THE POLITICAL ECONOMY OF THE 2009 FRENCH CARBON TAX PROJECT

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2012
ENVIRONMENT DIRECTORATE
ENVIRONMENT POLICY COMMITTEE

Working Party on Integrating Environmental and Economic Policies

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19-20 November 2012
OECD Headquarters, Paris

This paper was written by Dominique Bureau of École Polytechnique and Conseil économique pour le développement durable, Paris. It discusses the political economy of the carbon tax project elaborated in 2009 in France, and it contributes to two separate projects at the OECD:

• An ongoing project on lessons on environmental policy reform, under the auspices of the Working Party on Integrating Environment and Economic Policies; and

• A new project on the political economy of environmental taxes, under the auspices of the Joint Meetings of Tax and Environment Experts.

Delegates are invited to provide comments in writing by 10 December 2012. It is planned to release this study as an ENV Working Paper.

ACTION REQUIRED: For discussion.

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NOTE FROM THE SECRETARIAT

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1. In autumn 2009, as part of the preparation of the Finance Act for 2010, the French Parliament adopted a proposal of a carbon tax. The corresponding mechanism would have applied to the sectors which were not already covered by the European cap and trade system for CO\textsubscript{2} emissions (EU ETS), that is to say domestic emissions, including residential and tertiary sectors, household emissions related to the use of fossil fuels for heating, and fuel used for transportation. Based on a price per tonne of CO\textsubscript{2} of EUR 17, in line with what was then the expected medium term price on the ETS market, it was planned that the revenues of the tax coming from the households overall would be given back to them under the form of lump-sum tax credits.

2. This project was a commitment of the first “Grenelle de l’environnement” law (2009), which had established that the creation of an eco-tax, as proposed in the Environmental Pact of the Nicolas Hulot Foundation during the 2007 presidential campaign, and called “climate-energy contribution” (CEC), should be studied; and that its implementation would be strictly compensated by the reduction of other taxes, to preserve the purchasing power of households and business competitiveness, according the directions set by the President at the conclusion of the Grenelle Environment Forum.

3. This case study reviews the economic issues and political economy problems that Green Tax Reforms should solve. In this perspective, the general economy of this carbon tax is first considered, with particular focus on the choice of the tax level. Next, acceptability issues, in particular for households, are studied, before the question of the use of tax revenues is examined more generally.

1. The global economy of the carbon tax project

4. The introduction of a carbon price in France was justified in the “Grenelle de l’environnement” context:

   • for economic reasons, to minimise the cost of achievement of the targets that had been adopted in the framework of the European “Climate-Energy package”, of reducing by 14\% the French CO\textsubscript{2} emissions which were not covered by the European trading system for CO\textsubscript{2} emissions permits (EU ETS);
   • for ecological reasons, because it is basically through a price-signal reflecting environmental scarcities that emissions behaviours can be changed;
   • and also for industrial reasons, because a carbon tax is a tool to guide investment and innovation toward energy transition.

5. At the conceptual level, the basis for this type of instrument is the observation that, in presence of pollution, the functioning of the markets is not yet efficient, because each agent ignores the damages it creates for others. To correct this situation, it is necessary that polluters are made responsible for the costs of damages they cause to other agents, present or future. This can be done through green taxation, by the

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1. This was a broad-based environmental roundtable discussion initiated by the former President Nicolas Sarkozy in the summer of 2007.
means of incentive eco-taxes. Ideally, their rate should be calibrated to the cost of damages associated with an additional unit of pollution (marginal cost of damages), following the “Pigouvian rule”, so called by reference to Pigou (1920) who first developed these concepts almost one hundred years ago.

6. Therefore, such eco-taxes have no revenue purpose. They seek only to “internalise” the costs of environmental degradation by the agents that are responsible for it. Contrary to other environmental policies, such like command and control regulations or subsidies, the use of environmental taxation is cost-effective, since it realises the distribution of efforts which minimizes the cost necessary to achieve a given environmental objective.

