

Workshop on methodologies for socio-economic evaluation of climate change policies and measures

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Experience from France

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Economic evaluation in PAMs reporting: European and UNFCCC requirements

- Article 13 of MMR regulation:

« 1. By 15 March 2015, and every two years thereafter, Member States shall provide the Commission with the following: [...]

(vi) **where available**, estimates of the projected costs and benefits of policies and measures, as well as estimates, as appropriate, of the realised costs and benefits of policies and measures; »

- UNFCCC reporting guidelines on national communications

« 24. Parties **may also** provide information under the headings below for each policy and measure reported:

(a) Information about the costs of PAMs. Such information should be accompanied by a brief definition of the term 'cost' in this context;

(b) Information about non-GHG mitigation benefits of PAMs. Such information may include, for example, reduced emissions of other pollutants or health benefits. »

→ no requirements on the methodologies to be used to assess benefits and costs of PAMs

Economic evaluation in PAMs reporting in France

- For 2015 MMR report, we reported costs for the following PAMs:
 - Calls for projects to finance public transport infrastructure
 - Fund for renewable heat
 - Farms competitiveness and adaptation plan
- Only direct public costs were reported
- These are PAMs for which it is easy to get this information (financing measures for which total distributed money is known)

→ There is room for improvement regarding economic evaluation in PAMs reporting

Economic evaluation in PAMs reporting

Difficult for France but also for other Member States

Table 4.1 Number of PAMs reported with projected and/or realised cost estimates per sector

	Belgium	Czech Republic	Estonia	Finland	France	Total
Energy consumption	2	13	5		1	21
Energy supply	2	9	10		2	23
Transport	1	18	8	1	2	30
Industrial processes		1				1
Waste		1	3			4
Agriculture						
LULUCF			12			12
Cross-cutting		2				2
Total	5	44	38	1	5	93

Source: EEA, 2015, 'EEA viewer of climate change mitigation policies and measures in Europe' (<http://pam.apps.eea.europa.eu>).

Beyond reporting

Beyond reporting, various types of economic evaluations are carried out:

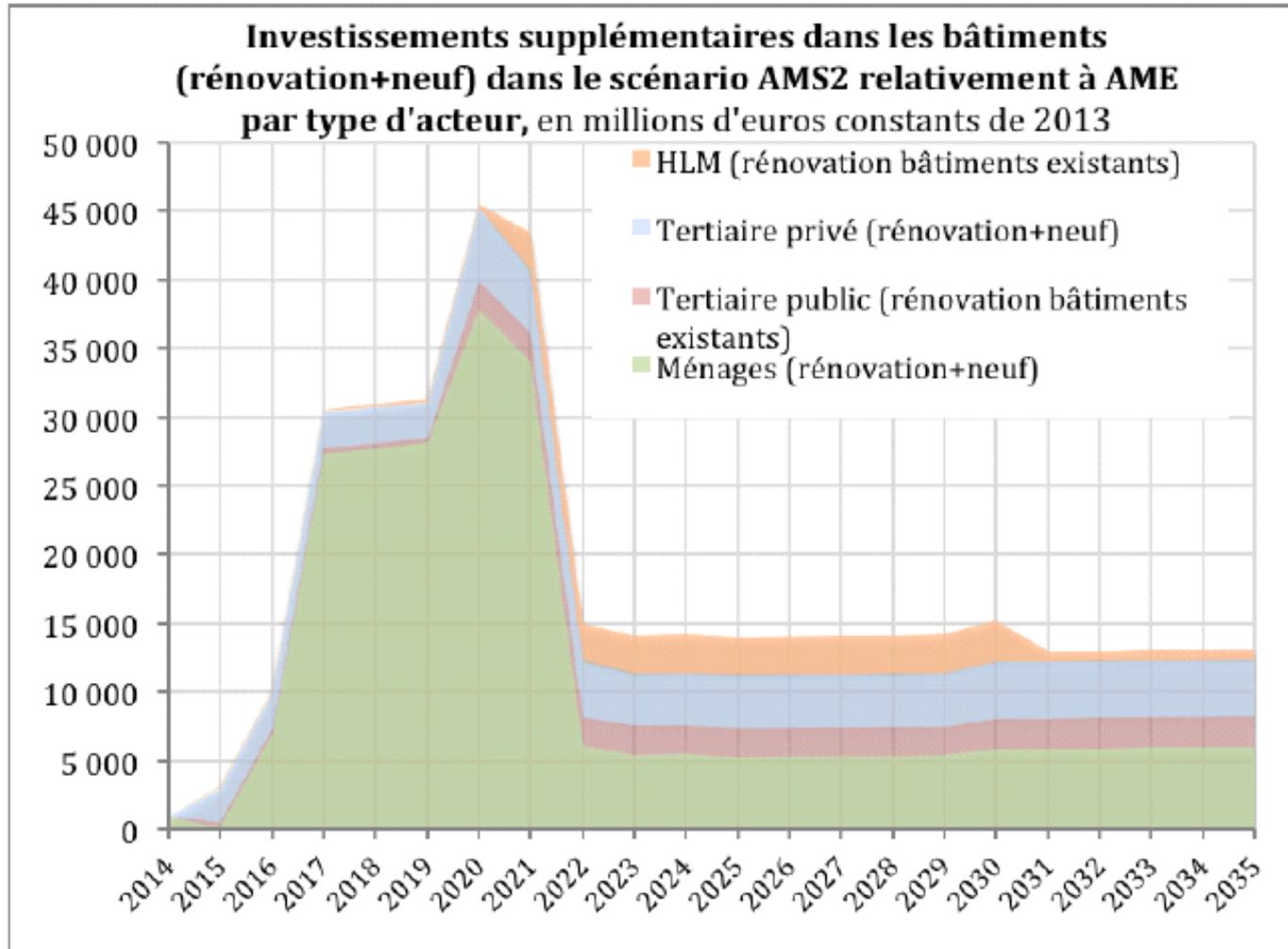
- Macroeconomic evaluation of scenarios
- Economic evaluation of noteworthy draft measures prior to their adoption
- Socio-economic evaluation, particularly for transport projects

Macroeconomic evaluation of scenarios

Estimate of the total macroeconomic effect of policies and measures constituting the « with existing measures » and the « with additional measures » scenarios:

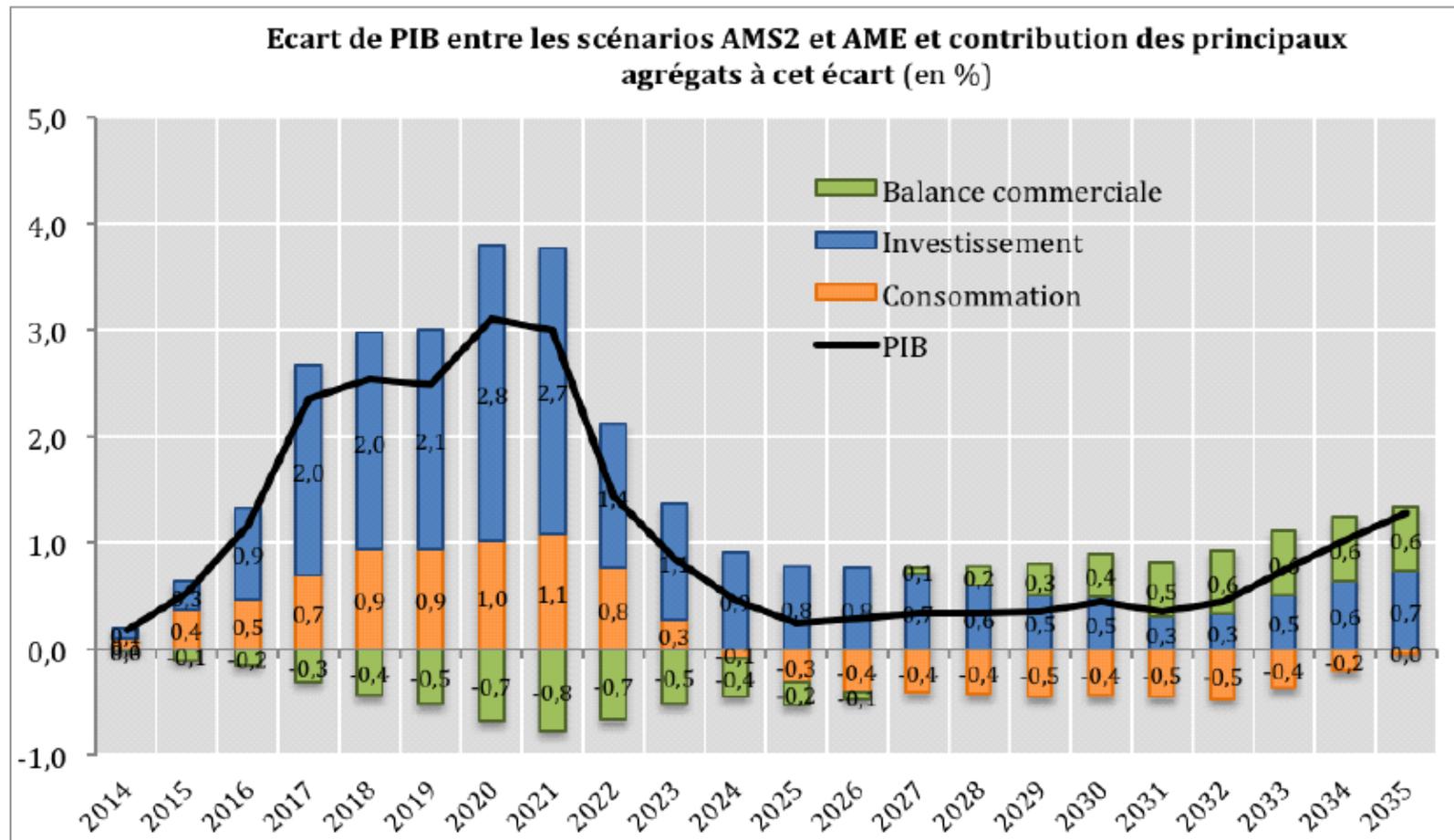
- **Estimates of investments in building, transport, industry, electricity production**
- **Impact on employment**
- **Impact on consumption**
- **Impact on trade balance**
- **Impact on GDP**

Macroeconomic evaluation of scenarios



Macroeconomic evaluation of scenarios

Figure 13 : Ecart de PIB entre AMS2 et AME



Source : SEURECO/ Erasme

The economic evaluation of an emblematic measure: the carbon taxation scheme

- The carbon component of the energy taxation scheme

France has implemented since 2014 this taxation scheme, progressive and proportional to the CO₂ content of fossil fuels, designed to encourage energy efficiency initiatives and the development of low-carbon solutions in the road transport and construction sectors.

2014	2015	2016	2020	2030
7€/tCO ₂	14,5€/tCO ₂	22€/tCO ₂	56€/tCO ₂	100€/tCO ₂

The evaluation of an emblematic measure: the carbon taxation scheme

- An economic evaluation of the measure was initially carried out in 2009 to enlighten policy-makers on its effects on households, firms, tax income, growth, employment.
- The evaluation underlined that the economic impact of the measure is positive and was used to consider several options for revenues use.

Tableau 4 : Impacts de différentes options de recyclage sur l'activité, l'emploi (mesuré en équivalent temps plein) et la consommation des ménages pour une CCE de 400€/tCO₂

Réforme		Recyclage "mixte"	Baisse des CS et crédit d'impôt	Baisse des CS, crédits d'impôts et transferts ciblés
Produit intérieur brut (en volume)		+0,6%	+1,4%	+1%
Emplois créés (ETP)		587 000	822 000	759 000
Consommation	ENSEMBLE	+0,4%	+0,7%	+0,7%
	Mén. pauvres (F0-5)	+3,0%	+1,8%	+3,0%
	Mén. Modestes (F5-35)	+1,7%	+1,2%	+2,2%
	Mén. Médiants (F35-65)	+0,2%	+0,4%	+0,6%
	Mén. Aisés (F65-95)	+0,2%	+1,0%	+0,3%
	Mén. Riches (F95-100)	+1,5%	+2,8%	+1,9%

