

Transition costs and funding: an assessment for France

Bologna – 6 october 2023

Based on « The economic implications of climate action »
Report to the French Prime minister - Jean Pisani-Ferry - Selma Mahfouz

Methodology and context

- Report commissioned by the French Prime minister to “improve our understanding of the macroeconomic impacts of mitigation policies for better informed decisions”.
- Focus on impact of reduction in GHG emissions (Net zero)
- Institutional environment: General Secretariat for Ecological Planning, revision of the National Low-Carbon Strategy
- Experts from government departments, economic institutes, academic community
- A dozen thematic reports (Competitiveness, Adaptation, Distributive effects, Inflation, Labor market, Productivity, Sufficiency...)
- Bottom up approach >> Specify sectoral policies to be implemented to achieve targets
- Quantify the investment needs and economic impacts of these policy measures

The costs of the transition to net zero

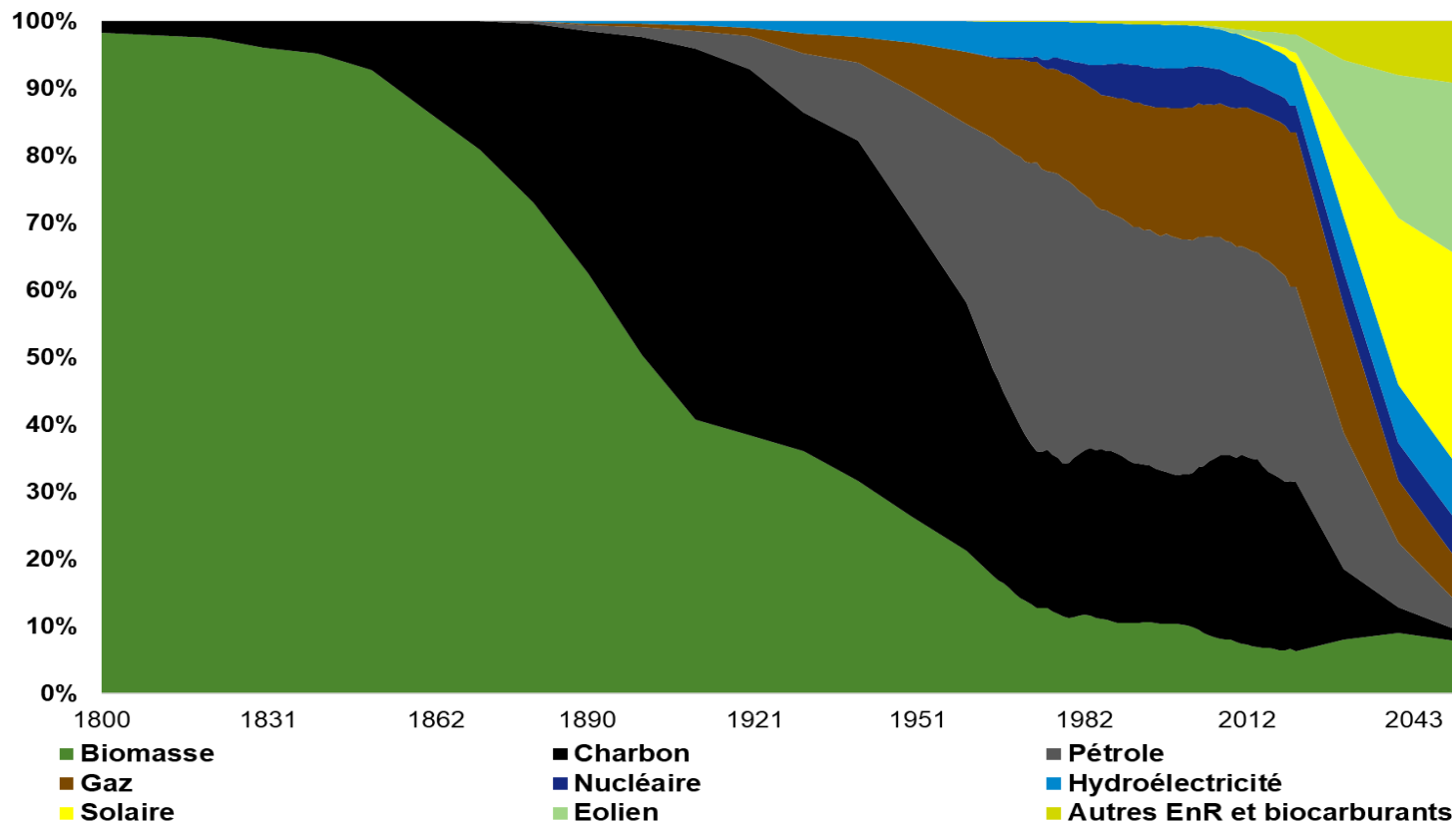
- 1- Why
- 2- How much
- 3- Who will pay