7. Moreover, the fact that, at the time of the “Grenelle de l’environnement” forum, the Stern Review (2007) had convinced policy makers that climate-change policies could be assessed in standard terms of costs-benefits analysis had also suggested that the “polluter-payer principle” approach could apply to reduce greenhouse gases emissions, in particular to implement the commitment that France had taken of reducing its domestic emissions outside of the EU ETS by 14%. These represent 65% of total French CO₂ emissions (Figure 1). Moreover, they are those emissions whose tendency is the most dynamic, since the concerned sectors are mainly transport (35% of emissions), the residential and tertiary sectors (25%) and, to a lesser extent, agriculture and waste management.

8. Despite specific excise duties on energy, the French fiscal system did not include a real carbon price. For example, it should be kept in mind that diesel or gasoline taxes internalise other external costs, such as noise, road safety, local pollutions and, in the first place, traffic congestion. Hence, the rationale of these existing taxes is infrastructure charging, or public funding, not carbon pricing. In addition, levels of taxation on natural gas, oil and coal appeared particularly low in France. Consequently, this tax project aimed to remedy this situation, by introducing a specific carbon price.

9. Unfortunately, this reform was rejected by the Constitutional Court, in a decision of 29 December 2009. In contrast to an economic analysis that establishes that the price of quotas in a “cap-and-trade” system depends only on the global quota, the Court thought that the rule used for allocating quotas would impact the size and structure of abatement efforts in the context of the EU ETS. Therefore, the Court considered that, as long as grandfathering prevailed for the quota allocations, firms within the EU ETS
were not really induced to reduce their emissions, so that, from the Courts point of view, it was not equitable that firms belonging to sectors included in the ETS were exempted from the carbon tax.\textsuperscript{2}

10. The Ministry for environment, under the management of Minister Chantal Jouanno, then tried to adapt the carbon tax project to answer these criticisms. But she could not find a satisfactory solution, because submitting these firms to a carbon tax would have had competitiveness drawbacks for French economy, without any environmental benefit, since the total emissions for these sectors were set at the European level, by the overall ceiling of the EU ETS. Moreover, with the economic crisis, the climatescepticism lobbying, and pressures from the agricultural sector, the political context had become less in favour of environmental issues, and, at the end of March 2010, the Prime Minister announced the withdrawal of the project.

11. These legal issues remain critical in France. In addition, similar issues have been important repeatedly over the last ten years, against all attempts to implement new environmental policies based on economic incentives or the price signal: the legality of the incentive charges of water-basin agencies which had been created by the Water Act of 1964 had been questioned; the tax project on polluting activities in 2000 had been rejected; and the Arcelor case has shown that the transposition of the European Directive implementing EU ETS was indeed fragile.

12. It is therefore urgent to find solutions to these legal problems in France. Work with lawyers is needed to overcome the misunderstandings between legal and economic analysis, and to define a shared doctrine. However, these issues appear to be very specific to the French context. They will not be detailed further, and it is more interesting here to look back on the economy of the tax proposal.

\textbf{1.1 Conclusions of the Rocard Commission}

13. To prepare this project, the government had put in place an original process, combining an “experts conference” on 2 and 3 July 2009, and then a Commission with stakeholder representatives (environmental and consumers NGOs, business sector, trade unions) and Members of Parliament. The summary of this Commission, chaired by former Prime Minister Michel Rocard, reflects the nature of the consensus that had been established. The roundtable exceeded the strict circle of environmental experts, although it still remained limited to decision-makers particularly interested in Green Tax Reform or environmental challenges.

14. The report of this Commission noted at the outset that:

\begin{quote}
“Under the Grenelle Environnement process, France is committed to divide by four its greenhouse-gases emissions in 2050, what is consistent with scenarios and constraints considered by the IPCC. This requires an unprecedented shift in our patterns of production and consumption of fossil fuels,
\end{quote}

\textsuperscript{2} The precise sentence was: « Considérant que des réductions de taux de contribution carbone ou des tarifications spécifiques peuvent être justifiées par la poursuite d'un intérêt général, tel que la sauvegarde de la compétitivité de secteurs économiques exposés à la concurrence internationale ; que l'exemption totale de la contribution peut être justifiée si les secteurs économiques dont il s'agit sont spécifiquement mis à contribution par un dispositif particulier ; qu'en l'espèce, si certaines des entreprises exemptées du paiement de la contribution carbone sont soumises au système d'échange de quotas d'émission de gaz à effet de serre dans l'Union européenne, il est constant que ces quotas sont actuellement attribués à titre gratuit et que le régime des quotas payants n'entraînera en vigueur qu'en 2013 et ce, progressivement jusqu'en 2027 ; qu'en conséquence, 93 % des émissions de dioxyde de carbone d'origine industrielle, hors carburant, seront totalement exonérées de contribution carbone ; (…) que, par leur importance, les régimes d'exemption totale institués par l'article 7 de la loi déférée sont contraires à l'objectif de lutte contre le réchauffement climatique et créent une rupture caractérisée de l'égalité devant les charges publiques ». 

