

GREEN OAT

ALLOCATION AND
PERFORMANCE REPORT
FOR 2019



**MINISTÈRE
DE L'ÉCONOMIE
ET DES FINANCES**

*Liberté
Égalité
Fraternité*



**AGENCE
FRANCE TRÉSOR**



Photo Credit: Patrick Bagein - Bruno Le Maire, Minister of the Economy and Finance, and Brune Poirson, Secretary of State to the Minister for the Ecological and Inclusive Transition

Contents

| | |
|---|-----------|
| Four questions for Anthony Requin, Chief Executive of Agence France Trésor | 4 |
| AFT AND THE GREEN OAT | 6 |
| Presentation of AFT | 8 |
| Tasks | 8 |
| An autonomous, accountable agency with national scope | 8 |
| The 2039 OAT, France's first sovereign green bond | 10 |
| Changes since the previous report | 11 |
| Update: eligible Green Expenditure | 12 |
| Green OAT Evaluation Council | 12 |
| ALLOCATION AND PERFORMANCE REPORT FOR 2019 | 14 |
| Allocation to Eligible Green Expenditure | 16 |
| Presentation | 16 |
| Eligible Green Expenditure and allocation method | 17 |
| Budget programmes financed by the Green OAT | 21 |
| Statement of performance and use of proceeds | 22 |
| Four objectives of the Green OAT | 26 |
| Proceeds allocated to six sectors | 27 |
| Multi-sector expenditure | 28 |
| Analysis and performance of each sector | 32 |
| Building | 32 |
| Living resources | 36 |
| Transport | 40 |
| Energy | 46 |
| Adaptation | 50 |
| Pollution | 54 |
| APPENDICES | 58 |
| KPMG assurance report | 60 |
| Carbone 4 methodology | 65 |
| Vigeo Eiris assurance report | 66 |
| Methodology | 74 |
| Reference documents | 76 |
| Abbreviations | 76 |

4 questions for Anthony Requin

Chief Executive of Agence France Trésor



In 2019, the total outstanding volume of the Green OAT exceeded €20 billion. Do you see that as an achievement?

On 24 January 2017, Agence France Trésor launched its first Green OAT with a coupon of 1.75% maturing on 25 June 2039 for an initial issuance amount of €7 billion, making France the first country to issue a benchmark size sovereign green bond. Following several successive tap issues, the amount outstanding for the Green OAT stood at €9.7 billion at end-2017, €14.8 billion in 2018 and €20.7 billion in 2019. But the story does not end there because two new tap issues this year brought total outstanding volume to €25.3 billion at the end of the first half of 2020. France is now one of the world's leading green bond issuers, confirming its role as a driving force for the achievement of goals set at the December 2015 Paris Climate Agreement.

Through regular tap issues, we have met investor demand, which remains very buoyant.

Reaching the €20 billion mark was not an objective in and of itself, but we are proud to say that the Green OAT's size now means that it offers the same liquidity as conventional Treasury bonds, which was one of AFT's commitments to investors during the inaugural issuance. The Green OAT has also helped expand the depth of the green bond market. It is a risk-free liquid asset, enabling investors active on this segment to diversify their portfolio.

In last year's Allocation and Performance Report, you mentioned environmental benefit reporting, a key component of Green OAT monitoring. Did such reporting continue in 2019?

We have set up an independent Evaluation Council, comprising internationally-renowned experts, to supervise environmental evaluations. In November 2018, the Evaluation Council published its first Green OAT Impact Assessment on the tax credit for energy transition (CITE). In the months that followed, it commissioned an assessment of the subsidy received by the French inland waterways office (VNF) matched to the Green OAT.

The report on VNF, published in November 2019, is interesting for several reasons. The first part of the report quantifies the reduction in greenhouse gas emissions achieved thanks to transport via VNF's inland waterways, which would have otherwise shifted to road or rail mode. The second part takes a novel approach by showing how VNF integrates climate change adaptation and biodiversity preservation in its management. In the Green OAT framework document, we wanted to underline the wide range of public environmental policies, which are not restricted to climate change mitigation, although this is of course crucial. The ICMA (International Capital Market Association), in charge of the Secretariat of the Green Bond Principles, has adopted a similar stance: last April it suggested various biodiversity indicators for inclusion in impact assessments.

With the development of green bonds, and given the ever present risk of greenwashing, is there a need to better formalise good market practices? On a pan-European level, the EU has begun drafting a Green Bond Standard, for example. Where does the Green OAT stand with regard to this approach?

At the time of the inaugural issuance, our ambition was to align the Green OAT with the most stringent market practices. That has not changed.

The project you've just mentioned, as described in the work of the Technical Expert Group mandated by the European Commission, encompasses several aspects of the green bond market. The standard, which would initially be applied on a voluntary basis, will impact the commitment of issuers that choose to comply with it. This would influence the way they prepare their green bond framework, and their obligations as regards transparency and accountability.

In concrete terms, the organisation of our framework document, the cycles of our allocation and performance reports and our use of external verifiers are in line with the requirements outlined in the draft standard.

The draft standard also uses the EU taxonomy, which defines a common language, a classification system for sustainable economic activities. The taxonomy, whose scope is currently being widened, does not yet cover all sovereign green expenditure, such as tax credits or specific research subsidies. But we still intend to align the Green OAT with this emerging standard.

Regarding your green issuance programme, what changes do you foresee over the coming months?

The Eligible Green Expenditure envelope for 2020 has not yet been fully used. Consequently, depending on demand, new tap issues of the OAT maturing in 2039 are possible. As of next year, we may have a larger expenditure base. Last autumn, Parliament voted in favour of reintegrating in the general budget, as of 1 January 2021, expenditure previously recorded in the special "Energy Transition" appropriation account. State expenditure in support of renewable energies will no longer be financed by allocated funds but could be included in Eligible Green Expenditure matched to Green OAT issuance, if the interministerial working group so decides.

Such an increase in the amount of Eligible Green Expenditure would enable AFT to consider issuing a second benchmark Green OAT next year, if market conditions are met. This would require the inaugural issuance to be sufficiently large to ensure a minimum liquidity level before new tap issues (typically between €5 billion and €7 billion, depending on maturity).



AFT AND THE GREEN OAT



Presentation of AFT

TASKS

MANAGING THE STATE'S CASH POSITION

Agence France Trésor (AFT) manages the State's cash position so that it can adhere to its financial commitments at all times, whatever the circumstances. Although it varies over the course of the year, this cash management role involves updating forecasts of the receipts and disbursements of the State and Treasury correspondents and monitoring the outturn of flows into and out of the account in order to be able to meet any temporary cash requirements on a day-to-day basis.

MANAGING THE STATE'S DEBT

AFT is tasked with managing debt in the taxpayer's best interest. In that context, its strategy is to take a long-term view, while tracking the market closely. It promotes liquidity across the full range of its debt issuances, while maintaining full transparency and a commitment to combining innovation and security.

AN AUTONOMOUS, ACCOUNTABLE AGENCY WITH NATIONAL SCOPE

Reporting to the Minister of Finance and to the Director General of the Treasury and managed by a Chief Executive and Deputy Chief Executive, AFT is an agency with national scope (SCN). AFT has the required scale and resources to carry out all its activities, particularly when navigating complex financial markets and maintaining close relationships with all financial stakeholders.

The fact that AFT reports to the French Ministry for the Economy and Finance means that it has access to the full range of information it needs to carry out its strictly defined tasks. It often works closely with the other structures of the Directorate General of the Treasury or the Ministry, such as the Budget Directorate and the Directorate General of Public Finances.

AFT is staffed by civil servants with in-depth knowledge of the Government's financial procedures and by market professionals contracted by the government. Staff members serve in operational functions (cash management, market transactions, risk management and back office procedures, information technology), and analytical functions (modelling, economics and legal), as well as communication functions.

At the end of 2019, AFT had 47 staff members (17 women and 30 men, 18 contract employees and 29 civil servants). AFT's staff members are notable for the diversity of their educational backgrounds and career paths. They share the same values as those of the Directorate General of the Treasury, namely commitment, loyalty, openness and team spirit. All staff members adhere to strict commitments with regard to professional ethics.



Photo credit: Célia Bonnin - Ministry for the Economy and Finance - Agence France Trésor trading room, Paris

KEY FIGURES FOR 2019

€1 823 billion

Negotiable debt securities outstanding at 31 december 2019

8 years and 63 days

Average residual maturity of debt at 31 december 2019

0.11%

Weighted average yield of medium- and long-term fixed-rate securities

53.6%

Non-residents' holdings of negotiable debt securities by market value at 31 december 2019

The 2039 OAT, France's first sovereign green bond

On 24 January 2017, Agence France Trésor launched the first Green OAT with a coupon of 1.75% maturing on 25 June 2039 for an issuance amount of €7 billion. By becoming the first country to issue a large-scale green bond, France has confirmed its role as a driving force for the achievement of goals set at the December 2015 Paris Climate Agreement. Following several tap issues since its inaugural issuance, the amount outstanding for the Green OAT at the end of June 2020 was €25.3 billion, making it the largest green bond in the world.

A sovereign green bond funds projects that have a positive environmental impact. It differs from a conventional bond by its specific reporting requirements and “green” credentials, although the financial risk is the same for investors.

France's Green OAT funds central government budget expenditure to fight climate change, adapt to climate change, protect biodiversity and fight pollution. Proceeds are managed in compliance with the general budget rules and finance an equivalent amount of Eligible Green Expenditure.

In practice, the proceeds from the Green OAT are managed like those of a conventional sovereign bond, but allocations to Eligible Green Expenditure are tracked and reported.

AFT tapped the Green OAT after the initial issuance to maintain its liquidity, as is the case for conventional benchmark sovereign bonds. The Green OAT was tapped twice in 2017. The Green OAT was extended by two other tap issues in 2018 for an aggregate €5.1 billion, including a €4 billion syndicated tap issue, and three additional tap issues in 2019 for an aggregate €5.9 billion. Two auction sales in early 2020 brought the total outstanding Green OAT debt to €25.3 billion. Consequently, the outstanding amount of the Green OAT was increased by successive tap issues, with their proceeds being systematically matched to Eligible Green Expenditure.

| Date | Type of issuance | Amount issued (€ billions) | Amount outstanding (€ billions) | Yield at issue (%) |
|------------|----------------------|-------------------------------|---------------------------------------|-----------------------|
| 24/01/2017 | Syndicated tap issue | 7 | 7 | 1.74 |
| 01/06/2017 | Auction sale | 1.632 | 8.632 | 1.51 |
| 07/12/2017 | Auction sale | 1.065 | 9.697 | 1.27 |
| 05/04/2018 | Auction sale | 1.096 | 10.793 | 1.34 |
| 25/06/2018 | Syndicated tap issue | 4 | 14.793 | 1.46 |
| 07/02/2019 | Auction sale | 1.737 | 16.53 | 1.25 |
| 02/05/2019 | Auction sale | 2.471 | 19.001 | 1.04 |
| 05/09/2019 | Auction sale | 1.676 | 20.677 | 0.19 |
| 06/02/2020 | Auction sale | 1.982 | 22.659 | 0.38 |
| 02/04/2020 | Auction sale | 2.607 | 25.266 | 0.51 |

CHANGES SINCE THE PREVIOUS REPORT

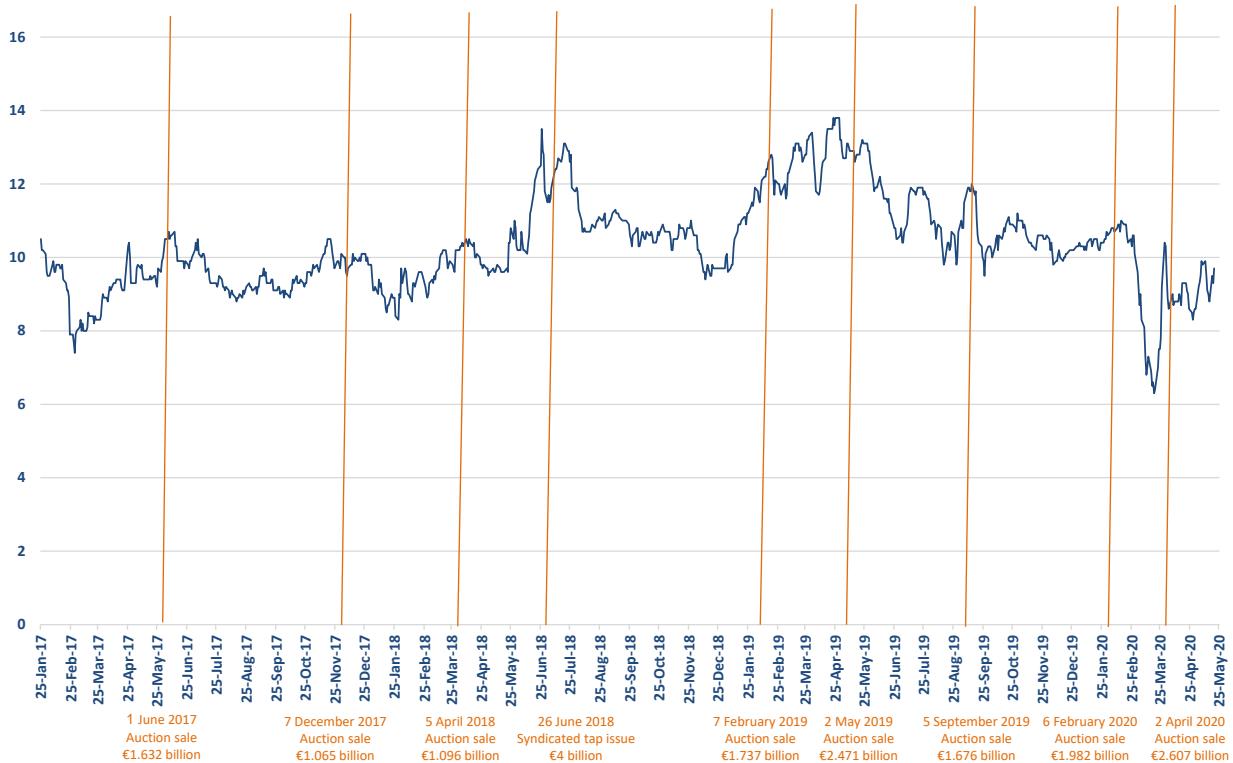
Since the previous report, the Green OAT has been extended through three tap issues, one in 2019 and two in 2020:

- on 5 September 2019 for €1.676 billion, with a yield at issuance of 0.19%;
- on 6 February 2020 for €1.982 billion, with a yield at issuance of 0.38%;
- on 2 April 2020 for €2.607 billion, with a yield at issuance of 0.51%.

The outstanding amount was €25.266 billion at 30 June 2020.