1- Transition to net zero: an industrial revolution

But two important differences :

- twice as fast (graph),
- driven by public policies rather than technological innovations

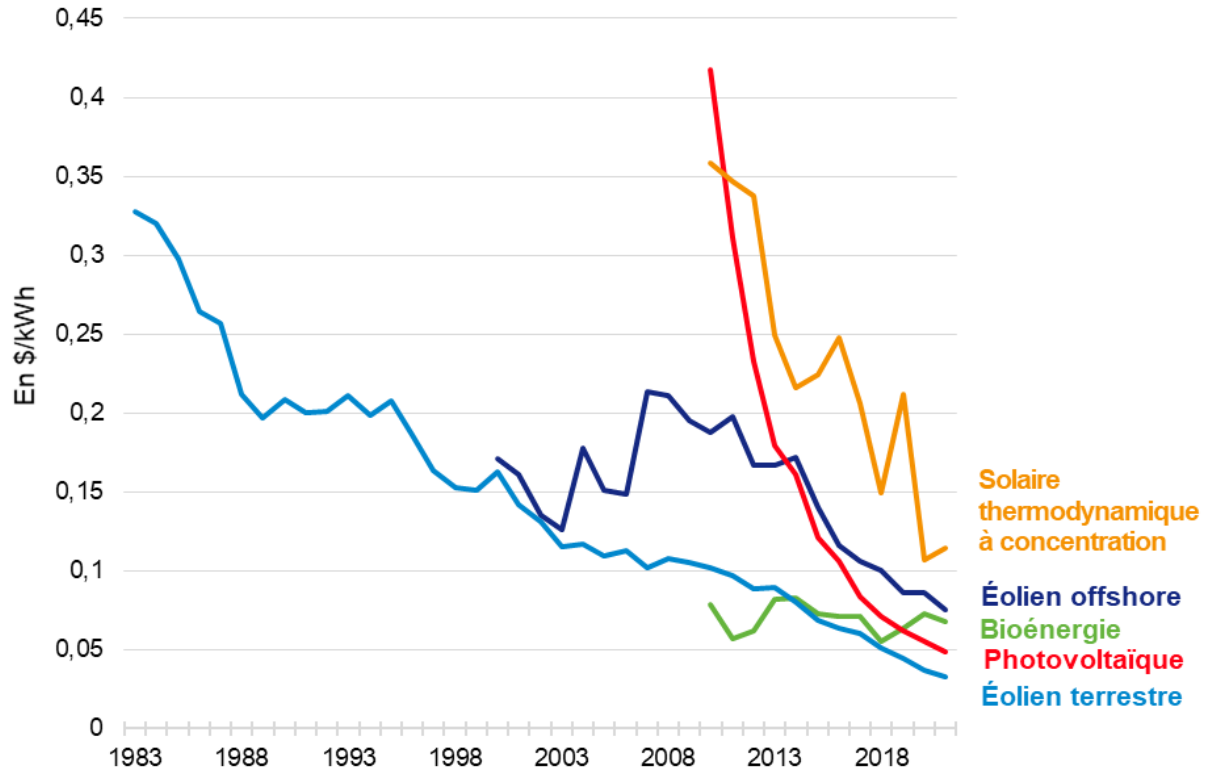
World energy mix, 1800 to 2050 (Net Zero scenario)