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which makes it necessary to implement the most effective policy tools: to mobilise the possible reductions of emissions following their merit order, in terms of cost per tonne of carbon avoided; to stimulate innovation and provide benefits to our industry in the field of green technologies; and to contribute to our security of supply for products which Europe, and especially our country, are particularly dependent.”

15. This led the Commission to unanimously agree the principle of the reform, that is to say establishing a carbon price signal through a new specific duty perceived upstream, in addition to existing excise duties on fossil fuels. This Climate Energy Contribution (CEC) would apply to all CO₂ emissions, except those already included in the EU ETS.

16. Such an instrument appeared necessary to curb diffuse CO₂ emissions, and thus to respect the country’s “factor 4” commitments, at the lowest economic cost. The initially proposed trajectory of the tax rate was one recommended by the Quinet Report (2009) about the “social price of carbon emissions”: EUR 32 per tonne of CO₂ in 2010, or EUR 0.07-0.08 per litre, growing progressively to attain EUR 100 per tonne of CO₂ in 2030.

17. It was also stated by the Rocard Commission that:

“The principle that the reform should not increase the global fiscal burden to maintain economic competitiveness and household purchasing power is fundamental and unanimous. But there are nuances of interpretation about the way to implement it, beyond the agreement on the need to respect general budget principles such as universality or earmarking prohibition. From an economic point of view, the ideal use of the induced tax revenues is to lower existing taxes (or social assurance contributions) which are the most penalising for economic growth. But this recommendation cannot be completely applied in the first step of the reform process.

Redistribution of a part of the revenues, as possible on a lump-sum basis so as not to weaken the incentive impact of the price signal, has to be accepted for some households or sectors. Criteria for households could take into account the fact that the spatial location or the constraints on working hours are as sensitive as income to characterise most captive or most affected people, requiring compensations, or subsidies to engage energy transition. Such lump-sum compensations, if well-designed, are better than exemptions or tax reductions. The latter measures must be avoided, given the purpose of the project, and the need to make perfectly clear its economic logic.

The introduction of the CEC has for unique purpose reducing CO₂ emissions. Therefore, it should not be seen as the funding for the reduction of the local Corporate Tax (so-called “taxe professionnelle”). The distorting effect of the latter is recognised by most stakeholders, though not by all. Many of them stress the need for having a more comprehensive diagnosis on what should be the global fiscal shift in the medium term. However, the priority of the global fiscal reform should limit compensations to what is strictly necessary for the acceptability of the establishment of a carbon tax. In all cases, it is emphasised that the justification of the CEC project is mitigation of global warming. The legibility of this context conditions its acceptability.

To make visible the multi-year perspective of the project, the fiscal law should announce the rates of the carbon tax for the next five years, and these should be contextualised in the longer term in the presentation of the Act. Finally, it is recommended to establish an institution responsible for orientation and evaluation, to assess the impacts of the CEC in the eyes of economic evolution and environmental prospects. This institution should also go thoroughly into various topics which have been identified, such as: the treatment of other greenhouse gas emissions; the integration of CO₂ into the regulation of retail electricity prices; the link with transport infrastructure charges, to
efficiently guide mobility and location choices; and, of course, the definition of a shared vision of the future tax reform, to put the burden of the tax system more on pollutions and less on the factors of production and growth.”

1.2 What level for the carbon price?

18. The consensus among the experts, representatives of stakeholders, and policy-makers within the Rocard Commission was primarily a qualitative consensus on the nature and purpose of a carbon tax: such an instrument should have no revenue target; it was intended only to provide a signal to guide the behaviour of consumers and producers.