On the secondary market, the Green OAT's performance since the publication of the last report has been consistent with the rest of the French yield curve. The spread between the Green OAT and the Treasury bond used to determine its issuance price, namely the May 2036 OAT, therefore remained stable compared with the previous year. The yield spread currently fluctuates around 10 basis points. The bond tap issues were based on a yield spread approximating these levels.

YIELD SPREAD BETWEEN GREEN OAT AND 2036 OAT
In basis points (hundredths of a percent)



Source: Bloomberg, AFT calculations

UPDATE: ELIGIBLE GREEN EXPENDITURE

On 23 January 2020, Agence France Trésor announced that Eligible Green Expenditure funded by potential Green OAT issuances (Green OAT with a coupon of 1.75% maturing on 25 June 2039) amounted to €8 billion in 2020.

The update of the second opinion provided by Vigeo Eiris on the sustainability of the Green OAT with a coupon of 1.75% maturing on 25 June 2039 was signed on 11 May 2020. It is the opinion of Vigeo Eiris that “France’s overall sustainability performance, as a sovereign bond issuer, is advanced and stable”. The independent third-party expert declared a level of “advanced performance” once again, which constitutes the highest level on the rating scale and an advanced level of performance in the environmental domain. Vigeo Eiris additionally has “a reasonable level of assurance on the green credentials of Eligible

Green Expenditure identified by the interministerial working group” associated with issuances of the Green OAT in 2020.

Total eligible expenditure could be even larger in 2021. At the initiative of French MP Bénédicte Peyrol, which the government supported, an amendment to remove the “Energy Transition” appropriation account (CAS TE) as of 1 January 2021 was included in the 2020 Budget vote and approved by Parliament. Pending the decision of the interministerial working group, public funding for renewable electrical energy and biogas could be included in eligible expenditure (€5.4 billion in 2019). This type of funding is not currently eligible for Green OAT contributions since specific proceeds are allocated to it through the CAS TE account.

GREEN OAT EVALUATION COUNCIL

A TEAM OF RENOWNED, INDEPENDENT EXPERTS

With the issue of the first Green OAT in January 2017, the French government committed to publishing reports on the environmental impact of Eligible Green Expenditure.

Chaired by Manuel Pulgar-Vidal, former Minister for the Environment in Peru, President of the UNFCCC¹ COP20 and currently WWF Global Climate and Energy Practice Leader, the Green OAT Evaluation Council is comprised of independent experts:

- **Mats Andersson**, Vice-Chairman of the Global Challenges Foundation, Chairman of PDC and former CEO of AP4, Sweden’s fourth national pension fund;
- **Nathalie Girouard**, Head of the Environmental Performance and Information Division of the Environment Directorate at the OECD;
- **Ma Jun**, Director of the Centre for Finance and Development and Special Adviser to the Governor of the People’s Bank of China;
- **Karin Kemper**, Senior Director for the Environment and Natural Resources Global Practice at the World Bank;

- **Thomas Sterner**, Professor of Environmental Economics at the University of Gothenburg;
- **Eric Usher**, Head of the Secretariat of the United Nations Environment Program Finance Initiative.
- The Council also includes two observers:
- **Sean Kidney**, co-founder and CEO of the Climate Bond Initiative;
- **Nicholas Pfaff**, Senior Director and Secretary to the Green Bond Principles, ICMA (International Capital Market Association).

The Council held its inaugural session in December 2017. Since then, it has maintained a regular schedule of two meetings per year. The Secretariat of the Green OAT Evaluation Council is executed jointly by the General Commission for Sustainable Development and the Directorate General of the Treasury. The Green OAT Evaluation Council sets the specifications and schedule of the studies it oversees. It also issues an opinion on the quality of the reports and the relevance of findings. The work of the Evaluation Council is presented in separate publications.



Photo credit: Ministry for the Economy and Finance

WORK OF THE EVALUATION COUNCIL

The Evaluation Council met twice in Paris in 2019, in June and November. Its first report published in 2018 dealt with the tax credit for energy transition (CITE). After that report, the Council focused on assessing the environmental impact of the subsidy for public service expenditure granted to the French inland waterways office (VNF). VNF manages the third largest navigable river system in Europe, with some 6,000 km of waterways. The Council's work was completed by the end of November 2019, with the publication of its Second Impact Assessment evaluating the environmental impact of the Green OAT². To ensure that the study is transparent and meets the highest scholarly standards, the Council called on the expertise of two independent rapporteurs, François Combes (IFSTTAR) and André Evette (IRSTEA).

The report highlights the environmental benefits of the VNF waterway system and its special management challenges. VNF ships 2% of land freight, which would otherwise be shipped by road or rail. According to the study, inland waterways transport therefore prevents around 290 kilotonnes of carbon emissions every year, the equivalent of 1% of total French freight emissions per year.

Going beyond mere figures, the report takes a fresh angle by analysing VNF's strategy for climate change adaptation and biodiversity protection. It shows that in many respects, VNF exceeds current regulations, optimising waterway maintenance techniques and intensifying its efforts to protect biodiversity. Including this second section in the methodology is an innovative development in green bond reporting.

With its work on the CITE tax credit and VNF, in the first three years of the Green OAT the Council was able to cover 35% of the expenditure matched to bond proceeds. Incidentally, both reports demonstrated that the programmes they examined effectively fight greenhouse gas emissions, although the reports cannot be reduced to that single metric. In aggregate, over the 2016-2019 period, the CITE tax credit amounted to €6,449 million. Assuming that the benefits of this work will be noticeable for 35 years, and extrapolating the findings of the Council's study (on 2016 and 2017 expenditure), CITE expenditure from 2016-2019 will prevent the emission of 5,558 tonnes of CO₂ equivalent (at a cost of €1.16 per tonne of CO₂ equivalent). Over the same period, subsidies for public service expenditure granted to VNF totalled €978 million, preventing 1,160 tonnes of CO₂ equivalent from entering the atmosphere, at a cost of €0.84 per tonne of CO₂ equivalent.

12

13



ALLOCATION
AND
PERFORMANCE
REPORT
FOR 2019



Allocation to Eligible Green Expenditure

PRESENTATION

Proceeds are managed in compliance with the general budget rules and finance an equivalent amount of Eligible Green Expenditure. In practice, the proceeds from the Green OAT are managed like those of a conventional sovereign bond, but allocations to Eligible Green Expenditure are tracked and reported.

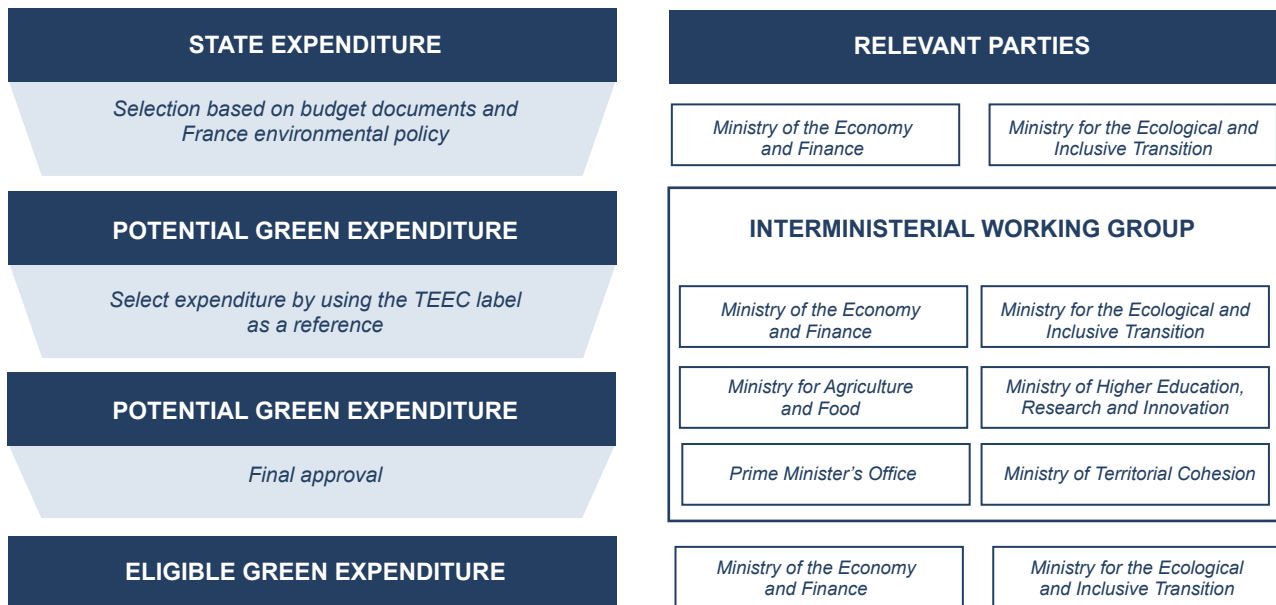
The sectors of activity in which Eligible Green Expenditure will be funded and the associated eligibility criteria were defined and published prior to the first issuance in a Framework Document dated 10 January 2017, which is available on the AFT website³.

Eligible Green Expenditure projects are identified ex ante annually by an inter-ministerial working group, which reports to the French Prime Minister. The Greenfin label, which replaced France's "TEEC" label in 2019, is a factor in the selection process. The "TEEC" label was created in 2015 by the Ministry for Environment, Ecology and the Sea to recognise investment funds that promote the ecological and energy transition. Expenditure should also contribute to one of the four green objectives (combat climate change, adapt to climate change, protect biodiversity and fight pollution) and relate to one of the following six green sectors: building, transport, energy (including smart grids), living resources, adaptation, pollution control and eco-efficiency.

Each ministry is responsible for identifying Eligible Green Expenditure within its budget programmes. The interministerial working group also ensures the exclusion of certain sectors: nuclear, armament and all expenditure dedicated to fossil fuel.

Prior to issuance of the Green OAT, in December 2016, the interministerial working group had identified Eligible Green Expenditure funded by proceeds from issuances in 2017. As authorised by the Framework Document dated 10 January 2017, this related to 2016 and 2017 budget and tax expenditure including Invest for the Future programme (PIA) expenditure, as well as future PIA investments, estimated until 2020. Similarly, the Interministerial Committee validated Eligible Green Expenditure for 2018 and 2019 at its meetings of 20 December 2017 and 19 December 2018, respectively.

SELECTION PROCESS FOR ELIGIBLE GREEN EXPENDITURE



Vigeo Eiris had certified the relevance of the approach used by the Government given the objectives stated and compliance of Eligible Green Expenditure in 2017 with the TEEC label which became the Greenfin label. Consequently, Vigeo Eiris provided a reasonable level

of assurance (the highest level of assurance) on the sustainability of the bond issue. In April 2018 and again in April 2019, Vigeo Eiris confirmed the same level of assurance with regard to the ex-ante presentation of Eligible Green Expenditure for 2018 and 2019.

ELIGIBLE GREEN EXPENDITURE AND ALLOCATION METHOD

In 2019, the Green OAT issuance with a coupon of 1.75% maturing on 25 June 2039 was tapped three times: on 7 February, generating proceeds of €1,737 million; on 2 May, generating proceeds of €2,471 million; and on 5 September, generating proceeds of €1,676 million, for an aggregate €5,884 million. Consequently, AFT is required to show that proceeds of the Green OAT issuance have been used to finance an equivalent amount of Eligible Green Expenditure.

In line with its commitments, in 2019 AFT monitored Eligible Green Expenditure identified ex ante by the interministerial working group and the associated performance indicators. This expenditure was incurred in 2018 and 2019 and meets the eligibility criteria set out in the Green OAT Framework Document.

As presented in the Methodology section in the appendices hereto (p. 74), Eligible Green Expenditure has been tracked through budget documents (2018 and 2019 Annual Performance Reports), and data derived from the information systems of the tax authorities and Secretariat General for Investment, with their assistance. The associated performance indicators are primarily those described in the French Organic Law on Finance Laws (LOLF), also available in the budget documents. In the other cases, they are available in documents published by the public authorities in charge of the associated expenditure.

In accordance with the budget schedule set out by the LOLF, the Budget Settlement Act for 2019 was adopted by the Council of Ministers on 2 May 2020. The Budget Settlement Act sets the final amount of State expenditure and revenue and the resulting income or expense. It was submitted to Parliament on the same day for approval during the summer of 2020, and made public.

The statement on the statutory validity of the State's accounts issued by the National Audit Office is included in the appendices and published at the same time as the Budget Settlement Act for 2019, along with State budget and accounting data. Budget data may not be changed as of the publication date. The preparation schedule for this report is in line with that of the Budget Settlement Act for 2019.

ALLOCATION OF GREEN OAT PROCEEDS FOR 2017 AND 2018

Eligible Green Expenditure for 2016 and 2017 amounted to €4,956 million and €5,120.3 million, respectively. AFT's Green OAT issuances in 2017, matched to Eligible Green Expenditure, brought the bond's total outstanding volume to €9,697 million. In accordance with the Green OAT Framework Document, half of the proceeds from the issuances in 2017 were used to fund Eligible Green Expenditure incurred in 2016 and the other half for expenditure incurred in 2017, i.e. €4,848.5 million per year. Consequently, the remaining €107.5 million in eligible expenditure for 2016 will not be matched to Green OAT issuance. However, the €271.9 million of eligible expenditure incurred in 2017, and which had not been matched to Green OAT issuance, were carried forward as eligible expenditure for 2018.

Similarly, €6,064.8 million in eligible green expenditure was incurred in 2018. Yet in 2018, the Green OAT issuance amount was €5,096 million. Of this amount, €271.9 million were allocated to the portion of 2017 expenditure not matched to Green OAT proceeds, and the rest (€4,824.2 million) was allocated to expenditure incurred in 2018. The remainder of €1,240.7 million was not matched to 2018 proceeds.

