

First impact evaluation of the Green OAT Evaluation Council: Tax credit for energy transition

The Green OAT Evaluation Council is in charge of evaluating the environmental impact of the green eligible expenditure financed by the Green OAT, the first French sovereign green bond. This document sums up the opinion of the Green OAT Evaluation Council¹ on the environmental impact of the Tax credit for energy transition (CITE), the most prominent of these expenditures. This opinion has been informed by an evaluation of the environmental impact of this policy, provided to the Council and published along with this opinion's publication.

Main observations:

→ *The Green OAT Evaluation Council welcomes the evaluation provided, notably the quantitative estimation of the contribution of the Tax credit for energy transition to climate change mitigation.*

→ *The quality of the evaluation meets high academic standards.*

→ *The evaluation process provided transparency and independence, as the evaluation was reviewed by independent experts.*

→ *The Green OAT Evaluation Council endorses the main results of the evaluation of the Tax credit for energy transition, in particular that this policy contributes significantly to meet Frances' objectives in terms of climate change mitigation.*

1. Introductory remarks

France aims at reaching carbon neutrality by 2050, in order to contribute to reaching the objectives of the Paris Agreement. This demanding target requires ambitious policies to promote energy efficiency and reduce greenhouse gas emissions. Building renovation is a key pillar of this strategy, as buildings account for 45 % of final energy consumption in France and produce 25% of the country's greenhouse gas emissions. In addition, the Building Energy Renovation Plan, published in 2018, sets as a target a **15 % decrease of energy consumption of buildings between 2017 and 2022.**

The CITE supports this policy. It is an **income tax credit on housing energy efficiency expenditures and on some renewable energy investments.** It represents €3.2bn of the 2017 issuance of the Green OAT (amounting to a total of €9.7bn), *i.e.* almost one third of the issuance for that year. This is the largest green eligible expenditure among expenditures selected for the 2017 issuance of the French sovereign green bond.

2. Main results of the evaluation provided to the Council

The study confirms the impact of the CITE on climate mitigation. More specifically, the study estimates that the CITE triggered around **75 000 additional renovations per year** in 2015 and 2016, which represents an **increase of about 16% of the annual amount of energy efficiency investment.** As a result, the study finds that the CITE in 2015 and 2016 triggered a decrease of energy consumption and CO₂ emissions respectively by 43 TWh and 2.9 MtCO₂ over the 2015-2050

¹ Members of the Green OAT Evaluation Council: Manuel Pulgar-Vidal, WWF (chair); Mats Andersson, Global Challenges Foundation, PDC; Nathalie Girouard, OECD; Ma Jun, People's Bank of China; Karin Kemper, World Bank; Thomas Sterner, University of Gothenburg; Eric Usher, UNEP-FI; Sean Kidney, Climate Bond Initiative (observer); Nicolas Pfaff, International Capital Market Association (observer).

period. These cumulative quantities are equivalent to around 7% of the 2015 housing energy consumption and CO₂ emissions.

The abatement cost of CO₂ avoided by the investments triggered by the CITE in 2015 and 2016 is estimated at **240 €/tCO₂ over 2015-2050 but this value is subject to great sensitivity, varying from 0 to 500€/tCO₂ if investment costs vary from -20% to +20%**. Collective gains concerning pollution externalities represent around 200€/tCO₂, which, if deducted from CO₂ abatement cost, lead to a lower abatement cost of 40€/tCO₂. These results underline that the **CITE contributes to meet Frances' objectives in terms of climate change mitigation**. It can be accompanied and complemented by other policy instruments, such as carbon pricing and subsidised loans.

3. Quality of the evaluation

Real independence of evaluations are the keystone of their credibility and the presence of referees is considered by the Council as very important. In order to be aligned with best practices regarding that issue, the CITE assessment was framed by Terms of Reference, defined by the Council with the support of the Secretariat. Two referees, Philippe Quirion² and Louis-Gaëtan Giraudet³, were appointed in order to monitor closely the evaluation process. An intermediary report has been presented to the Council and submitted to its review and comments. The impact assessment study has been conducted by the Commissariat General for Sustainable Development.

The Council underlines that **the study meets its objectives** as defined by the Terms of Reference, as it delivers quantitative elements on the following topics: relevance and effectiveness; additional effect; economic efficiency; sensitivity analysis; analysis of the cost distribution on main economic actors.

The Council states that the study meets academic standards as the model on which it is based has been used for peer-reviewed publications. In particular, the Council welcomes the fact that a sensitivity analysis was conducted on several parameters in order to assess the robustness of the results. Hypothesis and methodology are very cautious and clearly avoid overestimating environmental benefits of the policy scheme, ensuring reliability and credibility. On the contrary, the Council notes that the methodology chosen could rather have underestimated benefits.

The Council also notices some areas of potential improvements for future studies, whenever possible and appropriate: a) consider using measured data rather than estimated data; b) consider various sensitivity analyses; c) consider lack of knowledge on the cumulative nature of technical progress. The Council notes that integrating these elements could have mitigated the underestimation of the benefits of the CITE.

4. Conclusion regarding the opinion of the Evaluation Council

The Evaluation Council welcomes the results of the study on the Tax credit for energy transition, as this policy is a key component to the climate mitigation strategy of the French government. This is the first study designed to evaluate the environmental impact of a sovereign green bond. It is a major step for the Green OAT as **it provides an impact evaluation covering one third of the 2017 issuance**. This impact reporting ensures the credibility and the transparency of the Green OAT.

² Philippe Quirion is a senior researcher in the area of environmental and climate economics. He has published several papers in peer-reviewed journals on energy transition. He is currently advising PhDs on energy efficiency in building renovation.

³ Louis-Gaëtan Giraudet has a PhD thesis in the field of the development of usage of electricity and energy efficiency. He is research fellow at Ecole des Ponts ParisTech, CIREA (*Centre international de recherche sur l'environnement et le Développement*). He is an expert in energy efficiency policy and energy modeling, especially in housing renovation.

The Evaluation Council underlines the high quality of the evaluation process. The study meets high academic standards. The supervision of referees guarantees its independence and quality. Having conducted this first impact evaluation, the Council points out the importance of anchoring this process in the long run and to allow it the time it needs in order to conduct proper impact evaluations.

The Council is confident that this first impact evaluation will be useful to other green bond issuers and offer a contribution to the development of best practices for evaluation on the market. This study could in particular be of use for issuers in countries that are conducting a similar energy efficiency policy. Impact evaluation and transparency are indeed key factors to support the scaling up of green finance.