19. Its economic status would be that of a “price”, reflecting the scarcity of a resource, namely the importance of the climate for the development of human activities. It was not meant as a revenue-raising levy for the funding public expenditures or redistribution. Hence, its level should be set in relation to this scarcity, to reflect that additional emissions of greenhouse gases today are likely to be paid a high price tomorrow, in terms of infrastructures adaptation costs, or of management of climate refugees facing rising sea levels and water shortages. Moreover, delaying (relatively) cheap actions available now will need to be offset in the future by abatements of emissions of greenhouse gases emissions much more difficult to achieve.

20. The modelling exercises examined by the Quinet Commission (2009) had just quantified, in the state of the knowledge about damages costs and technological prospects, these trade-offs. On this basis, it was possible to estimate a level of the tax which was consistent with the quantitative objectives that had been set for the evolution of domestic CO₂ emissions.

21. This reference for the tax level of the climate-energy contribution has been often considered to be somewhat high. But it was indeed justified by reference to the amounts of efforts which are needed to achieve a stabilisation of greenhouse gases concentrations in the atmosphere. One should keep in mind that the ratio between the emissions trend (“Business-as-Usual”) and emission levels compatible with a target of 550 ppmₑ for 2050 is the order of 3. And it reaches 5 for 450 ppmₑ. Obviously, the price of carbon to be implemented is directly related (“dual”) with the objective that is set for the concentration of greenhouse gases or increase in temperature (2°C).

22. The recommended tax levels should also be compared with those used by other countries or in other sectors than those covered by the CEC. In this regard, it was noted that:

- the reference standards used by the European Commission or other European governments, for the same goal of 450 ppmₑ, lie in a range between EUR 20 and EUR 50 per tonne of CO₂ in 2020, or between EUR 85 and EUR 180 in 2050. All expect increasing values over time, with a rate of growth between 2% and 5%;
- the impact assessment of the Commission considered a rising carbon price, from EUR 26 per tonne of CO₂ in 2013 to EUR 39 per tonne of CO₂ in 2020 for Phase III of the EU-ETS. But this increase would apply to industries which are the most exposed to carbon leakage. A higher price for the CEC, which mainly affects domestic sectors, could therefore be justified. In addition, current prices (EUR 13 end June 2009, less today) thus appeared “abnormally low” compared to the objectives;
- the existing carbon taxes, or these to be put in place in 2010, were planned at the level of EUR 20 in British Columbia and Denmark; EUR 30 to EUR 50 in Finland for the carbon surcharge; EUR 10 to EUR 40 in Norway; EUR 17 to EUR 34 for the British “Climate Change Levy”; and the order of EUR 100 per tonne of CO₂ in Sweden;
• the implicit cost per tonne of avoided carbon emissions that can be estimated in other public policies are often higher than those proposed by the Quinet Commission.

23. At the level of the experts and of the Rocard Commission in July 2009, there was a consensus in favour of a carbon price programmed and gradually increasing up to a rate of about EUR 100 per tonne of CO₂ in 2030. This long-term target has not been a major source of controversy in the debate that followed, but it had no immediate impact. In contrast, the “slope” to be used for the growth of this price, and therefore the initial level of the tax, has been strongly debated, generally associating this question with acceptability problems.

24. However, this link needs to be discussed. The problem of acceptability is mainly because, ex ante, the establishment of an eco-tax determines an important monetary transfer, from economic agents to public finances, even if it is not its purpose. In theory, this revenue can be given back. The important condition is to use lump-sum transfers: in the same manner that a “negative income tax” does not change the incentives to work, learn or invest, these compensations must not cancel the incentives for reducing CO₂ emissions. Under such an approach, the price can be put at its ideal, efficient level, since redistributive impacts can be managed by other instruments.

25. Insofar as the agents are heterogeneous with respect to their needs of CO₂ emissions, the transfers to be implemented to “compensate the losers” may lead to a quite complex system. However, that remains possible to be realised, such like a free allocation of carbon emission rights, similar to those granted on the basis of grandfathering or basic needs in the context of emissions permits markets.