ALLOCATION OF GREEN OAT PROCEEDS FOR 2019

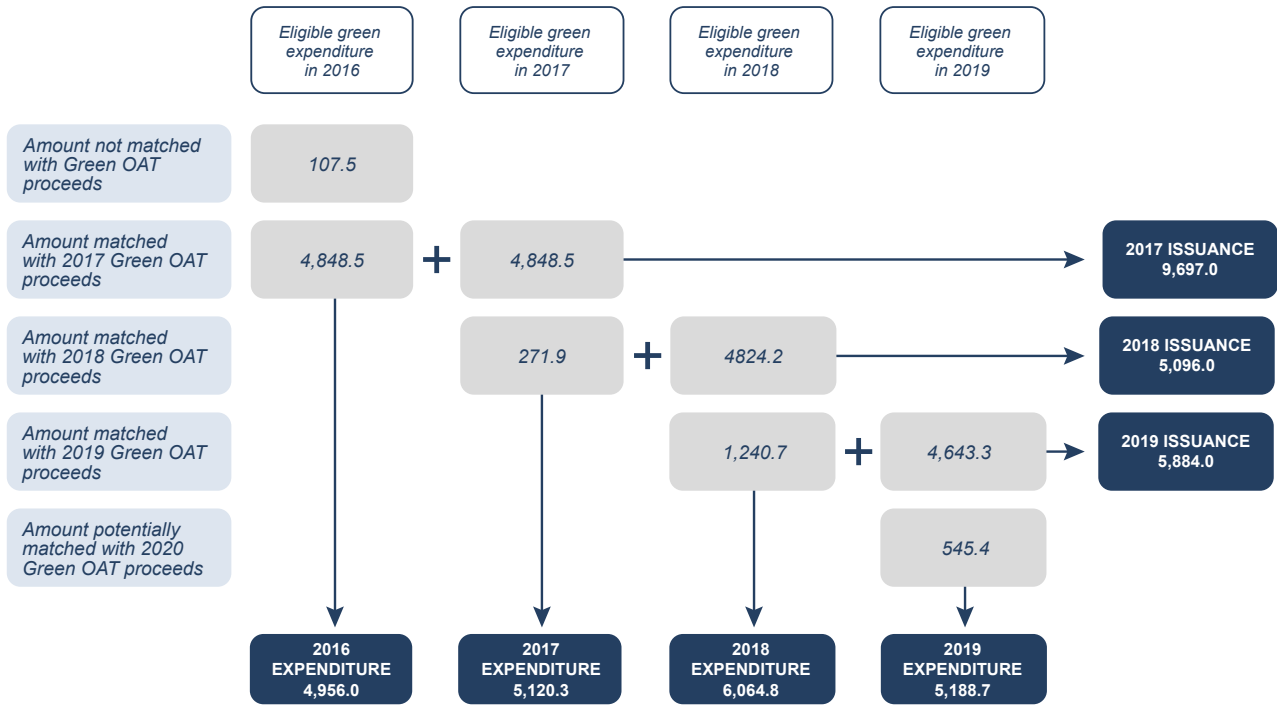
For 2019, a similar rationale applied: of the €5,884 million in Green OAT proceeds, €1,240.7 million were allocated to the portion of 2018 expenditure not matched to Green OAT proceeds, and the rest (€4,643.3 million) was allocated to Eligible Green Expenditure incurred in 2019. Thanks to the budget tracking procedure, it was shown that €5,188.7 million in Eligible Green Expenditure was disbursed in 2019⁴. The unmatched amount of €545.4 million may be carried forward and matched to 2020 tap issues. In line with the commitments presented in the Green OAT Framework Document, in 2019, expenditure for the current year accounted for more than half of the Green OAT issuance amount. Finally, we note that future expenditure of Invest for the Future programmes authorised to receive proceeds under the Green OAT Framework Document was not used.

To summarise, this Allocation Report is based on the total Green OAT issuance amount for 2018, €5,884 million. This amount is allocated to expenditure incurred partly in 2018 (€1,240.7 million and partly in 2019 (€4,643.3 million). In those two years, the amount allocated was apportioned to the different items in proportion to expenditure actually incurred.

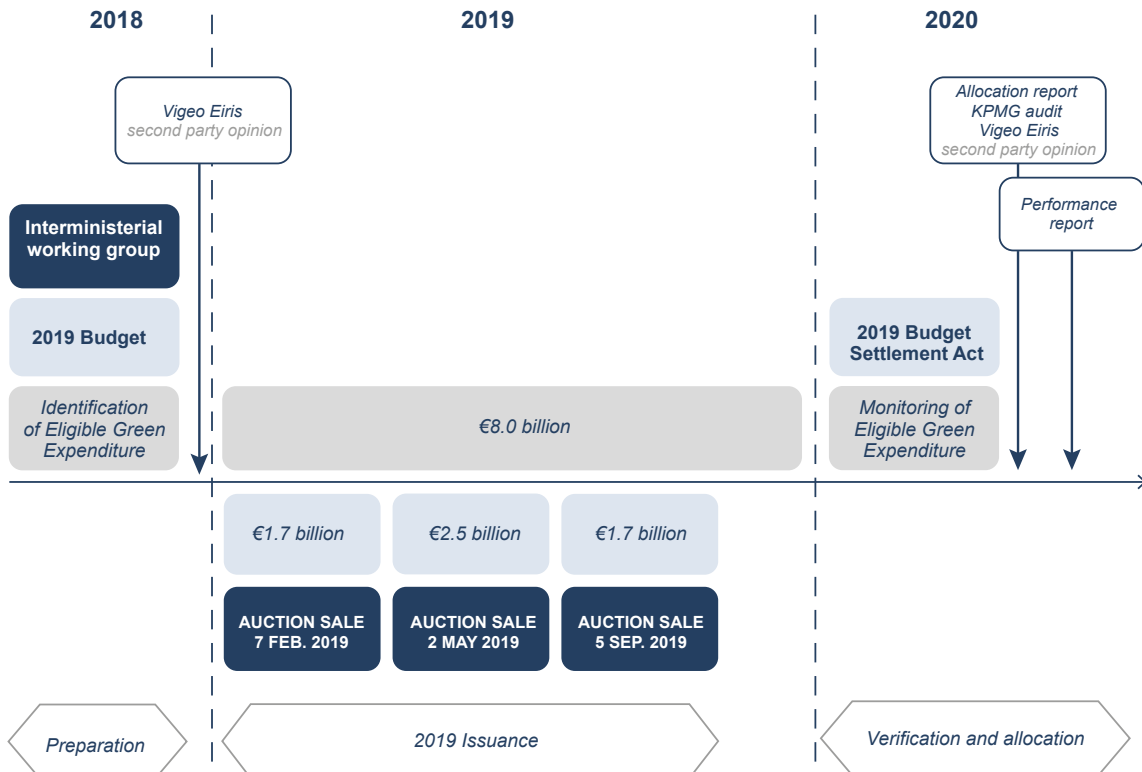
In line with France's commitments at bond issuance, expenditure monitoring has been audited by an independent third party, selected following a public call for tender. Consequently, KPMG has provided an assurance report on the use of proceeds based on procedures performed, which is included in extenso in the appendices to this report (p. 60).

4 - The decrease in eligible expenditure in 2019 compared with 2018 was mainly due to CITE tax credit program

ALLOCATION OF GREEN OAT PROCEEDS (in € millions)



MONITORING OF 2019 EXPENDITURES



The procedures performed include the following (see report in appendix for more detail):

- assessing the appropriateness of the Guidelines⁵ in terms of relevance, completeness, reliability, neutrality and understandability;
- verifying the implementation of a process to collect, compile, process and control data to ensure completeness and consistency of the Verified Information⁶ and gain an understanding of the internal control and risk management procedures used to prepare the Verified Information;
- verifying that procedures were properly applied and performing tests of details, using sampling techniques, in order to verify the calculations and reconcile data with the supporting documents, including:
 - the annual performance reports appended to the French Budget Settlement Act,
 - statements of roles and responsibilities extracted from the tax expenditure tools used by the French Ministry for the Economy and Finance,
 - extracts from the information systems of the Secretariat General for Investment, concerning funding per project of the “Invest for the Future” programme for the years ended 31 December 2018 and 31 December 2019.
- ensuring that the Verified Information is consistent with other publications, including the Budget Settlement Acts and reports by the National Audit Office;
- performing analytical review procedures on the Verified Information and checking its consistency with the information provided in the statement on Performance and Use of Proceeds.

Vigeo Eiris was entrusted with providing a second party opinion prior to the issuance and confirmed the sustainability of the transaction. It was subsequently commissioned by AFT to update its opinion, as an independent third party expert, on the environmental and social responsibility factors and objectives involved in structuring and managing the Green OAT. Vigeo Eiris reaffirmed its “reasonable” level of assurance (its highest rating) on the issuer’s performance in terms of sustainable development, based on the green credentials of Eligible Green Expenditure funded by the tap issues executed in 2019 and on adherence to the commitments made for bond tap issuance. The full report is provided in the appendices to this document.

The performance of each item of expenditure has been measured using the Government’s output indicators and certain statistics published by the government agencies responsible for quality monitoring of the French environment. All the performance indicators combined, which use existing procedures, are also presented in this document. As regards expenditure of the Invest for the Future programme (PIA), previous reports tracked the number of active projects as at 31 December of each year. Given the considerably different sizes of these projects, this indicator was difficult to interpret and it is no longer tracked. From now on, the report will include a financial leverage indicator for the various PIA programmes eligible for Green OAT funding.

5 - The Guidelines are defined by KPMG in its assurance report in the appendix, p. 60

6 - “Verified Information” is defined by KPMG in its assurance report in the appendix, p. 60

BUDGET PROGRAMMES FINANCED BY THE GREEN OAT

| Budget programme | Reference | Year | Source |
|---|---------------|------|---|
| Landscape, water & biodiversity | 113 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM113.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM113.pdf |
| Urbanism, territories and habitat improvement | 135 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM135.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM135.pdf |
| Economy and sustainable development of agricultural, agribusiness & forestry businesses | 149 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM149.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM149.pdf |
| Expertise, social economy, geographical and meteorological information | 159 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM159.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM159.pdf |
| Scientific research & multidisciplinary technologies | 172 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM172.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM172.pdf |
| Energy, climate & former mines | 174 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM174.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM174.pdf |
| Risk prevention | 181 | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM181.pdf |
| Research in the sustainable energy, development and mobility fields | 190 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM190.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM190.pdf |
| Space research | 193 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM193.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM193.pdf |
| Infrastructure and transport services | 203 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM203.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM203.pdf |
| Public energy service | 345 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM345.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM345.pdf |
| Renovation of administrative complexes and other multi-occupant government buildings | 348 | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM348.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM348.pdf |
| Civil service | Several | 2018 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2018/rap/pdf/DRGPGMPGM148.pdf |
| | | 2019 | https://www.performance-publique.budget.gouv.fr/sites/performance_publique/files/farandole/ressources/2019/rap/pdf/DRGPGMPGM148.pdf |
| Invest for the Future programmes (PIA) | PIA 1,2 and 3 | 2018 | https://www.gouvernement.fr/sites/default/files/contenu/piece-jointe/2019/06/ra_sgpi_2018_web.pdf |

STATEMENT OF PERFORMANCE AND USE OF PROCEEDS

In 2019 Green OAT proceeds were allocated to a wide spectrum of environmental issues, providing funding for various Government policies. The relevance and effectiveness of the measures taken under these policies can be assessed using a diverse range of performance indicators. The following table highlights, for each sector, Eligible Green Expenditure in 2018 and 2019 matched to Green OAT proceeds in 2019, and the associated performance indicators. Operating expenditure accounts for 51% of these amounts, intervention expenditure 17%, and tax expenditure 31%.

| Mission | Programme | Expenditure | Amount (in € millions) | | | | |
|--|---|---|---|---------------------|----------|---------------------|----------------|
| | | | 2018 | | 2019 | | Total |
| | | | Eligible | Remainder allocated | Eligible | Remainder allocated | Allocated |
| Agriculture, food industry, forestry and rural matters | P149 | Sustainable forest management and development of the timber industry | 268.6 | 55.0 | 226.7 | 202.8 | 257.8 |
| | | Tax credit for organic farmers | 37.3 | 7.6 | 53.0 | 47.4 | 55.1 |
| | | “Organic future fund” (Fonds Avenir Bio) | 6.0 | 1.2 | 4.0 | 3.6 | 4.8 |
| Social cohesion | P135 | Energy renovations to housing (ANAH) | 110.0 | 22.5 | 110.4 | 98.8 | 121.3 |
| | | Interest-free green loans | 48.6 | 9.9 | 49.0 | 43.9 | 53.8 |
| Ecology, Sustainable Transport Development | P203 | Funding for the maintenance of French waterways (VNF) | 248.2 | 50.8 | 241.6 | 216.2 | 267.0 |
| | | Support for combined transport (rail, sea and inland waterways) | 34.9 | 7.1 | 27.0 | 24.2 | 31.3 |
| | | Reduced tax on electricity (TICFE) for operators of rail or cable transport or electric or hybrid buses | 197.8 | 40.5 | 186.8 | 167.2 | 207.7 |
| | P113 | Landscape, Water and Biodiversity programme to protect environments | 142.0 | 29.0 | 149.5 | 133.8 | 162.8 |
| | P159 | Funding allocated to the French Research Centre on Environmental Risk, Transport and Planning (CEREMA) | 96.0 | 19.6 | 93.8 | 83.9 | 103.6 |
| | | Funding allocated to Météo France | 61.6 | 12.6 | 69.2 | 61.9 | 74.5 |
| | P174 | Energy transition and fighting climate change | 61.5 | 12.6 | 56.4 | 50.5 | 63.0 |
| | | Fighting air pollution: funding for studies, agencies and policies | 23.5 | 4.8 | 25.2 | 22.6 | 27.4 |
| | | Energy transition tax credit | 1948.0 | 398.5 | 1136.0 | 1016.6 | 1 415.1 |
| | | Property tax exemptions for social housing agencies (HLM) and semi-public companies (SEM) | 92.2 | 18.9 | 109.0 | 97.5 | 116.4 |
| | P181 | ADEME (the French Environment & Energy Management Agency) | 572.4 | 117.1 | 583.8 | 522.5 | 639.6 |
| | P345 | Promoting renewable energies in areas not connected to the national grid (ZNI) | 41.4 | 8.5 | 31.3 | 28.0 | 36.5 |
| | Management of public finances and human resources | Multiples | Reimbursement of public transit passes for civil servants | 77.9 | 15.9 | 83.0 | 74.2 |
| Public action and transformation | P348 | Energy renovations in public buildings | 1.8 | 0.4 | 11.9 | 10.6 | 11.0 |