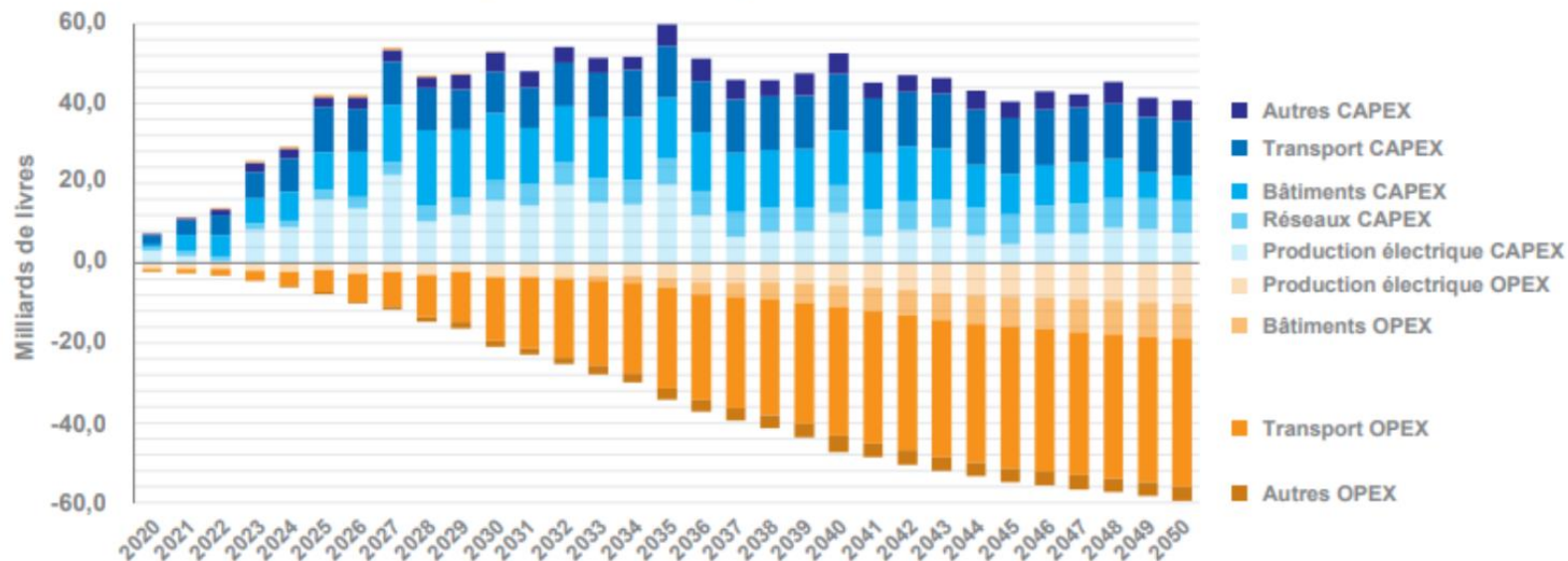
2- Three economic mechanisms

- ***Redirecting technical progress*** towards green technologies (after 2030)
>> decline in costs of renewables (cf. graph)
- ***Sufficiency***, defined as reducing energy consumption over and above what would result from energy efficiency gains:
 - required changes in practices and collective norms,
 - < 20% of emissions reduction by 2030
- ***Substituting capital for fossil fuels*** (cf. graph CCC)
= main mechanism in next 5 to 10 years

Cost of different technologies (excluding backup and system costs)



Additional investment (CAPEX) – Reduced user costs (OPEX) Balanced pathways scenario Climate Change Committee, 2020-2050



Note : CAPEX = *capital expenditures/dépenses d'investissements* ; OPEX = *operational expenditures/coûts d'exploitation*.

Source : CCC (2020), *The Sixth Carbon Budget*, op. cit, Figure 5.3., en livres sterling constantes de 2019

2. Climate Change Committee (2020), *The Sixth Carbon Budget: The UK's Path to Net Zero*, rapport, décembre, 448 pages.

3- Investments for the transition

- Significant additional investment in the next decade
60 to 70 bn euros annually by 2030 (> 2 % of GDP) (cf. table)
- To replace fossil fuels
 - not to increase production capacity
 - nor to enhance labor or capital productivity
- **>> -1/4 point of labor productivity growth over the transition period**

Additional Investments

| <i>billion euros</i> | Additional investments in 2030 |
|---|---|
| Public buildings | 10 |
| Infrastructures | 7 |
| Renovation of housing (heating and insulation) | 21 |
| Renovation of buildings (private non housing) | 17 |
| Electric vehicles for households | -8 |
| Electric vehicles for firms | 4 |
| Industry and energy sectors | 13 |
| Agriculture | 2 |
| TOTAL | 66 |

4- Climate transition is inherently a source of inequality

- Rules and standards not less painful than carbon taxes
- Fair transition requires:
 - sharing the sacrifices and
 - being able to finance alternative solutions
- For middle-class households, renovating homes and changing heating systems or acquiring an electric instead of a conventional vehicle, both require investing about a year's income.
- Even if the investment is cost-effective, its financing may not be accessible without public support.