26. The proposal of a “green check” by the Nicolas Hulot Foundation, which was taken up later by the Minister of Environment Jean-Louis Borloo, strictly applied this approach. Their diagnosis was that such redistribution of the revenue was a necessary and sufficient condition to ensure the acceptability of a carbon tax, which could then be established at the appropriate rate. Taxation of nitrogen oxide emissions in Sweden was a model in this regard: it is fixed at its incentive “Pigouvian” level, which is a hundred times higher than its French equivalent. To make this acceptable, the amounts collected are given back to the industrial installations covered by the tax, by means preserving the incentives to reduce NOₓ emissions.

27. In other terms, if the policy maker has appropriate instruments at his disposal to give back the revenues, the problem of acceptability of environmental taxes should normally be addressed by these instruments, and, hence, should not affect the choice of the initial level of the tax. Otherwise, the conflict between equity and efficiency can obviously become acute.

28. But normally, the level of the tax and its temporal evolution should only be determined on the basis of pure economic efficiency arguments. The logic of the temporal growth is simple: in the short term, the damages caused by climate change are already significant, but they remain too weak (and the capital productivity too high) to devote all our savings to climate change mitigation. Nevertheless, when the concentration of greenhouse gases increases, the present value of marginal damage tends to increase, and efforts to reduce emissions become more profitable, socially speaking. This reasoning justifies a rising carbon price in real terms, for example at the pace of the discount rate (the so-called Hotelling rule for the management of exhaustible resources).

29. Elements that can modulate this rule are associated with uncertainty (option value of anticipating the efforts to avoid the risk of a technological lock-in), or with industrial policy (learning curves, and mobilising industry to take strategic advantage in relation to green products).

30. On the basis of such arguments, the recommendation of the experts thus stood at EUR 32 per tonne of CO₂ for the initial rate. The choice finally made by President Sarkozy was to retain a lower price
of EUR 17 per tonne of CO$_2$, in line with the expected level for the price of a CO$_2$ quota on the ETS at this time. Should one consider that this choice showed a failure of expertise, which had forgotten that “Politics matters”?

31. This view must be tempered, first of all because it would make a mistake about the nature of the Rocard Commission, which was not an “experts commission”, but whose composition was balanced between experts, stakeholders and politicians. Moreover, its President has constantly repeated that, for him: Green Tax Reform was a major political project; that the introduction of a carbon price was a huge reform reflecting a vision of society; and that, for these reasons, such a structural reform would not be done in one day, as it had been also the case for the other fiscal reforms he had managed in his career (VAT development, broadening the economic base of social contributions).

32. In addition, the role of expertise is to provide the elements which are relevant for shedding light on the choices, not to make the choices. In this case, the chosen price remained within the range recommended by experts. Moreover, if the experts strongly argued that starting with a relatively high price was possible because it would apply to domestic emissions, not directly subject to international competition, the political choice which finally prevailed had also a clear economic rationale: showing the uniqueness of the carbon price for the whole economy.

33. This “one price” logic is hardly questioned by economic expertise. Moreover – and this must be fully admitted – the economists are divided when it comes to choosing between a “second best approach”, or the reference to the “first best principles”. In this case, the message of politicians to the experts was therefore that the latter should not underestimate the pedagogy constraints: a Green Tax Reform must pay sufficient attention to establish the legibility of the price signal!

34. To summarise, the carbon price level one settled for was weaker than the one recommended by most of the experts. But it was sufficient to initiate the process. In this perspective, the main imperfection of the project was not this initial level, but the lack of announcement of its trajectory in the medium-term, which is indeed the main determinant of the efforts that would be stimulated by such an tax, especially investments.

2. Equity, acceptability, and governance

35. As noted, for households, the project combined the carbon tax, proportional to emissions, and lump-sum refunds, differentiated according to the composition and characteristics of households, but, of course, independent of their individual emissions. This approach was consistent with the theoretical idea that the fairness of such a reform is to address by the use the tax revenues, the rationale of the tax level being only efficiency or “true pricing”.

36. By this way, the carbon price-signal was not distorted, each household bearing the social costs of additional emissions, or benefiting from its efforts to reduce them. Refunds were designed to maintain their purchasing power or, more generally said, to only establish an incentive device, without any redistributive objective, compared to the initial situation.