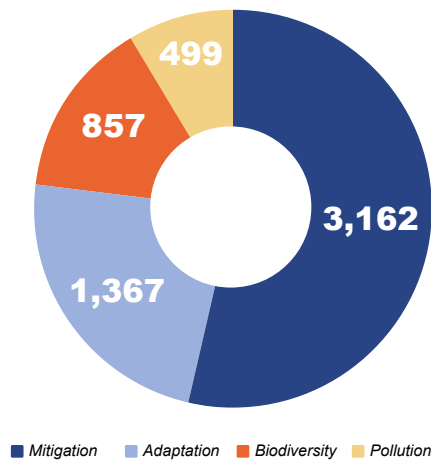
| Expenditure by sector (in € millions) | | | | | | | Expenditure by objective (in € millions) | | | | Indicator | 2017 | 2018 | 2019 |
|---------------------------------------|------------------|-----------|--------|------------|-----------|--------------|--|------------|--------------|-----------|---|-----------|-----------|---------|
| Building | Living Resources | Transport | Energy | Adaptation | Pollution | Multi-sector | Atténuation | Adaptation | Biodiversité | Pollution | | | | |
| | 257.8 | | | | | | | 128.9 | 128.9 | | Percentage of publicly-owned forests being sustainably managed | 94.6% | 95.8% | 96.1% |
| | 55.1 | | | | | | | 18.4 | 18.4 | 18.4 | Number of farming businesses benefiting from the tax credit | 13 531 | 14 851 | 16 500 |
| | 4.8 | | | | | | | 1.6 | 1.6 | 1.6 | Percentage of organic farms in total agricultural land area in use | 6.6% | 7.5% | 8.5% |
| 121.3 | | | | | | | 121.3 | | | | Number of homes renovated | 52 266 | 62 345 | 116 995 |
| 53.8 | | | | | | | 53.8 | | | | Number of credit institutions authorized to grant zero-interest green loans | 24 315 | 18 755 | 35 574 |
| | | 267.0 | | | | | 89.0 | 89.0 | 89.0 | | Waterway availability rate | 98.2% | 96.1% | 97.5% |
| | | | | | | | | | | | Modal shares | | | |
| | | | | | | | | | | | ... Share of combined transport in inland passenger transport | 18.2% | 18.0% | 18.2% |
| | | 31.3 | | | | | 31.3 | | | | ... Share of rail transport in internal goods transport/ | 9.6% | 9.0% | 9.0% |
| | | | | | | | | | | | ... Share of waterway transport in internal goods transport | 1.9% | 1.9% | 2.0% |
| | | 207.7 | | | | | 207.7 | | | | Volume of power usage concerned by the reduced TICFE tax rate (in TWh) | 8.87 | 8.91 | 8.46 |
| | 162.8 | | | | | | | 81.4 | 81.4 | | Percentage of mainland France subject to stringent protection measures | 1.37% | 1.37% | 1.51% |
| | | | | | | | | | | | Percentage of maritime areas under protection | 22.36% | 22.91% | 23.57% |
| | | 103.6 | | | | | 34.5 | 34.5 | | 34.5 | Number of publications intended for public authorities per CEREMA agent | 0.46 | 0.53 | 0.58 |
| | | | | | | 74.5 | 37.3 | 37.3 | | | Number of international research publications in peer-reviewed journals, per researcher | 1.77 | 1.60 | 1.60 |
| | | | 63.0 | | | | 63.0 | | | | | | | |
| | | | | | 27.4 | | | | | 27.4 | Annual air pollution emissions (in kt) | | | |
| | | | | | | | | | | | NOx | 804 | 749 | 710 |
| | | | | | | | | | | | NH ₃ | 599 | 594 | 592 |
| | | | | | | | | | | | COVnm | 620 | 595 | 576 |
| | | | | | | | | | | | PM _{2,5} | 143 | 134 | 125 |
| 1,415.1 | | | | | | | 1,415.1 | | | | Number of households benefiting from the CITE tax credit | 1,245,754 | 1,419,100 | 930,000 |
| 116.4 | | | | | | | 116.4 | | | | Number of HLMs and SEMs benefiting from the exemption | 6,446 | 8,369 | 8,350 |
| | | | | | | 639.6 | 319.8 | | | 319.8 | Efficiency of the energy fund in euros/TOE: | | | |
| | | | | | | | | | | | Biomass sector, heavy industry | 747 | 741 | 470 |
| | | | | | | | | | | | Biomass sector, other industries | 852 | 849 | 650 |
| | | | | | | | | | | | Solar heating | 7,687 | 5,480 | 5,740 |
| | | | | | | | | | | | Geothermal energy | 1,697 | 930 | 1,350 |
| | | | 36.5 | | | | 36.5 | | | | | | | |
| | | 90.2 | | | | | 90.2 | | | | | | | |
| 11.0 | | | | | | | 11.0 | | | | | | | |

| Mission | Programme | Expenditure | Amount (in € millions) | | | | |
|-------------------------------|--------------|--|------------------------|---------------------|----------------|---------------------|----------------|
| | | | 2018 | | 2019 | | Total |
| | | | Eligible | Remainder allocated | Eligible | Remainder allocated | Allocated |
| Research and higher education | P172 | Environmental projects of public research bodies (BRGM, CEA, CIRAD, CNRS, IFREMER, INRA, IPEV, IRD, IRSTEA) | 1,148.9 | 235.0 | 1,146.3 | 1,025.8 | 1,260.8 |
| | P193 | Developing space research technology for improved Earth observation | 378.7 | 77.5 | 390.7 | 349.6 | 427.1 |
| | P190 | CEA research into new energy technologies | 70.0 | 14.3 | 51.0 | 45.6 | 60.0 |
| | | Funding for the applied research of the French Science and Technology Institute for French Network Development (IFSTTAR) | 18.0 | 3.7 | 20.9 | 18.7 | 22.4 |
| Invest for the Future (PIA) | PIA 1 | Energy renovations for housing (ANAH) | 117.3 | 24.0 | 25.8 | 23.1 | 47.1 |
| | | Energy transition institutes (ITEs) | 46.5 | 9.5 | 24.0 | 21.5 | 31.0 |
| | | City of the future | 32.0 | 6.5 | 50.3 | 45.0 | 51.6 |
| | | Green technology funding (innovate SMEs) | 15.2 | 3.1 | 17.7 | 15.8 | 18.9 |
| | PIA 1 et 2 | "Energy transition demonstrators" (which includes the circular economy and smart grids) | 62.9 | 12.9 | 97.0 | 86.8 | 99.7 |
| | | Vehicles of the future | 93.5 | 19.1 | 99.9 | 89.4 | 108.5 |
| | PIA 3 | Innovation competition (ADEME) | 8.1 | 1.7 | 10.6 | 9.5 | 11.1 |
| | | Faster development of high-performing innovation ecosystems (transport and sustainable mobility) | 0.2 | 0.0 | 1.8 | 1.6 | 1.7 |
| | | Energy transition demonstrators and the «TIGA» highly ambitious innovative regions scheme (CDC) | 3.8 | 0.8 | 5.1 | 4.6 | 5.3 |
| | Total | | | 6,064.8 | 1,240.7 | 5,188.7 | 4,643.3 |
| As % of the total | | | | | | | |

| Expenditure by sector (in € millions) | | | | | | | Expenditure by objective (in € millions) | | | | Indicator | 2017 | 2018 | 2019 |
|---------------------------------------|------------------|--------------|--------------|--------------|-------------|--------------|--|----------------|--------------|--------------|--|-------|-------|-------|
| Building | Living Resources | Transport | Energy | Adaptation | Pollution | Multi-sector | Atténuation | Adaptation | Biodiversité | Pollution | | | | |
| | 493.5 | | 225.8 | 493.5 | 48.1 | | 225.8 | 493.5 | 493.5 | 48.1 | Research produced by the programme operators | | | |
| | | | | | | | | | | | Worldwide | 1.71% | 1.62% | 1.54% |
| | | | | | | | | | | | In the European Union | 6.1% | 6.0% | 5.8% |
| | | | | | | | | | | | In France, Germany and the United Kingdom | 13.9% | 13.6% | 13.5% |
| | | | | 427.1 | | | | 427.1 | | | Research produced by the programme operators | | | |
| | | | | | | | | | | | Worldwide | 3.9% | 3.7% | 3.6% |
| | | | | | | | | | | | In the European Union | 14.2% | 13.6% | 13.0% |
| | | | | | | | | | | | In France, Germany and the United Kingdom | 30.7% | 29.6% | 28.4% |
| | | | 60.0 | | | | 60.0 | | | | Measurement of transfers of NETs to industrial players: | | | |
| | | | | | | | | | | | Number of patents filed | 259 | 200 | 216 |
| | | | | | | | | | | | Valuation (in € millions) | 41.1 | 38.6 | 36.8 |
| | | 22.4 | | | | | 11.2 | 11.2 | | | Research produced by the research bodies in the programme: number of publications per researcher | 0.90 | 0.96 | 1.03 |
| 47.1 | | | | | | | 47.1 | | | | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 3.5 |
| | | | 31.0 | | | | 31.0 | | | | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 0.3 |
| | | | | | | 51.6 | 12.9 | 12.9 | 12.9 | 12.9 | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 8.3 |
| | | | | | | 18.9 | 4.7 | 4.7 | 4.7 | 4.7 | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 2.9 |
| | | | | | | 99.7 | 24.9 | 24.9 | 24.9 | 24.9 | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 2.0 |
| | | 108.5 | | | | | 108.5 | | | | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 2.2 |
| | | | | | | 11.1 | 5.6 | | | 5.6 | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 1.3 |
| | | 1.7 | | | | | 1.7 | | | | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 1.2 |
| | | | | | | 5.3 | 1.3 | 1.3 | 1.3 | 1.3 | Leveraging ratio (public/private funding to contractual amounts by the PIA) | | | 1.4 |
| 1,764.8 | 973.9 | 832.3 | 416.3 | 920.5 | 75.5 | 900.8 | 3,161.6 | 1,366.6 | 856.6 | 499.2 | | | | |
| 30.0 | 16.6 | 14.1 | 7.1 | 15.6 | 1.3 | 15.3 | 53.7 | 23.2 | 14.6 | 8.5 | | | | |

FOUR OBJECTIVES OF GREEN OAT

As defined in the Framework for the Green OAT, expenditure must address one of the four following objectives: combating climate change (or mitigation), adapting to climate change, protecting biodiversity and reducing pollution. The allocation of proceeds to Eligible Green Expenditure in 2019 for each objective was as follows:



EXPENDITURE BY OBJECTIVE (€ MILLIONS)

CLIMATE CHANGE MITIGATION

- Of the €5.9 billion allocated in 2019, 54% was allotted to programmes for climate change mitigation, amounting to €3.2 billion. The high percentage reflects the magnitude of the issue. Today, combating climate change is a priority for which effective initiatives can and must be implemented without delay.
- In 2017, the annual carbon footprint per capita in France was 7.0 tonnes of carbon dioxide equivalent⁷. This individual emissions amount is calculated by adding the country's greenhouse gas emissions from households (cars, heating), industry (production of goods and energy for both export and domestic consumption), the service sector, transport and agriculture. This figure is then divided by the number of inhabitants.

- Today, France is one of the best performers in the European Union. The 28 member states had an average carbon footprint of 8.4 tonnes of CO₂ equivalent per inhabitant in 2017⁷. France's carbon footprint has steadily shrunk since 1990, when it was 9.4 tonnes of CO₂ equivalent per inhabitant⁷.
- However, it must shrink faster if France is to reach the carbon neutrality objective set in its national low-carbon strategy (SNBC), lowering emissions across the country to around 1.1 tonnes of CO₂ equivalent per inhabitant by 2050. This target will help balance man-made emissions with the capacity of natural carbon sinks throughout the French territory (such as forests, bogs, prairies and natural soils).
- The new Strategy, revised in 2018-2019, aims to almost completely eliminate carbon emissions from the transportation, energy and building industries by 2050. These targets match the need to balance man-made emissions with the capacity of natural carbon sinks throughout the French territory.

ANTICIPATING RISKS

- Risk mitigation must be stepped up since climate change is under way, with some effects already palpable.
- The year 2019 was ranked the third hottest ever on record (i.e. since the beginning of the twentieth century). Like the year before, it also saw several extreme weather events such as cyclones, severe storms, flooding, landslides, heat waves and droughts. Similarly, glaciers and polar ice caps are melting at an increasing pace, raising sea levels.
- Risk mitigation must therefore concur with preparation for the long-term effects of global warming. Some €1.4 billion (23%) of Green OAT proceeds allocated in 2019 were used for climate change adaptation. Initially this involves improving our ability to forecast climate change and its consequences on socio-economic activities and nature.

⁷ - The per capita carbon footprint is calculated by dividing the country's GHG emissions aside from LULUCF (source: Key Climate Figures 2020) by the population of the geographical area in question (source: INSEE).

PROTECTING BIODIVERSITY

- Another already visible sign of the environmental crisis is the escalating erosion of global biodiversity, currently considered the sixth mass extinction event in Earth's history. The May 2019 global assessment report by the UN's Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) confirms this trend and warns of the rapid decline of our ecosystems.
- Protecting biodiversity is a fundamental, emblematic aspect of the ecological challenge, commensurate with the countless ecosystem services that biodiversity bestows on us. This objective is closely tied to the other three set for Green OAT, given that pollution and climate change are the two leading reasons for loss of biodiversity, along with habitat destruction, invasive species and overharvesting.
- Some 15% of Green OAT funding allocated in 2019 (€857 million) was used for the protection of biodiversity. Such protection requires two parallel actions: furthering knowledge of biodiversity on French territory and enhancing conservation of the most sensitive natural areas.

REDUCING POLLUTION

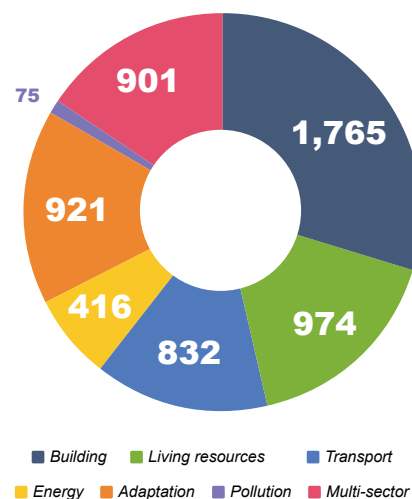
- The remaining 8% of Green OAT proceeds allocated in 2019 (€499 million) funded efforts to reduce water, air and soil pollution.
- These environments are most likely polluted from common, highly visible yet harmful human activities, with direct consequences for public health and biodiversity. Water, air and soil pollution also closely echo our ability – or inability – to live and grow with due concern for our environment and that of future generations.
- Reducing the polluting effects of our activities requires implementing measures in all major sectors of our economy (residential/tertiary, transport, industry and agriculture). It also means monitoring air, water and soil quality to determine which measures to take and where, and ensuring that they are effective.

26

27

PROCEEDS ALLOCATED TO SIX SECTORS

To meet the four objectives previously mentioned, programmes funded by the Green OAT fall into six major sectors: Building, Energy, Transport, Living resources, Pollution and Adaptation. The sectors are defined in the Green OAT Framework, available on the AFT website⁸. They encompass economic sectors that are heavily affected by greenhouse gas emissions (e.g. building, energy production, transport and agriculture), and other issues directly related to Green OAT objectives (e.g. preserving living resources, controlling pollution and adapting to climate change).



EXPENDITURE BY SECTOR (€ MILLIONS)

8 - <https://www.aft.gouv.fr/fr/oat-verte>

Three large sectors account for almost two thirds of the €5.9 billion in proceeds allocated in 2019: Building (30%), Living resources (17%) and Adaptation (16%). Transport (14%), Energy (7%), Pollution (1%) and Multi-sector expenditures (15%) benefited from the remaining proceeds allocated.