Gross cost of transition for households

| Operation | Gross Investment (euros) | Relative to annual income Low income households (D1-D2) | Relative to annual income Middle class households (D4-D5) |
|-------------------------------------|---------------------------------|--|--|
| Housing renovation | 24 000 | 146 % (6 %) | 82 % (3 %) |
| Change of heating system | 13 000 | 79 % (3 %) | 44 % (2 %) |
| Purchase of electric vehicle | 35 000 | 213 % (13 %) | 120 % (8 %) |

5- Fiscal impact

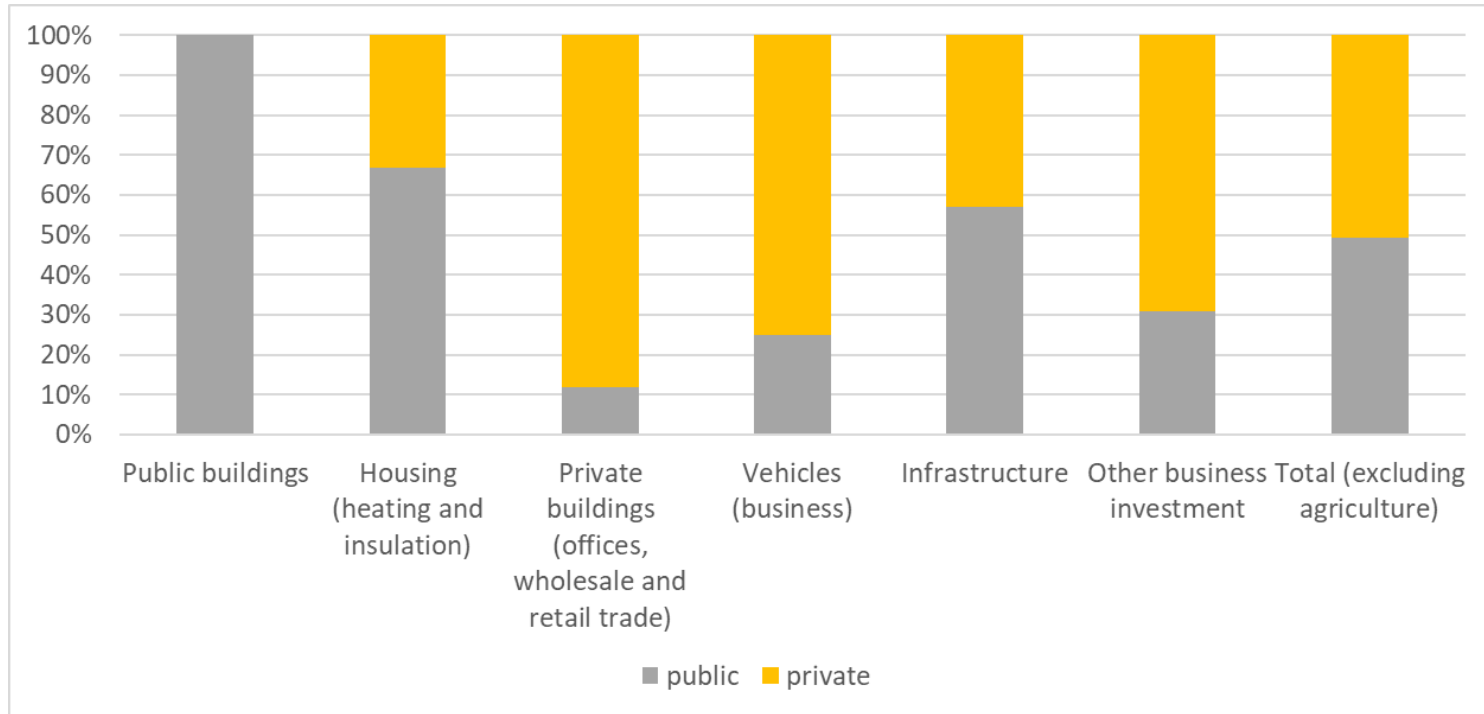
- No “double dividend”
- Sharing of additional investment (public buildings, households and SMEs support, infrastructures...)
>> increase in public spending of 1 point of GDP