37. Overall such a device would have functioned as a bonus-malus system, with fair neutral points, adjusted according to household characteristics, and maintaining a single marginal price level, what is the basic condition for its cost-effectiveness. The explanation of these economic principles has been the main topic of controversy about this project, with actually two lines of questions, the first one concerning this equity-efficiency assignment of instruments, and the ability to solve acceptability problems by these means, and the second one wondering what should be the best use of tax revenues.
2.1 Household compensations

38. At the chosen rate of EUR 17 per tonne of CO₂, the ex ante (before refunds) impact of the project on household energy bills would have been an increase of 4.4% on average. But the impact is heterogeneous (Table 1), depending on several factors: income, but also, and primarily, household composition, type of housing, heating mode, and the accessibility to public transport. Given the CO₂ content of each energy category, the price increase (VAT included) would have been of EUR 0.0055 per kWh for heating oil, and only of EUR 0.0042 per kWh for natural gas, since the latter emits less CO₂, and of 0.054 per litre of diesel and EUR 0.049 per litre of unleaded petrol.

Table 1. Impact of the project on energy prices

<table>
<thead>
<tr>
<th>Energy category</th>
<th>g CO₂ per kWh</th>
<th>Increase, excluding VAT</th>
<th>Increase, including VAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural gas</td>
<td>206</td>
<td>+EUR 0.0035 per kWh</td>
<td>+EUR 0.0042 per kWh</td>
</tr>
<tr>
<td>Heating oil</td>
<td>271</td>
<td>+EUR 0.0046 per kWh</td>
<td>+EUR 0.0055 per kWh</td>
</tr>
<tr>
<td>Transport</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petrol</td>
<td>246</td>
<td>+EUR 0.041 per litre</td>
<td>+EUR 0.049 per litre</td>
</tr>
<tr>
<td>Diesel</td>
<td>271</td>
<td>+EUR 0.045 per litre</td>
<td>+EUR 0.054 per litre</td>
</tr>
</tbody>
</table>

Source: ADEME, calculs CGDD.

39. This increase in energy costs would therefore have resulted in an increase of short-term consumer expenditures of about EUR 100 per year, or 4.4% of their energy costs, based on habits of consumption measured in 2006. Wealthier households, which have greater energy expenditures, would have been the most affected by the contribution, with a cost of EUR 130 on average for the 10% wealthiest households, against EUR 65 for those belonging to the lowest decile of income.

40. Indeed, the share of energy costs in the total budget of poor and intermediate income households is quite similar, around 10 to 11% of their budget, for households belonging to the first to the seventh decile of income (Figure 2). However, the former spend a higher share on heating than the latter, but less on motor vehicle fuels. They are therefore more affected by rising energy costs for housing, which represent 8% of their budget, against 3% for motor fuel costs.

41. Moreover, for two households of equal size, the aggregate amount of the carbon tax would have been comparable regardless of their status (active or retired): for a single person, for example, it would have been EUR 65 per year on average. However, activity status influences its structure: active households are relatively more affected by the rising prices of motor fuels than by heating fuels ones, while retired households are in the opposite situation: the need to travel to work causes a much more intensive use of the car in working households than among retirees. But this effect is offset by energy consumption for housing, which is generally lower for active people, who generally have more recent dwellings, better insulated, more often heated by electricity, and often less extensive per person (40 m² on average by person for active households, against 60 m² for retirees).

Finally, the energy consumption increases significantly with the presence of an additional adult in the household. Thus, the amount of the contribution would have been EUR 110 on average for a couple without children. In contrast, the presence of a child does not change significantly the energy expenditure of the household: single-parent families would have paid only EUR 10 more contribution than individuals. The difference between the amount of two-parent families and couples without children is slightly higher (EUR 20), but it remains well below the differences arising from the presence of an additional adult in the household.

The compensation mechanism associated to the carbon-energy contribution provided for annual tax credits, depending on the composition of the household and on its area of residence: EUR 46 per adult living in an area served by public transport, EUR 61 for an adult living in an area not served by public transport, and an additional transfer of EUR 10 by other person in the household. Apart from the modulation by area of residence, the mechanism of compensation was thus the same for all households.