The individual sectors meet the four Green OAT objectives in different ways. For example, Building

expenditure almost entirely advanced the objective of climate change mitigation, promoting energy efficiency with insulation work on French residential-tertiary sector buildings. Proceeds allocated to Living resources, on the other hand, were more diversified, as they funded biodiversity protection and climate change adaptation. They were devoted to tax expenditure, research, sustainable forestry or natural areas management and farming.

MULTI-SECTOR EXPENDITURE

This category represents 15% of Green OAT expenditure (€901 million) and includes six expenditure items of which the four largest are:

Funding for the French Environment & Energy Management Agency (ADEME)

- **Amount allocated from Green OAT proceeds:** €639.6 million
- **Description:** The funding is in connection with the Great Investment Plan (GPI) for ecological transition. In particular, it comprises specific funds for heating, air quality and mobility, another for the circular economy, and support for SMEs to cut back on waste. For 2019, an additional €158 million were allocated to ADEME as part of the Great Investment Plan.
- **Impact:** This funding bolstered the heating fund, a crucial tool in reaching the goal of 38% renewable energy within total national power use by 2030 (objective set out in France's Energy Transition Act for Green Growth)⁹. In 2019, the heating fund budget was increased by 50%¹⁰ compared with 2017.

The funding also furthered the fund for the circular economy, a crucial lever for reaching the ambitious objectives of both the Energy Transition Act and France's "anti-waste law for a circular economy". The objectives include achieving a 65% recycling rate for non-hazardous waste by 2025 and halving the amount of waste sent to landfills between 2010 and 2025. Another goal is to gradually eliminate single-use plastics by 2040, in increments: disposable consumer tableware and cotton buds in 2020, drinking straws, takeaway cups and confetti in 2021, fruit and vegetable packaging and tea bags in 2022, disposable restaurant tableware in 2023, etc.

Funding for demonstrators of the Invest for the Future Programme (PIA)

- **Amount allocated from Green OAT proceeds:** €99.7 million
- **Description:** The purpose of the demonstrators is to develop tools that spur on energy and ecological transition while modernising the French economy, particularly as regards the circular economy, smart grids, renewable energies, green industry and agriculture, home energy renovations, organically sourced products, and biofuels. In 2018 and 2019, 32 projects were funded.
- **Impact:** This funding makes it possible to structure and develop business ecosystems furthering energy transition. The leveraging ratio (public/private funding to contractual amounts) is 2.

Météo France operations and investments:

- **Amount allocated from Green OAT proceeds:** €75 million
- **Description:** France's national weather service, Météo France, runs a research programme in "Expertise, geographic information and meteorology". The research enables Météo France to continuously improve its services. It enhances understanding of the complex phenomena behind significant weather events, and provides the skills necessary to understand past climate phenomena, make forecasts and support public authorities' climate change adaptation policies.

9 - Key Climate Figures – France, Europe and the World, SDES, 2020

10 - ADEME Budget vote, December 2018

The work of Météo France also furthers climate change mitigation. For example it helps the aviation industry cut emissions thanks to improved understanding of wind patterns. Additionally, anticipating forest fires, major sources of carbon emissions, helps to limit their spread.

- **Impact:** The Green OAT funding enables Météo France to maintain a high level of research production, with an average 1.6 publications per researcher in 2019.

This indicator measures the teams' production using standard bibliometrics: it only takes into account publications in leading scientific journals with an impact factor above 1 as defined by ISI web¹³. This means that only the most impactful, peer-reviewed journals are concerned. Consequently, the indicator reflects Météo France's efforts in terms of research and innovation.

Invest for the Future fund for "Cities of the future"

- **Amount allocated from Green OAT proceeds:** €51.6 million
- **Description:** This programme funds various projects aimed at developing attractive and robust cities that protect the environment, and promote social cohesion and quality of life for inhabitants. Initiatives include industrial conversion, regeneration of wasteland, refocusing the city around the river, quality of life in densely populated areas, generation of renewable energy with the construction of positive energy buildings, energy renovation, mobility management and the enhancement of natural areas.
- **Impact:** This funding contributed to a strong leverage ratio of 8.3 (public/private funding to contractual amounts), which bears testimony to the appeal of the "City of the Future" programme with investors.

Invest for the Future Programme "eco-technology" fund

- **Amount allocated from Green OAT proceeds:** €18.9 million
- **Description:** This programme funds innovative SMEs operating in four major areas: renewable low-carbon energy and green chemistry; circular economy (waste recycling, eco-product design, industrial ecology); Smart Grids; and vehicles of the future (projects using non-fossil energy sources).
- **Impact:** This funding encourages SME innovation by attracting private investors, as reflected in the leverage ratio of 2.9 (public/private funding to contractual amounts).

The following section presents a sector-by-sector analysis of Green OAT expenditure and the associated KPIs.

Focus on “Invest for the Future” programme | Innovation Competition

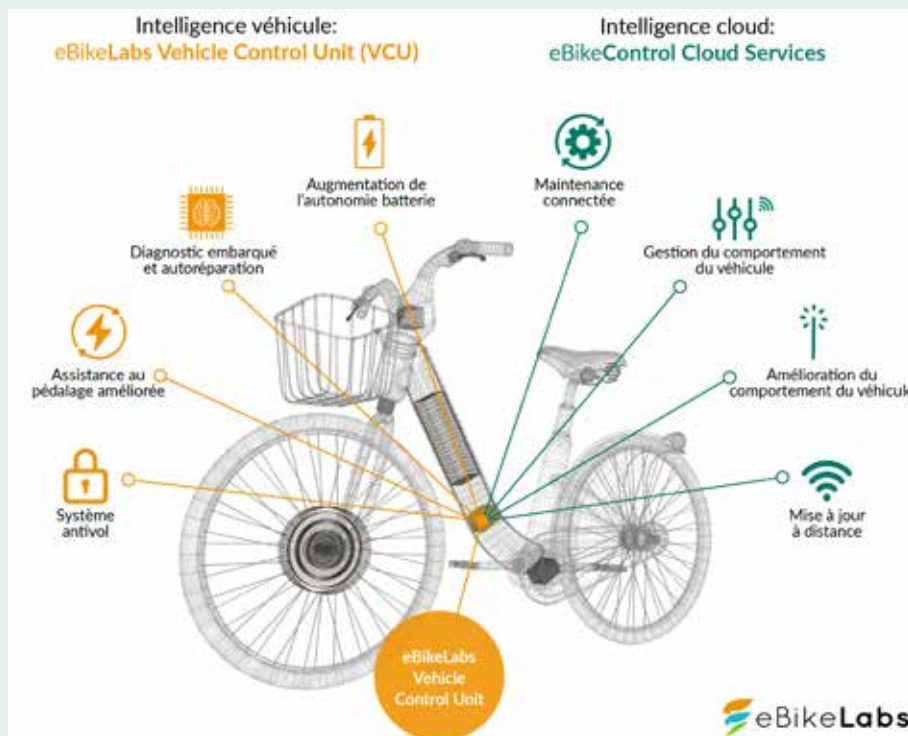
eBikeBrain

eBikeLabs is a young, dynamic startup based in Grenoble. They develop and market innovative, interactive solutions for e-bike fleets. The e-bike and bike sharing markets are booming. eBikeLabs boasts innovative technology featuring an original pairing of hardware and software based on powerful algorithms. The solution developed is a “brain” for e-bikes. Instead of being a mere item of propulsion, the motor is genuinely interactive.

The eBikeBrain project aims to significantly cut overhead, in particular for e-bike share providers, by optimising maintenance, doing away with costly parts, and extending battery life. In other words, it provides out-of-the-box solutions to the last remaining hurdles preventing the widespread rollout of e-bike sharing systems, particularly in cities.

Total cost of the project: €1,746,016

PIA funding: €764,748



Crédit : eBikeLabs

Focus on “Invest for the Future” programme | City of the Future

FLUDIS: barge shipping for cleaner last mile delivery

The FLUDIS barge is a floating warehouse meeting pressing environmental needs in downtown cores. Lightweight goods are packaged on-board and delivered express throughout Paris using electrical delivery tricycles. The 38-metre barge has a hybrid motor and integrated crane, giving it great freedom in choosing quays for offloading. After passing through its on-board pick-and-pack zone, the packages are delivered by a fleet of 27 connected, electric delivery tricycles. The concept is innovative both from a technical standpoint and in terms of usage. It ensures clean last mile logistics, and improves traffic in downtown cores by limiting

air pollution and noise in densely-populated areas. On the basis of 3,000 packages delivered every day, the forecast impact is 110 tonnes of carbon dioxide emissions prevented every year. The AMME company behind the project inaugurated this first 100% electrical floating warehouse on 21 September 2019, in Paris.

Total project investment: €3,400,000

Maximum Invest for the Future contribution: €750,000 in equity and quasi-equity

CDC contribution from own resources: €750,000 in equity and quasi-equity



Photo credit: Fludis

Analysis and performance of each sector

BUILDING

LOWERING ENERGY NEEDS IN OUR BUILDINGS

Building energy renovations offer considerable climate, social and economic benefits.

- Buildings account for 46.5%¹² of final energy consumption in France and produce 17% of the country's greenhouse gas emissions¹³. The building sector needs to radically improve its carbon performance to meet the objectives of the national low-carbon strategy (SNBC¹⁴).
- 3.8 million uninsulated homes are currently occupied by households suffering from energy poverty¹⁵. Renovation can therefore also be tied in with a solidarity policy, with the short-term focus on improving energy efficiency in the homes of low-income households.
- Developing the building sector also creates skilled jobs that are local and not susceptible to relocation.

The sector's challenges particularly revolve around old builds.

- Given the slow pace of building renewal (around 1% per year), by 2050 France's built environment will mainly comprise structures already existing today.
- One of the four focus areas defined by the National Low-Carbon Strategy is to increase energy retrofit efforts by both renovating the building envelope (i.e. thermal insulation) and improving the energy and climate efficiency of systems (e.g. heating, air conditioning, domestic hot water, ventilation).
- The objective released in 2020 aims to renovate at least 370,000 dwellings per year from 2020 to 2030 and 700,000 per year between 2030 and 2050. Energy renovation to buildings has yet to become widespread.

SUPPORTING ENERGY RENOVATION

The tremendous scale of energy renovations to residential and tertiary buildings under France's Climate Plan is reflected in the allocation of proceeds to the Building sector. These expenditures finance four areas, all committed to improving the energy efficiency of French buildings:

French energy transition tax credit (CITE)

- **Amount allocated from Green OAT proceeds:** €1,415 million
- **Description:** The CITE is a household income tax credit for energy-saving renovation of a primary residence. Materials, equipment and appliances must meet well-defined performance standards and criteria and be installed by certified professionals. Before 2019, the tax credit amounted to a certain percentage of eligible renovation invoices. In 2020, this changed to a lump sum per type of renovation, capped at 75% of invoices.
- **Impact:** 930,000 households benefited from the CITE tax credit in 2019 (for 2018 renovations).

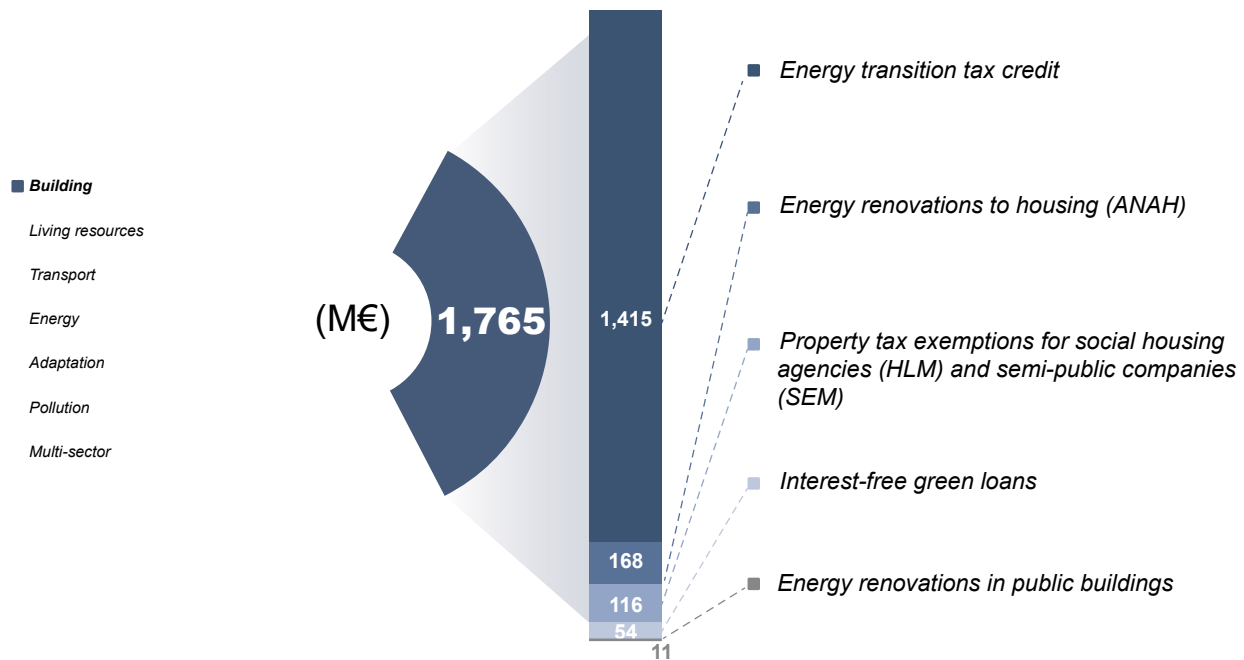
12 - Key Energy Figures, SDES, 2019

13 - Key Climate Figures – France, Europe and the World, SDES, 2020

14 - SNBC: French national low-carbon strategy, published in April 2020

15 - Energy precarity dashboard (Tableau de bord de la précarité énergétique), ONPE, 2019

Fonds alloués au bâtiment au titre des émissions 2019



Property tax exemptions for social housing agencies (HLM) and semi-public companies (SEM)

- **Amount allocated from Green OAT proceeds:** €116.4 million
- **Description:** Under this scheme, up to 25% of energy-saving renovation expenditure is deducted from property tax on buildings. Over 6,000 HLM agencies and semi-public companies have benefited from the relief.
- **Impact:** In 2019, over 8,000 HLM agencies and semi-public companies benefited from the relief. The tax credit also helps reduce the number of uninsulated low-income homes.

Interest-free green loans

- **Amount allocated from Green OAT proceeds:** €54 million
- **Description:** This type of loan provides up to €30,000 to fund renovations to improve energy efficiency in homes that are less than two years old. The loan is granted for at least one action that features on the official list of eligible renovations, or for renovations that result in a legally-defined quantitative improvement in the dwelling's energy consumption. Interest-free green loans are tracked by the French low-income mortgage intermediary SGFGAS, which acts as an intermediary between the French State and lending banks, controlling and managing the subsidised loans¹⁶.