- Temporary revenue reduction due to slower economic growth

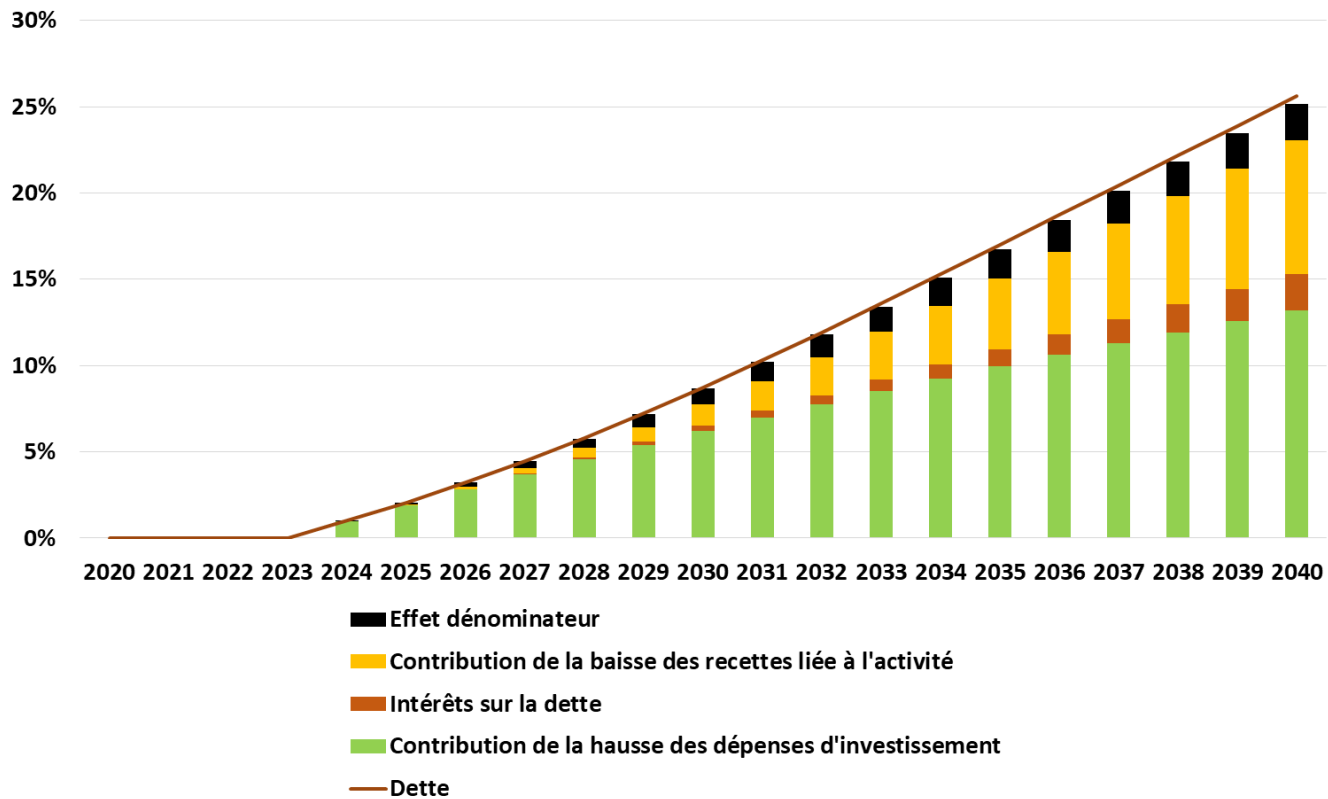
>> Risk on public debt is approximately 10 percentage points of GDP by 2030

(assuming that the decline in energy-related revenue is offset through activating new resources)

Distribution of future costs between private and public sectors



Hausse de la dette et contributions (en points de PIB)