Source : *Economie d'une fiscalité carbone en France*, Jean-Charles Hourcade, CIRED, 30 juin 2009

The evaluation of an emblematic measure: the carbon taxation scheme

- The measure implemented in 2014 is not exactly the same as the measure assessed in 2009.
- A complete evaluation, as the one conducted in 2009, is a long and resource-consuming process.
- What was important was not the exact effect of the measure but the consensual finding that it has not a negative impact on the economy.

The general framework for socio-economic evaluation in France

- Traditionally developed for and applied to transport projects since the 1960s
- Programming Bill adopted on 31 December 2012 setting down the multiannual guidelines for public finances implies that all projects of public investment are subject to prior socio-economic assessment.
- Works lead by the Commissariat général du plan (reports « Boiteux 1 (1994) », « Boiteux 2 (2001) », and « Lebègue (2005) ») have defined the principles of socio-economic evaluation.
- Works by the Centre d'analyse stratégique (report « Quinet (2008) » on carbon price, report « Chevassus-au-Louis (2009) » on the value of biodiversity, report « Gollier (2011) » on risk) helped to clarify certain rules and set the value of a number of essential parameters.
- More recently, the report of the General Commission for the strategy and prospective in September 2013 on "socio-economic evaluation of public investment", under the authority of Professor Emile Quinet, lays down the principles of its extension to areas other than transport and updates the reference values for externalities.

The general framework for socio-economic evaluation in France

Main steps of socio-economic evaluation:

- Identify economic agents impacted by a project: the State, firms, individuals
- analyse the consequences of the project for each category of agents identified,

State	Costs of the project Impact on taxes
Firms	Impact on production costs, competitiveness, production capacity
Individuals	Impact on prices or revenues Time saving, comfort, safety, Environmental externalities : air quality, GHG, noise

- then evaluate these consequences in monetary terms (market effects and non-market effects valued through reference values)
- Finally, assess the balance between the positive and negative consequences.

The general framework for socio-economic evaluation in France

The shadow price of carbon: Quinet report

Shadow price is a reference value set by the State through a normalised approach

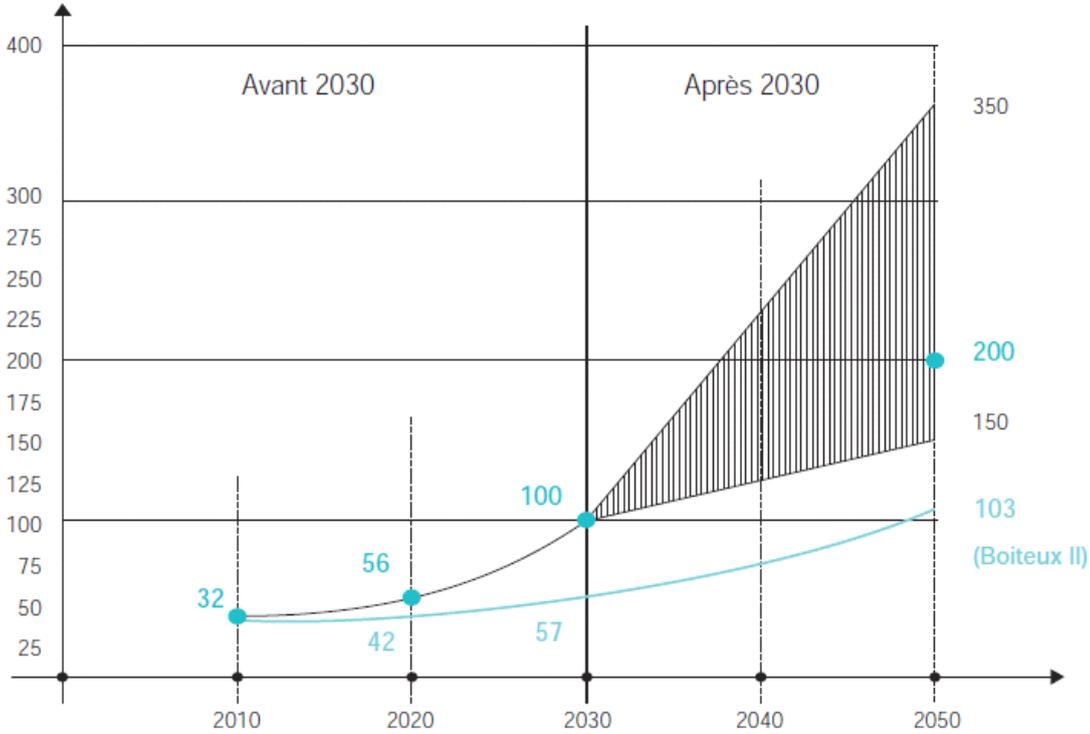
Three methods can be used to set a shadow price of carbon:

- Cost-benefit analysis, as used in the Stern report. Depends on the discount rate
- Cost-effectiveness approach: price is set based on a political objective. This approach has been used by the US government
- Mixed approach: price is set based on modeling taking into account the political objective, the geographical perimeter of the objective and technologies.

Approach chosen by France.

The general framework for socio-economic evaluation in France

The shadow price of carbon: Quinet report



Source : Centre d'analyse stratégique

The general framework for socio-economic evaluation in France

What can we learn for the evaluation of climate change policies?

- Socio-economic evaluation enables to highlight cobenefits of climate change policies: positive impact on local air pollution, noise, etc.
- It must be noticed that socio-economic calculation is currently very limited in its scope of use. It is mainly applied to transport sector, and often restricted to investment choices.
- The practice of socio-economic evaluation for sectors other than transport and for policies other than public investments such as technical regulations or pricing remains to be developed.

Example of a socio-economic evaluation: bike-share systems

Bike-share systems have becoming increasingly popular in French cities for a few years

A socio-economic evaluation of the systems has been carried out in 2010. It leads to the following results:

	By bike (in €/year)	For the whole 2008 fleet (32 000 bikes) (in M€/year)
Investment and exploitation costs	-2 500	-80
Opportunity costs of public fund	-670	-22
Road unsafety	-10	-0,3
Total costs	-3 180	-100
Benefits for cyclists (time saving)	2 430	80
Reduced congestion of public transport	820	25
Reduced congestion of roads	110	3
Noise	5,6	0,14
Air quality	11,4	0,28
GHG	3	0,075
Total benefits	3 380	110
Total	200	10

Example of a socio-economic evaluation: bike-share systems

Conclusions:

- The measure achieves a reduction of 2 800 tCO₂ per year.
- The GHG mitigation impact of the measure is small, particularly when monetarised and compared to the other impacts.
- The interest of the measure lies in criteria other than carbon reduction. The socio-economic evaluation is an adapted method to bring out the relative weights of the different categories of impacts.
- The development of bike-sharing is combined with other measures for the development of bicycle use (development of bicycle paths, secure parking for bicycles...). Reciprocal spillover effects of these policies and their costs are difficult to assess and could not be integrated in the evaluation.

Conclusions

- There is clearly room for improvement with regard to socio-economic evaluation of climate change policies and measures.
- It is difficult to carry out complete evaluations for each PAM (time-consuming, availability of data, difficulty to separate the effects of the measures, etc.).
- It is however particularly enlightening to assess the whole impact of a measure. Conclusions are not necessarily the same when you consider only GHG than when you consider the full effects. Some indirect effects impacting GHG may also be missed out if the evaluation is too narrowed (typically « deadweight effect », « rebound effect », impact on carbon footprint, interactions with other measures, etc.).
- If we cannot carry out complete evaluation of each PAM (with precise quantification and monetarisation of effects), it is important to lead qualitative analysis of the effects of PAMs in order to grasp their mechanisms of actions.

END



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