- **Impact:** In 2019, credit institutions set up 35,570 interest-free green loans, 90% more than in 2018.

Energy renovations to housing

- **Amount allocated from Green OAT proceeds:** €168 million
- **Description:** This initiative funds the Better Living, "Habiter mieux"¹⁷, programme to fight energy poverty, organized by the State Home Improvement Authority (ANAH). The ANAH's goal for the programme is to renovate 75,000 homes per year, with priority given to low-income households.
- **Impact:** In 2019, the ANAH achieved a record peak of activity, with 116,995 homes renovated.

Renovations in public buildings

- **Amount allocated from Green OAT proceeds:** €11 million
- **Description:** This programme aims to renovate administrative complexes to significantly further the energy transition, particularly by lowering energy expenditure.
- **Impact:** In 2018, 54 energy and technical audits were performed to provide comparable information used to decide which buildings were the priority for renovations. This preliminary analysis phase in 2019 singled out 39 administrative complexes for renovation.

32

33

16 - SGFGAS missions - <https://www2.sfgas.fr/web/site-public/missions>

17 - Information package for the "Better Living" programme (Habiter mieux), 2016 - ANAH



Energy efficiency assessment of two homes with different degrees of insulation

Focus | 2019, the year the interest-free green loan was drastically simplified

France's interest-free green loans were created in 2009 to support early energy renovation policies. The guaranteed loan, available to all income brackets, helps individuals finance renovations to improve energy performance. It is capped at €30,000 per dwelling and must fund one of the following:

- A set of two or three types of renovation;
- Renovation to reach a certain minimum, overall energy performance for the dwelling; or
- Renovation of a private sewer system.

Interest-free green loans are open to homeowners whose property is self-occupied or rented; to non-trading partnerships that are not subject to corporate income tax; and to condominium associations. The loan is granted for a given dwelling.

The year 2019 saw a drastic simplification of interest-free green loans. It is now possible to finance only one type of renovation (March 2019) and the paperwork is also much simpler (September 2019), making it easier to obtain bank funding.

- Renovation "package" no longer required

As of 1 March 2019, it is no longer necessary to plan a "package" of renovations. It is possible to choose only one from the official list, making it easier for households to finance the balance of the renovations, particularly low-income and very low-income households that were previously unable to do several types of renovations at once. With this simplification, the number of loans skyrocketed right from the second quarter of 2020.

- Administrative simplification of the loan

Several other simplifications also contributed to the upswing in green loans:

- establishing the same (maximum) loan term of 15 years, regardless of the number of renovations funded. This reduced monthly payments by 33% since the 10-year loan for fewer than three types of renovation was extended to 15 years;
- setting up a single cap of €15,000 per renovation type (not including insulation of outer walls with glazing) and €25,000 for two renovation types;

- extending the deadline by which an additional interest-free green loan can be applied for, under the initial interest-free green loan, to 5 years per dwelling. This makes it easier to plan energy renovations in phases;
- implementing the same condition as the "CITE" energy transition tax credit regarding the age of the dwelling (2 years);
- authorisation to fund renovations that had already been started less than three months prior.

Finally, all procedures and instructions were simplified and made paperless.

The interest-free green loan specifically for condominiums, which is delivered to condominium associations, was also simplified. For example, the requirement that 75% of total units be owner-occupied was removed. This ceiling had limited the possibility for condominiums to apply for the loan if they had large percentages of professional or commercial space. Additionally, an interest-free green loan taken out by a condominium association can be followed by another interest-free green loan granted to this same association or an individual condo owner. The purpose is to facilitate energy renovation financing in phases, furthering the goal of achieving a low-energy built environment by 2050.

All these measures led to a boom in interest-free green loans in 2019, culminating in 35,700 personal loans being granted, of which 19,930 over the last quarter (the figures on interest-free green loans for condominiums had not been finalised as of May 2020).

The trend should continue in 2020, public health crisis permitting. On 1 April 2020, a pilot project started delivering the loan through two third-party financing companies in Île-de-France and Hauts-de-France.

LIVING RESOURCES

AN ICONIC ENVIRONMENTAL CONCERN...

France's extraordinarily abundant living resources perform crucial services.

- With its extensive, diverse territories, France boasts an outstanding natural heritage. Continental France is bordered by the Atlantic, the Alps, and the Mediterranean, while the overseas regions feature tropical forests in French Guiana, coral reefs in three different oceans, and lands in the southern hemisphere and Antarctic.
- France's living resources encompass all the natural riches housed on its lands. They provide us manifold services: insects pollinate, earthworms enrich the soil, plants naturally purify water and prevent erosion and flooding, and bogs store carbon. More generally, living resources comprise all the public lands and natural areas that enhance our living environment through their aesthetic, spiritual, recreational and educational qualities.

France's forest heritage is particularly priceless and must be protected.

- Mainland France boasts over 16.8 million hectares of forest – 31% of its land area – and there are another 8.7 million hectares in overseas regions (mainly French Guiana)¹⁸.
- This heritage is a crucial resource for the French economy. Of 2.7 billion cubic metres of standing timber, some 45 million cubic metres¹⁹ are harvested and sold in particular to the building, furnishing, packaging and power industries each year.
- Forests are also a treasure trove of biodiversity. Even excluding French Guiana and other overseas territories, which account for over 60% of France's catalogued species, the forests of mainland France are home to 138 tree species²⁰, 128 mammal species, 596 bird species²¹ and 72% of mainland plant life. Natura 2000 sites also include woodlands.
- Finally, forests also play a crucial role in climate change mitigation as carbon sinks. Every year, French forests sequester around 50 million tonnes of carbon²², the equivalent of 11% of the country's greenhouse gas emissions.

- However, many French forests are aging and their timber is harvested little if at all. They are near saturation as carbon sinks, and more vulnerable to climate change and biological threats. Faced with this situation, France has set up an active, sustainable management strategy for forests and the timber industry, to foster more dynamic forestry that cares for ecosystems.

Habitat encroachment and intensive farming techniques threaten these resources.

- In France, as across the globe, natural environments are fragmented and destroyed in the name of urbanisation and developing human infrastructure. Some wild species fall victim to overfishing, deforestation and poaching. Others, suffering from water, soil and air pollution, are forced to migrate to adapt to climate change – if they still can.
- Over years of intensive development, natural areas have been swallowed up at a rate of 68,000 hectares per year²³ in mainland and overseas France. As a result, France ranks sixth worldwide in terms of the number of endangered species (1,546 total, including 293 in mainland France)²⁴.

Our public policies on biodiversity protection encourage three lines of action:

- Consistently furthering scientific knowledge of our natural environments, since to draw up effective measures it is crucial to determine the biodiversity in them and the way their ecosystems work;
- Protecting and enhancing our natural heritage through the wide range of resources (e.g. national parks, marine parks, Natura 2000 sites, etc.) that can be tailored to diverse grassroots issues;
- Modernising our farming and forestry practices to achieve more sustainable, environmentally-friendly management of our natural resources.

18 - IGN Forest Inventory Memento (Le memento), 2019

19 - IGN Forest Inventory, Forestry Flows (Les flux en forêt), 2018

20 - French Forestry Commission (ONF), official website

21 - National Inventory of Natural Heritage (INPN), French Biodiversity Observatory (ONB): 100 species figures explained (100 chiffres expliqués sur les espèces), May 2019

22 - SNBC: French national low-carbon strategy, published in April 2020

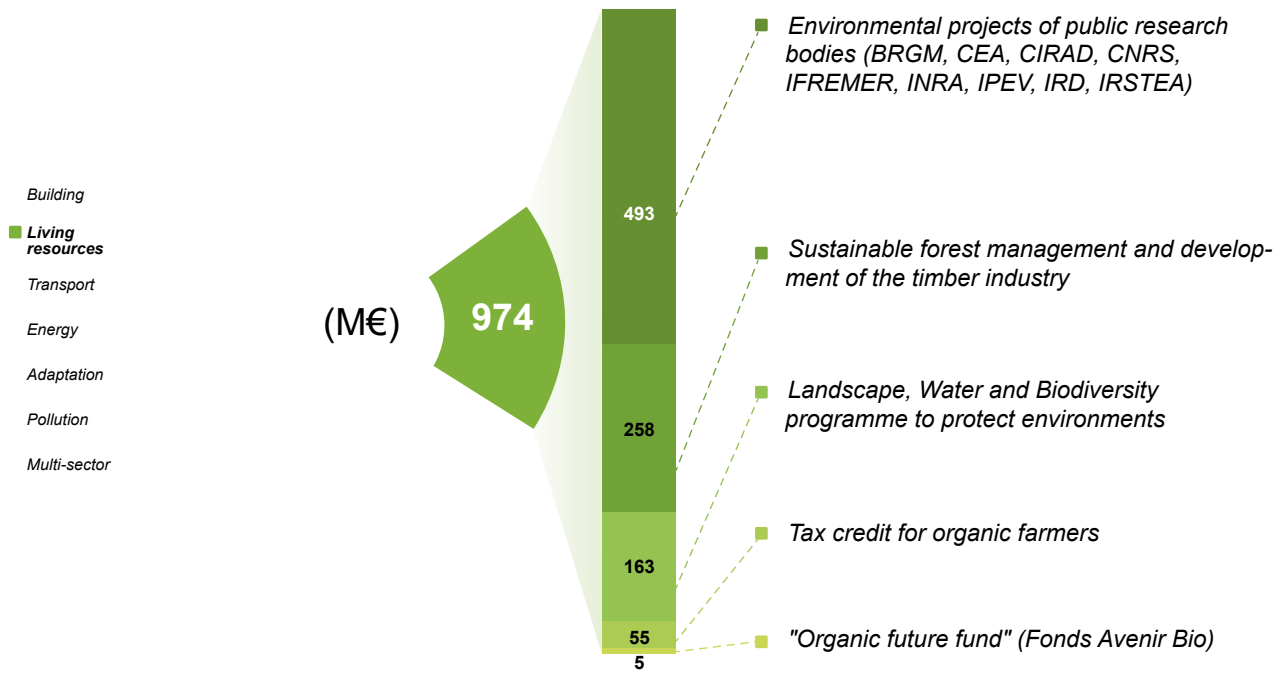
23 - Calculated from the Teruti land use surveys, later renamed Teruti - Lucas

24 - Biodiversity explained (in French), Ministry for Ecological and Inclusive Transition, 2018

SUPPORTING LIVING RESOURCE PROTECTION

At almost €974 million in 2019, "Living resources" was the second largest item of Green OAT expenditure.

Expenditure met the three above-mentioned goals of furthering knowledge of biodiversity, protecting environments and encouraging change.



Newts need protection from habitat encroachment in France

Funding research

- **Amount allocated from Green OAT proceeds:** €494 million
- **Description:** Funding for scientific and technological research at leading French research facilities (CIRAD, CNRS, INRA, etc.)²⁵ to deepen knowledge of our country's biodiversity and explore new farming solutions.
- **Impact:** In 2019, programme participants contributed 1.54% of the content of internationally recognised scholarly journals, 5.8% at EU level (EU 28) and 13.5% in the France-Germany-United Kingdom area.

Safeguarding the value of our forest assets

- **Amount allocated from Green OAT proceeds:** €258 million
- **Description:** Funds the strategy for sustainable forest management and a sustainable timber industry, which entails developing and planning the long-term management of private and public forests. The strategy is rolled out by two main players:
 - The National Centre for Forest Owners (CNPF) is a Government entity serving 3.5 million forest owners. Through territorial development, it contributes to the sustainable management of private forests and their maintenance, in particular by advising and training forest owners.
 - The French Forestry Commission (ONF) is a public entity that manages public forests in France, i.e. 25% of forest assets. Its threefold objective is to grow and harvest timber to meet society's needs; to preserve the environment; and to provide services for the public.
- **Impact:** Over almost 12 million hectares, the Forestry Commission strives to develop knowledge of forest geography and characteristics (via field and satellite observation, monitoring of biodiversity, etc.) to enable it to manage forests over the long term and ensure that trees are harvested at a rate suited to their natural life spans while replacing old growth with new trees. This also entails conducting the work and investment necessary for forest renewal.

Protecting and restoring biodiversity

- **Amount allocated from Green OAT proceeds:** €163 million
- **Description:** Preserving biodiversity on French territory requires two main actions: researching and monitoring biodiversity (to determine which areas to protect and assess the outcomes of such protection); and providing effective protection in natural areas teeming with biodiversity. The Green OAT furthers both those goals by funding the planning, maintenance and extension of protected areas, as well as biodiversity monitoring.

The French Biodiversity Observatory (ONB) monitors and inspects the status of biodiversity in mainland and overseas France. The observations and indicators published by the French Biodiversity Observatory provide a crucial basis for public policy on restoring bird biodiversity and protecting natural areas.

- **Impact :** Such protection takes many different forms: national and regional parks, SCAP²⁶ protected areas, water-and-land belts, Natura 2000 sites and wetlands. All these measures meet one of the objectives of the Convention on Biological Diversity (CBD), an international treaty signed at the 1992 Earth Summit in Rio de Janeiro, namely to conserve at least 17% of land and inland water and 10% of coastal and marine areas by 2020.

In 2019, France had 167 national nature reserves (RNN), 174 regional nature reserves (RNR) and 7 Corsican nature reserves, protecting some 67.8 million hectares on land or water.

Another major network promoting biodiversity protection is Natura 2000, with 1,780 sites covering more than 7 million hectares of French land (around 12.9%) and 12 million hectares of French waters (34%). France has the second largest maritime area in the world, with an exclusive economic zone (ZEE) covering over 11 million square kilometres. The country therefore spearheads efforts to preserve natural areas, and fully intends to pursue this course²⁷.

25 - CIRAD: French Agricultural Research Centre for International Development; CNRS: French Centre for Scientific Research; INRA: French Institute for Agricultural Research.

26 - SCAP: France's strategy to create protected areas

27 - RAP PLR 2019 – Programme 136

Fostering greener agriculture

- **Amount allocated from Green OAT proceeds:** €59.9 million
- **Description:** The programme encourages farm operations to stop using synthetic farm inputs, through incentives such as Organic Future Fund subsidies and tax credits (€4.8 million

and €55.1 million, respectively). The programme also helps combat pollution, since phytosanitary products and synthetic pesticides are toxic not only to wildlife, but also to humans when they enter the food and water supply.

- **Impact:** These aids are helping develop France's organic farming sector, which accounted for 8.5% of farms in 2019, compared with 7.5% in 2018.



TRANSPORT

A CARBON-INTENSIVE SECTOR

The transport sector emits the most carbon dioxide in the country. The reduction in its carbon intensity will be crucial to meeting the objectives of the National Low Carbon Strategy (SNBC).