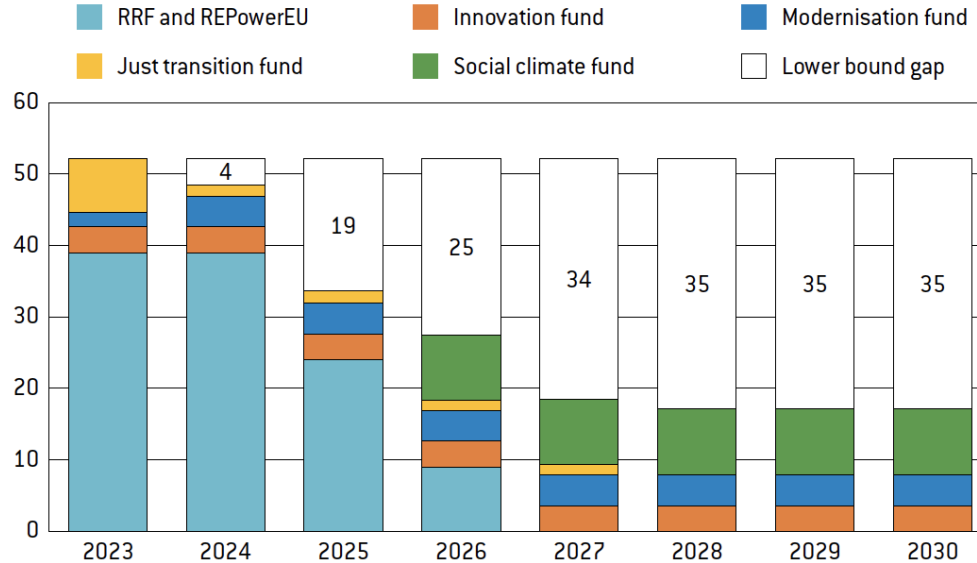
5- Financing

- Reallocation of expenditures, including of fossil fuel-related budgetary and tax expenditures (estimated to be at least €10bn per year in France, or one-third of a percentage point of GDP),
- Increase in public debt
- Financial engineering
- Temporary increase in taxation, e.g. one-off levy on financial assets of the upper decile
- A discussion also at the European level?

Spares

European financing is significant but set to decline sharply in coming years

Figure 4: EU climate grants: the sharp post-RRF decline (€ billions)



Source: Bruegel based on the European Commission (2020a) and Baccianti (2023). Note: All numbers are in current prices. The split of RRF and REPowerEU funding by year was done using Carrión Álvarez's estimates (2020).

7- Climate transition poses a risk of inflationary pressure

- Transition between energy sources
- Supply and demand effects
- Measurement issues (quality / price effects)

Implication for monetary policy:

- conduct monetary policy with caution
- likely need to raise temporarily inflation target

4- Further research is needed to improve the toolbox for assessing the economic impacts of climate action

- Proper understanding of the effects of the climate transition requires combining different levels of analysis:
 - technical, sectoral, sometimes local, as well as macroeconomic and international, given competitiveness and coordination issues
- Approach developed in the report:
 - Specify required policy measures
 - Bottom-up approach
- Preliminary results – further research needed

8- The European Union faces a serious competitiveness challenge

- High energy prices
- CBAM is an imperfect instrument that limits carbon leakages but does not fundamentally address the competitiveness issue
- The European industrial strategy is challenged by the IRA
- The European Union cannot preserve its competitiveness while being at the same time
 - a champion of climate,
 - a champion of multilateralism and
 - a champion of budgetary virtue

Carbon prices

**Tableau 7 – Prix moyen du carbone en 2021 :
Espace économique européen, Royaume-Uni, États-Unis et Chine**

| | Part des émissions couvertes par un instrument de tarification | Prix explicite moyen des émissions couvertes | Revenu moyen par tonne de carbone pour les émissions couvertes | Prix effectif moyen |
|-------------|---|---|---|----------------------------|
| EEE | 50 % | 64,3 \$ | 32,8 \$ | 32,1 \$ |
| Royaume-Uni | 43 % | 55,5 \$ | 45,2 \$ | 23,9 \$ |
| États-Unis | 7 % | 21,2 \$ | 13,0 \$ | 1,5 \$ |
| Chine | 36 % | 7,1 \$ | 0,0 \$ | 2,5 \$ |

Source : Calculs I4CE sur la base des [Comptes mondiaux du carbone en 2022](#). Le prix explicite moyen des émissions couvertes (colonne 3) tient compte des allocations gratuites. Le prix effectif moyen (colonne 4) fournit une estimation du coût d'opportunité auquel sont confrontées les entreprises.

9- Coordination between European and national policies to be revisited

- The EU sets the objectives and defines the framework
- Member states implement and finance

10- Conclusion

- There is no permanent trade-off between growth and climate
- But the next ten years will be difficult
- Need to be clear about the costs and risks
- Equity is paramount. Set principles and debate
- Also a European debate