This lump-sum approach aimed to preserve the incentive to reduce energy consumption. Consequently, low-income households, which have lower energy expenditures than the average one, would have obtained a greater tax credit than the carbon tax they would have paid, regardless of their area of residence. For other households, the net cost of the reform remained very moderate: less than 1% of their total energy expenditures (Figure 3).
This shows that the direct anti-redistributive effects of environmental taxation can be removed by such lump-sum transfers, without jeopardising the environmental effectiveness of the carbon tax. The corresponding transfers may rely on existing redistributive instruments (income tax, social transfers ...) and therefore do not require the implementation of new specific instruments. However, the design of these transfers must take account of the strong heterogeneity of household situations. As seen above, tax-credits depended on family composition and on access to public transport. Despite this complexity, the compensation was only ensured on average. There would have remained a significant number of losers, even among the poorest households. However, in theory, these tax credits could have been more finely detailed, without harming the incentive effect of the reform, but at the price of some greater complexity, opacity and increased management costs.

46. In a less static perspective, the increase in prices induced by the tax mechanically drives an increase in wages and social benefits. This increase also helps to protect low-income households from losses caused by the tax. In return, the higher wages and therefore labour costs can penalise employment, and in particular low-skilled jobs, because of the existence of the minimum wage and price indexation. It appears, therefore, that the impact of these compensation mechanisms needs to be assessed from a dynamic point of view.

2.2 Green tax reform and fiscal policy

47. The proposed compensation scheme for revenues coming from firms was different. The starting point was that, on this side, it was not necessary to give back the revenues directly, and that, following the “double-dividend” principle, it was better to use this fiscal resource to reduce other taxes; first of all the ones which are the most penalising on economic activity. At this time, the suppression of a local corporate tax (“taxe professionnelle”) was at the top of the agenda. But this priority remained controversial, what did not help the presentation of the CEC reform in the public. Moreover, to alleviate oppositions coming from different sectors, including road transport, agriculture and fisheries, reduced rates for certain activities were eventually accepted.
48. With the absence of announcement of the future path of the CEC, this element has been the most criticised feature of the project by economists, because it was clearly going against carbon pricing logic. In addition, this affected the price signal in precisely heavily CO₂-emitting industries: a bonus-malus type of instrument, keeping the “marginal” price signal in place, would have been preferable.

49. Another debate concerned the question of whether the electricity sector should or should not pay a carbon-energy contribution. On one side, it seemed normal to answer to this negatively, since this sector is already included in the EU ETS. Moreover, nuclear production plants emit little CO₂. On the other side, other energy sectors argued that this technology was excessively encouraged. Of course, the purpose of a green tax reform is not to be technologically neutral, but to stimulate a shift to cleaner products or services. But, for that purpose, it is necessary that each sector bears all its external costs. In this case, the carbon tax would perhaps have been less controversial if the simultaneous introduction of a tax reflecting nuclear risks had been considered.

50. Finally, it thus appears that the problems of acceptability on the side of households had been well anticipated and treated economically, even if the approach still could be criticized: a generous level of tax-credits, leading to ‘overcompensation’, and therefore a waste of revenues that could more usefully help the lowering of existing distortive taxes; and also some lack of sufficient pedagogy towards the public, what emphasises the importance of ‘framing’ issues in this type of reform. On the side of business emissions, the role of polluters’ lobbies had probably been too neglected, leading policy makers to forget principles such as:

- the analysis of equity impacts for firms cannot be done as for households, as companies who pay the tax do not bear its cost because, due to competitive market dynamics, they generally pass a major part of it to consumers. That is the case for road freight transport, for example;
- in this case, there is no need to give back revenues otherwise than by the means of general tax cuts;
- this way, that is to say a search for a double-dividend, should be preferred;
- for industries that actually cannot pass on the tax payments, and for whom its burden seems not acceptable, bonus-malus mechanisms, similar to those applied for households can be used. Such an approach could have been the good solution for the agricultural sector.

51. Indeed, the question of the use of eco-tax revenues needs to be discussed more thoroughly, taking two elements into account. First, CO₂ emissions are sufficiently sensitive to price signals to make carbon pricing the pivotal instrument of climate-change mitigation policies. Second, the corresponding price-elasticities remain less than unity: econometric estimates suggest that they are of the order of -0.3 in the short term and up to -0.7 in the long term. Under these conditions, even if it is not its goal, the introduction of a carbon tax provides some revenues.

