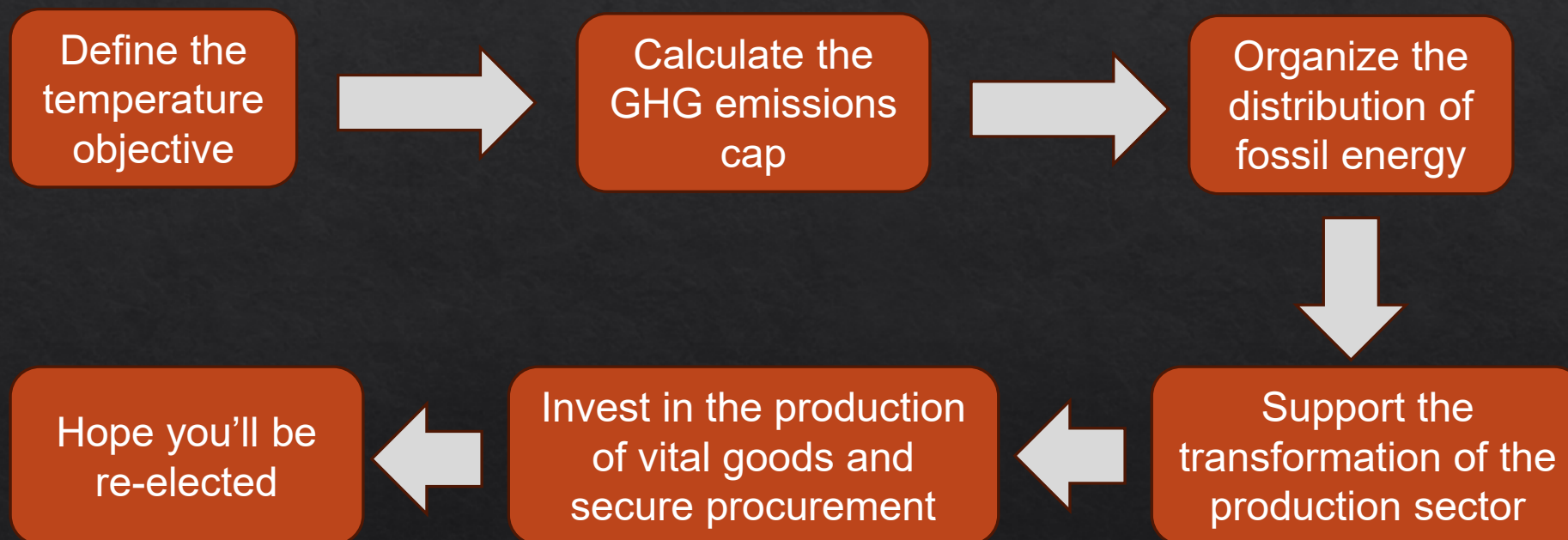
The debate from an institutional perspective

The **real questions**: how to cope with the social cost of the green transition?

- ◆ The **single price issue**: how do we prevent agents from emitting GHG?
 - If the price is too high, some legitimate uses of carbon emissions will not be fulfilled (ex: production of vital goods)... whereas the wealthiest can continue to overconsume.
 - If the price is too low, there is no guarantee that zero emission consumption will prevail and that the green transition will happen.
- ◆ The **social acceptance of constraints**.
 - From a “cap and trade” (CAT) principle to a “cap and organize” (CAO) logic.
 - Implementing a **limited purchasing power of money** (cf. complementary money, [Olk et al. 2023](#))

The debate from an institutional perspective

An institutional perspective to implement the green transition



Thank you
for your attention