- In 2017, the transport sector was responsible for 29% of France's greenhouse gas (GHG) emissions, making it the country's most GHG-emitting sector²⁸.
- These emissions are mainly generated by road transport, which is still highly dependent on hydrocarbons and contributes heavily to overall emissions of air pollutants in urban areas (harmful fine particles and nitrogen oxides). Road transport is still the most common means of carriage despite its emissions-intensive nature, accounting for 89.1% of freight transport²⁹.

- It was against this backdrop that the following five focus areas were set out in the French low-carbon strategy (SNBC)³⁰ to reduce this sector's energy consumption, greenhouse gas emissions and dependence on petroleum products:
 - Moving to zero-emissions vehicles and adapting the related infrastructures;
 - Energy efficiency of vehicles;
 - Controlling increases in demand;
 - Modal shift;
 - Optimising vehicle use.
- The results of the transition will also indirectly further the objectives of reducing pollution and protecting biodiversity.



Tram in Bordeaux

28 - Key Climate Figures - France, Europe and World, 2020 edition, page 37

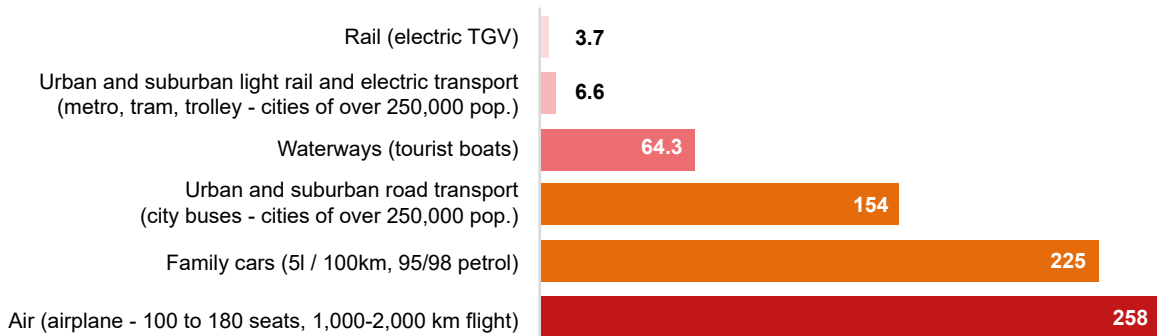
29 - Modal share of road transport in overland freight transport excluding oil pipeline, air cargo and passenger transit. Key Transport Figures, 2020 edition

30 - SNBC: French national low-carbon strategy, published in April 2020

ENCOURAGING THE MODAL SHIFT IS AN IMPORTANT FACTOR IN CUTTING EMISSIONS IN THIS SECTOR.

- To understand the importance of the modal shift in reducing the transport sector’s greenhouse gas emissions, it is useful to recall the magnitude of emissions for the various modes of transport. Examples for passenger transport:

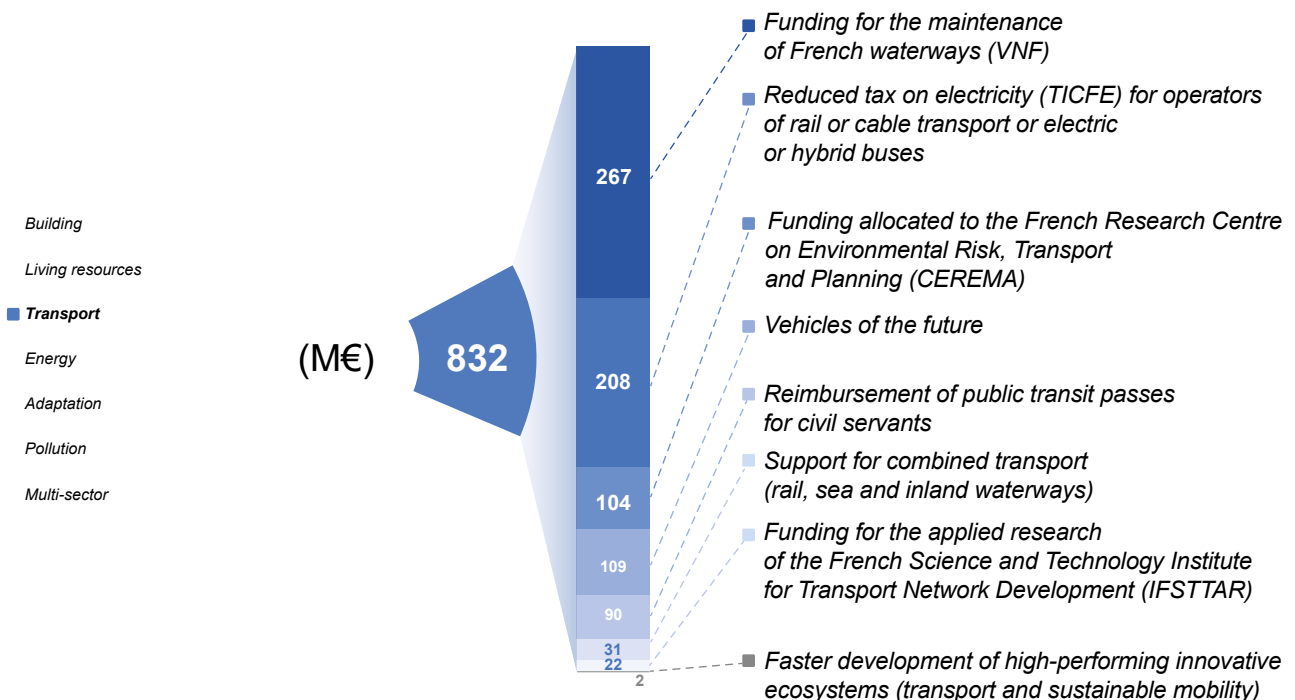
EMISSIONS FACTORS (gCO₂e/passenger.km)



Source: Carbone 4 graph, ADEME data

- Road transport has the highest emissions after air transport, it has the majority modal share in overland freight transport excluding oil pipelines (89.1%³¹) naturally making it the mode of transport with the highest emissions: 95% of GHG emissions in this sector. Conversely, rail and inland waterway transport only produce 1.3% of emissions³² for a modal share of around 10%³³ of overland freight transport, given their low carbon-intensive nature.
- Therefore, encouraging the use and development of alternatives to road transport, if their socio-economic profitability is established, is an important driver for reducing emissions. This can be done through electricity-based transport in France, where there is low-carbon electricity production.

40
41



31 - Key Transport Figures, SDES, 2020

32 - Key Climate Figures - France, Europe and World, SDES, 2020 edition, page 45

33 - Key Transport Figures, SDES, 2020

EXPENDITURE CONSISTENT WITH FRENCH LOW-CARBON STRATEGY

Green OAT proceeds allocated to the transport sector focus on three areas: energy efficiency of vehicles, carbon intensity of fuels and modal shift.

Funding allocated to the French Research Centre on Environmental Risk, Transport and Planning (CEREMA); Vehicles of the future; and the applied research of the French Science and Technology Institute for Transport Network Development (IFSTTAR)

- **Amount allocated from Green OAT proceeds:**
 - €104 million for the French Research Centre on Environmental Risk, Transport and Planning (CEREMA)
 - €109 million funding “Vehicles of the Future” under the “Invest for the Future” programme (PIA)
 - €22 million for the research of the French Science and Technology Institute for Transport Network Development (IFSTTAR)
- **Description:** Funds research and development to find more effective means of transport that could be deployed in the near future on a large scale. The goal is to improve the energy efficiency of vehicles and the carbon intensity of fuels.
- **Impact:** In 2019, the number of publications intended for public authorities per CEREMA agent was 0.58, up from 2018. As for IFSTTAR labs in the programme, the number of publications per researcher rose to 1.3, a considerable increase over 2018 and 2017 (0.96 and 0.90 respectively).

The modal shift accounted for the remaining Green OAT eligible expenditure in the transport sector: funding French Waterways (VNF), the reduced rate of tax on energy products and electricity (TICFE), and support for combined transport. The expenditure has encouraged the modal shift by funding the maintenance and management of non-road transport networks (rail, inland waterways and sea), and by providing tax incentives to develop low carbon-intensive modes of transport.

Funding maintenance of French waterways by VNF:

- **Amount allocated from Green OAT proceeds:** €267 million
- **Description:** Supports the VNF policy of reinforcing freight waterways, to lower road freight volumes. This should help reduce transport emissions, especially if the French inland waterways network is well maintained, since another aspect of the modal shift is from road transport to waterway transport. The modal share of waterway transport is 1.9% of inland goods transport in France³⁴, a figure that has been stable for decades. The emission factor of a self-propelled barge or pusher tug is around 50gCO₂ per tonne-km, which is 15 times less than that of a heavy goods vehicle of 7.5 tonnes (750 gCO₂ per tonne.km³⁵).
- **Impact:** In 2019, the waterway availability rate (main waterways) increased to 97.5%, compared with 96.1% in 2018.

Reduced tax rate on electricity (TICFE) for operators of rail or cable transport or electric or hybrid buses:

- **Amount allocated from Green OAT proceeds:** €208 million
- **Description:** The reduced tax (TICFE) helps reduce electricity costs for electric transport operators, thus encouraging the modal shift.
- **Impact:** In 2019, 8.46 TWh of power were distributed to electric transport operators at the reduced TICFE tax rate.

Reimbursement of public transit passes for civil servants:

- **Amount allocated from Green OAT proceeds:** €90 million
- **Description:** One benefit for civil servants is the partial payment of their public transit passes used for commuting; the programme also covers bicycle-sharing schemes. This promotes a modal shift towards lower-carbon modes.

34 - Modal share of road freight transport (excluding pipelines) in 2018, Key Transport Figures, 2020 edition, SDES

35 - GHG inventory, ADEME

Funding public services and combined transport operators (rail, inland waterways and sea):

- **Amount allocated from Green OAT proceeds:** €31 million
- **Description:** Combined transport means the coordinated use of various alternative modes of transport – collective, sea, inland waterways and rail – to transport passengers and goods.

Grants funded by Green OAT assist public services and infrastructure operators of combined transport (ports, train stations, multi-modal transport platforms) and those experiencing economic

difficulties. Ensuring the optimal operation of these infrastructures is necessary to ensure a high utilisation rate of the inland waterways maintained by VNF, and the electric modes of transport benefiting from the reduced TICFE rate.

- **Impact:** In 2019, the modal share of combined transport for inland passenger transport amounted to 18.2%, while that of rail in internal goods transport amounted to 9.0%. Finally, the modal share of waterway transport in internal goods transport totalled 2.0% in 2019.



Barge carrying gravel

Focus on “Invest for the Future” programme | Vehicles of the future

SpeedInnov – developing the next generation of high speed trains

At the end of 2015, the French State joined forces with Alstom to invest in SpeedInnov, under the auspices of the Ademe’s Invest for the Future Programme. The joint venture specialises in the research and development of high speed trains, known in France as TGVs. SpeedInnov is developing innovative, more cost-effective high speed trains. “TGVs of the future” will have to meet requirements for both energy efficiency and profitability for their operators. Able to carry up to 740 passengers, the trains will optimise energy, with a targeted reduction in consumption of 20-25% compared with current trains. They will also guarantee lower maintenance costs.

To date, Alstom has won a contract to deliver 28 trains to American railroad corporation Amtrak, and 100 trains to France’s state-owned railway operator, SNCF. These two contracts are part of the business plan of the joint venture. SpeedInnov is thus helping expand France’s clean public transportation offer and furthering the country’s industrial know-how in high speed trains. The French State is hoping to create 4,000 new jobs through the “TGV of the Future” endeavour, showing once again that the energy transition is part of a virtuous circle creating jobs and green growth.

Maximum total investment: €255 million

Maximum Invest for the Future contribution: €127.5 million



French waterways (VNF), committed to ecological and energy transition

French Waterways (VNF) maintains, operates and develops the largest European river system: 6,700 km of rivers, canals and canalised rivers, 4,000 civil engineering structures (including locks, dams and navigable aqueducts) and 40,000 ha of public waterways domain.

Through its work, VNF meets three major challenges. It:

- fosters freight transport;
- contributes to urban planning and tourism development; and
- manages the water system by ensuring the safety of hydraulic structures and water use, preventing floods and hydraulic stress, and promoting hydroelectricity and preserving biodiversity.

The authority has undertaken an ambitious modernisation of the waterway system. To enhance its service to users, VNF invested around €10.5 million in 2019 to modernize locks. In 2019, despite unusual weather phenomena, VNF was able to maintain a 97.5% availability rate in France's river system.

VNF, committed to water resource management and the preservation of biodiversity

In the current context that demands adaptation to all aspects of climate change, Voies navigables de France has undertaken a programme to modernise hydraulic engineering and thus improve water management on France's waterways.

The partnership set up with Météo France should help improve VNF's management of water throughout the 6,700 km of rivers and canals it oversees, as well as its crisis planning and management mission (e.g. low water levels or flooding). VNF takes action for wise management of water resources to preserve aquatic ecosystems.

In addition to improving waterway use conditions, VNF optimises water sources, through its programme for reconstructing, modernising and automating civil engineering structures, thereby ensuring precise, real-time water management. In 2019, VNF invested €30.6 million to renovate and modernise hydraulic engineering aspects.

To ensure the most effective water resource management, VNF also strives to control water abstraction from the environment. In 2019, more than 90% of abstracted water was monitored or measured. As of 2022, all VNF water abstractions will be measured or monitored and the resulting data made available in a data tracking tool.

VNF also promotes green, rational management of the river system. No phytosanitary products are used, helping restore natural environments and river continuity. Renovated river structures are also designed to restore river continuity. In 2019, VNF operated 63 fish ladders.

ENERGY

ENERGY TRANSITION IN FRANCE

Electrification significantly promotes lower carbon power in France.

- Efforts to combat global warming in line with the objectives defined at the 2015 United Nations Climate Change Conference (COP 21) have made energy consumption one of the main challenges of the 21st century. Electricity can significantly help us reduce our carbon footprint as we now have the technology to produce it without emitting excessive amounts of carbon dioxide.
- France's electricity supply is low-carbon (comprising less than 8% fossil energy³⁶, but electricity currently accounts for less than 24% of domestic final energy consumption³⁷, despite the fact that electricity generation accounts for 50% of primary energy consumption.
- Consequently, although the electricity mix in France is low-carbon, fossil energy sources comprise close to 48% of the primary energy mix. Renewable electricity sources (hydroelectric, wind and solar power) only account for 3% of the primary energy mix³⁷.

Less dependence on fossil fuels is needed to lower the carbon intensity of energy.

- Efforts to combat global warming, in line with the objectives defined at the 2015 United Nations Climate Change Conference (COP 21) have made energy consumption one of the main challenges of the 21st century.
- Of the 48% of fossil fuels in the primary energy mix, oil accounts for 30%, natural gas for 14%, and coal accounts for the rest. The sectors that consume the lion's share of fossil energy are transport (75% of final energy consumption of oil) and the residential-tertiary sector (66% of final energy consumption of natural gas and 13% of final energy consumption of oil).