52. By definition, a given tax revenue can only be used once. Therefore, the choice between the alternative possibilities of use of the carbon tax revenue, and beyond, the articulation between environmental tax reform and general fiscal reform are key decisions of any green tax reform. In this regard it is noteworthy that the first question discussed at the roundtable chaired by Michel Rocard was precisely the allocation of this revenue to the general budget. The ensuing discussion sought to find a compromise between the different uses, taking into account the acceptability constraints for household discussed above. Perhaps it would have been better simply to highlight the different options, and emphasise the political dimension of these choices.

53. Schematically, four options are available for the use of the revenues of environmental taxes:
• Allocate the revenues to the general budget, by analogy with the rules prevailing for contributory taxes. These rules reflect governance requirements. Indeed, earmarked taxes often escape arbitration processes to select priorities, what precisely justifies parliamentary voting of fiscal laws;
• Search for the second dividend, that is to say, fully exploit the fact that it is better to tax pollution than to tax labour. In this perspective, one should commit not using the revenues to relax budget spending discipline. This approach was strictly implemented by Nordic green tax reforms twenty years ago, in a context of consensus about the excessive global tax burden;
• Giving back the money to ensure the acceptability of the reform, what is in line with the idea that the purpose of an environmental tax is solely the establishment of correct incentives to reduce pollution. Hence, the first fiscal benefit of a green tax reform is to avoid future costs of environmental restoration;
• Use the money to support ecological transition, by subsidising, for example, the changes towards more emission-efficient equipments. Along this approach, it is better to promote this transition than to compensate agents for higher prices, what generally leads to lock-in situations. In addition, such support is often necessary for acceptability, because if agents have no alternative, environmental taxes are simply perceived as stigmatising.

54. In the case of the carbon-energy contribution, experts pleaded for the second option, but could not agree precisely about the macroeconomic tax-shifting direction. The persons in charge of fiscal affairs told that the first option was obvious. But, as we have seen, identified acceptability constraints led to the choice of giving back the money, at least for households, what was strongly criticised by specialists of the energy transition. Indeed, this shows that each option has its rationality, and that one must imagine mixed solutions. But this choice should be made perfectly transparent and justified.

55. Of course, in an ideal world, one could argue that the first solution should prevail, the arbitrage between the other options being made inside the general fiscal process. But this ignores the failures of these processes, especially its lack of multi-year perspective and its lack of commitment ability, and more generally, political economy constraints which explain the magnitude of the distortions one can observe in existing tax systems.

56. In this context, one can fear that looking for immediate revenues would be chosen, against establishing an efficient and progressive green price signal, designed to build credible expectations for investment and innovation. Moreover, acceptability constraints would probably be underestimated under such an approach.

57. However, it is not the responsibility of green tax reformers to make the macroeconomic choices of the global tax reform. This suggests that the link between the green tax reform and fiscal policy is much easier to find when fiscal policy is itself established on a sound basis, with a long-term perspective on the direction of reforms to be engaged.

58. In addition, a green tax reform has its own constraints. Its potential losers are specific groups that are difficult to address by the usual instruments of redistribution. Thus, ecological transition requires accompanying measures. Above all, green tax reform cannot be acceptable to the public if it does not see its consistency, its efficiency, and the fair distribution of its costs.

3. Conclusion

59. The Environmental Conference, held in September 2012, has given Green Fiscal Reform a new priority. A “Green tax commission” will assess its priorities. That will not be easy, as the European economic crisis and the dependence of our economies to high and volatile oil prices have reduced the
support of the public for environmental policies. Moreover, in a context of increasing fiscal pressure, it will be hard to convince that environmental taxes have no revenue target.

60. However, the experience gained from the 2009 carbon tax project is useful. It shows that there cannot be serious climate mitigation policy without this type of instrument. All the work done at this occasion also provides a very complete basis to again put this project at the agenda, and to be successful this time.

61. In this regard, the importance of setting the price signal in a multi-year horizon; the need to consider the internalisation of all externalities; the importance of finding a balanced package in the use of the tax revenues; and, ultimately, the need to build greater consensus on such reforms should be emphasised.
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