Endeavours like these must be undertaken in conjunction with other industries.

- France's climate target under the national low-carbon strategy is to achieve carbon neutrality by 2050. This will mean cutting greenhouse gas emissions by six between 1990 and 2050.

- France therefore has to slash its fossil fuel consumption in the transport and building sectors. The main measures for each sector have been presented in the relevant sections, including electrification of transport, energy renovation of buildings, and energy efficiency and savings for both sectors.
- Reducing carbon intensity of the economy should be placed in the wider context of reducing the carbon footprint. Industry, energy generation, waste management, agriculture and forestry all have a role to play in reducing greenhouse gas emissions.
- Changes in production and consumption methods in order to reduce greenhouse gas emissions should be made while bearing in mind the specific challenges of including intermittent renewable energies in the electricity grid and available biomass resources.

PROMOTE THE USE OF LOW-CARBON ELECTRICITY BY SOCIETY...

Electrification of vehicles will only foster the energy transition if French electricity production develops sufficiently while remaining low-carbon.

- The percentage of electric vehicles on the French car market is currently 0.5%³⁸, but current initiatives, including the decision to stop selling internal-combustion engine vehicles by 2040, augur well for future growth.
- Consequently, one of the key challenges facing the energy sector is to develop carbon-free electricity production, by diversifying energy sources. Development must effectively include new energy sources, in particular by taking into account the intermittent nature of renewable energies.
- This requires greater network flexibility to secure energy supply. It involves peak production, demand management, electricity storage and interconnection.

36 - 2019 Electricity Report of the French transmission system operator, RTE (Bilan électrique), page 24

37 - Key Energy Figures (Chiffres clés de l'énergie), 2020

38 - Total number of vehicles (2019) – European Alternative Fuels Observatory



Generating power at a wind and solar farm

46

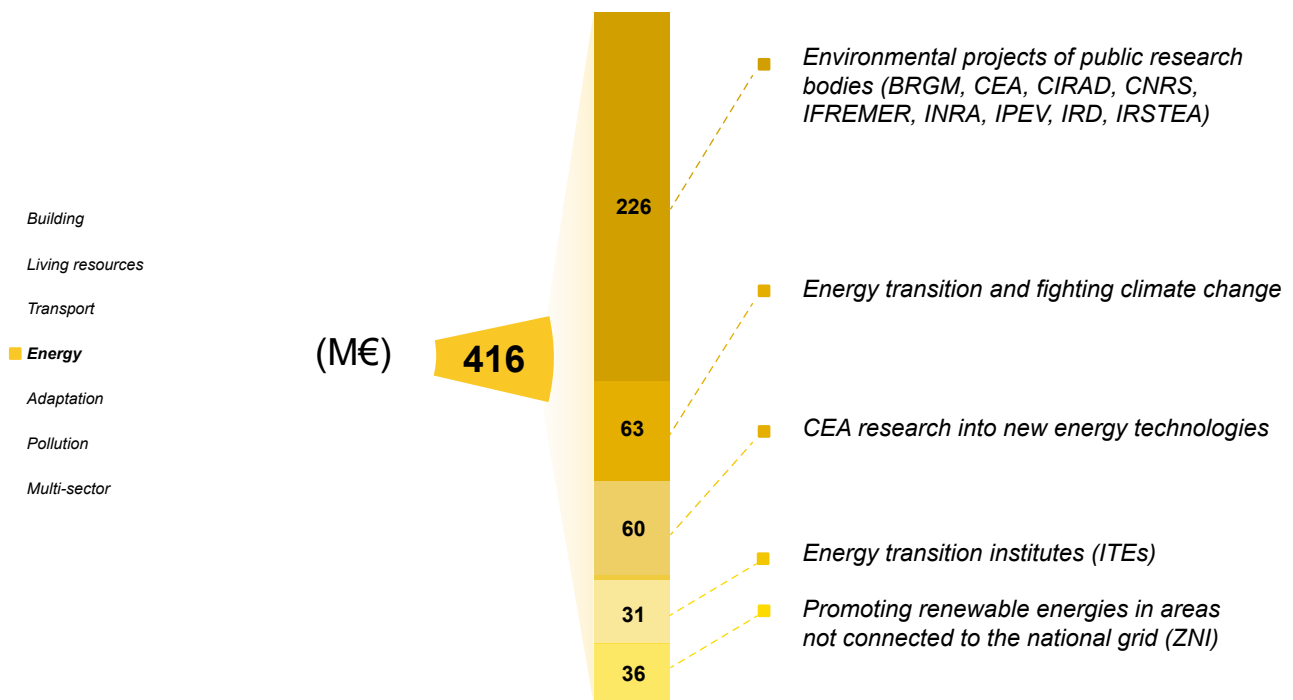
47

The French Low-Carbon Strategy (SNBC) has set three guiding principles for that purpose:

- Cut out carbon emissions and diversify the energy mix.
 - In particular, this involves developing renewable energies and waste-to-power to replace, first and foremost, current heat production techniques, encourage use of biomass, and promote R&D in these fields.
- Manage energy demand.
 - Drastically cut energy intensity of the French economy by setting up actions in all industries and adopting available top-of-class technologies.
 - Even out demand, and more specifically encourage a better match between supply and demand (flexibility, cutting back on electrical use in electricity-intensive industries).

- Encourage research and innovation in energy efficiency (industrial manufacturing lines, waste-to-energy plants, motor efficiency, thermal insulation).
- Encourage moderate, mindful power use and related behaviours (developing smart devices, choosing off-peak hours, raising consumer awareness of responsible power use).
- Determine long-term scenarios on the use of natural gas and heating networks and intraday and seasonal thermal energy storage.

The €416 million of Green OAT proceeds allocated to the Energy sector contribute to these development initiatives, as well as research into new carbon-free energy sources to improve sustainable mobility.



...BY DEVELOPING TOMORROW'S TECHNOLOGIES TODAY

The four types of Energy expenditure funded by Green OAT proceeds are all dedicated to research and to developing solutions to ensure electricity network flexibility and carbon-free transport.

Environmental projects of public research bodies (BRGM, CEA, CIRAD, CNRS, IFREMER, INRA, IPEV, IRD, IRSTEA)

- **Amount allocated from Green OAT proceeds:** €226 million
- **Description:** Funding for the Bureau for Geology and Mining Research (BRGM), the Alternative Energies and Atomic Energy Commission (CEA), the Agricultural Research Centre for International Development (Cirad), the Centre for Scientific Research (CNRS), the marine research institute (IFREMER), the Institute for Agricultural Research (INRA), the Paul-Emile Victor Polar Institute (IPEV), the Research Institute for Sustainable Development (IRD), and the National Institute for Environmental and Agricultural Science and Research (IRSTEA).
- **Impact:** In 2019, research by programme participants accounted for 1.54% of the corpus of internationally renowned scholarly publications, 5.8% at EU level (EU 28) and 13.5% in the France-Germany-United Kingdom area.

CEA research into new energy technologies

- **Amount allocated from Green OAT proceeds:** €60 million
- **Description:** CEA develops disruptive innovations in power generation, storage, distribution and consumption to promote the use of renewable energies and enhance energy efficiency. The main research projects funded relate to solar power, hydrogen and fuel cells, energy storage and batteries for vehicles, second-generation biofuels and synthetic fuels, as well as marine energies.
- **Impact:** In 2019, CEA registered 216 patents in the field of new energy technologies, more than in 2018. Revenue received by CEA from manufacturers' use of the patents bears witness to their value and relevance for industry³⁹. In the same year, technology transfers from the research institute to industry generated over €36.8 million.

Projects of the Energy Transition Institutes (ITEs) and Invest for the Future Programme (PIA)

- **Amount allocated from Green OAT proceeds:** €31 million
- **Description:** Funds the applied research of the Energy Transition Institutes (ITEs), interdisciplinary platforms combining industrial and public research expertise in carbon-free energies in a joint investment approach.

39 - Calculated as total revenue from services and collaborative research with manufacturers and fees/royalties received for manufacturers' use of software and processes..

These institutes primarily target high-potential sectors, including those with a proven positive impact on climate change, such as the energy efficiency of transport equipment, energy management tools, geothermal energy, renewable marine energies, solar power, energy storage and smart grids.

- **Impact:** At the end of 2018, the aggregate figures were 409 software patents filed, 1,803 research publications, 51 technological platforms and participation in 128 projects across Europe, including 13 in a coordinating role. These bodies bring together 499 industry players, of which almost half are SMEs (224) and 293 are academic partners. In total, over 1,100 individuals participate (employees and doctoral students).



ADAPTATION

PREPARING FOR CLIMATE CHANGE RISKS

With global warming now an undeniable reality, our territory must be adapted to the resulting risks.

- Efforts to curb it may minimise its future impact, but climate inertia and the intensity of greenhouse gas emissions over the last centuries have made certain major changes inevitable. These changes will profoundly impact numerous sectors, including agriculture, forestry, tourism, fisheries, land and urban planning, building and infrastructure, and population protection.
- Some of these changes are already visible, such as more frequent extreme weather events (including storms and cyclones, drought, heavy rainfall and flooding), changes in seasonal patterns with harmful effects on agriculture and biodiversity, the rise in sea level and acidity, melting of glaciers and polar ice caps and rapid erosion of biodiversity.
- The risks identified in France include losses for the agricultural sector due to heat waves and drought; the depletion of water resources in areas already in a precarious situation; a network of roads and highways estimated at €2 billion; and thousands of homes and businesses that would be regularly submerged if there were a one-metre rise in sea levels by the end of the century (trend-based assumption).
- With the combat against climate change as a national priority, adapting land use to climate change has also become a key challenge requiring nationwide efforts. The objective is to minimise the future impact of climate change on socioeconomic activities and nature, by preparing for physical and financial risks.

Planned adaptation is needed to avoid maladaptation.

- While spontaneous adaptation involves adapting to a climate constraint by means of an immediate, automatic response, planned adaptation is the fruit of deliberate strategic decisions, based on a clear understanding of impending change and the appropriate measures needed to achieve the desired result.
- Spontaneous adaptation may lead to conflict with existing policies (for example, the massive use of air-conditioning, which increases energy consumption and greenhouse gas emissions) or maladaptation, where vulnerability to unpredictable weather conditions is paradoxically increased. “Maladaptation” may refer to one of the following situations:
 - Inefficient use of resources compared with other use options (for example, widespread use of air-conditioning instead of investing in insulation materials);
 - Uncontrolled transfer of vulnerability from one system to another, but also from one period to another (for example, the equipment used to protect a motorway from flooding should not increase the risk of flooding for a nearby A-road);
 - Reducing leeway for future adaptation (measures that limit flexibility, for example the construction of flood barriers and urbanisation of new protected areas);
 - Scope errors: over-adaptation (excessive cost) or under-adaptation (excessive individual risk).

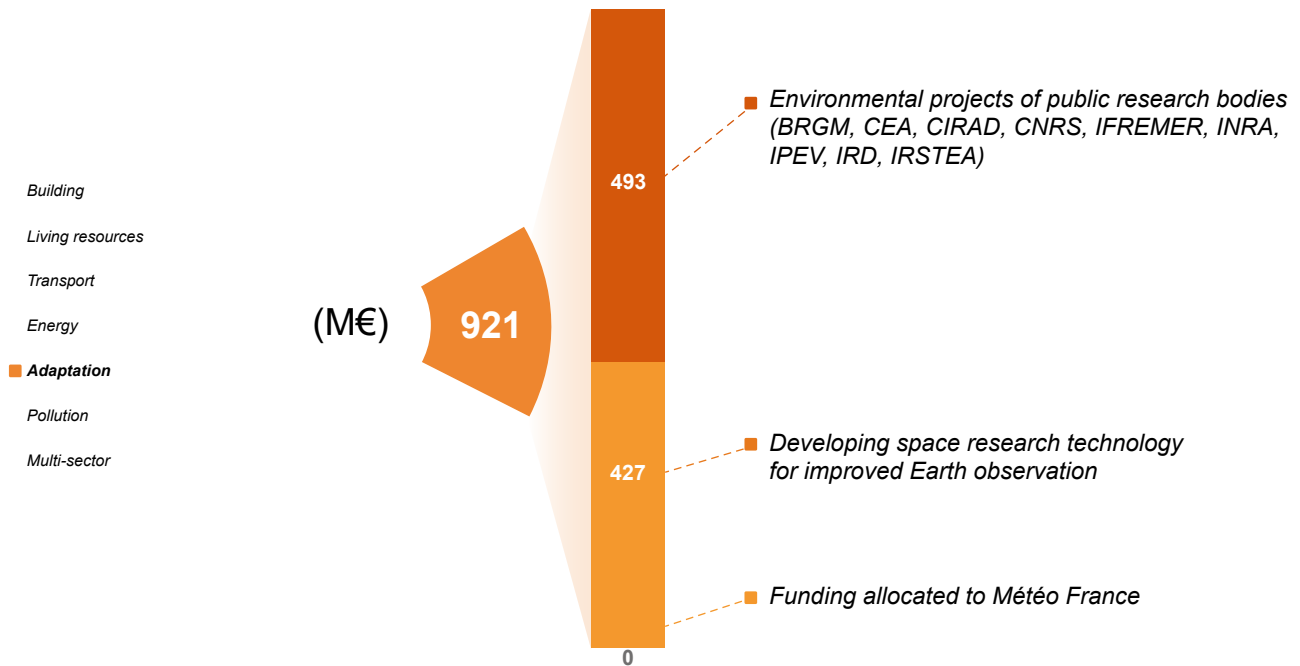


50

51

- To avoid maladaptation, it is therefore essential to correctly foresee risks, rationally measure them and define the most acceptable risk levels. Improving knowledge through research programmes is an essential aspect of planned adaptation policy. There are various types of adaptation measures:
 - physical, such as flood barriers;
 - institutional, such as crisis management mechanisms or specific regulations;
 - strategic, such as population displacement or settlement (i.e. moving inland from a threatened coastal area), or measures facilitating recovery in the event of a disaster
 - improving public disclosure and answering decision-makers' information needs, to facilitate accountability and decision-making.

SUPPORT RESEARCH TO ENHANCE ADAPTATION



In 2019, research expenditure in support of climate change adaptation accounted for over 921 million of proceeds from the Green OAT. The expenditure has been used entirely to improve climate change knowledge through public research programmes on observation of the Earth and the environment. It is essential to obtain the best understanding possible of phenomena relating to the Earth’s atmosphere and climate in order to predict future changes and adopt the most efficient adaptive responses.

Funding scientific research

- **Amount allocated from Green OAT proceeds:** €493 million
- **Description:** Funding for scientific and technological research at leading French research facilities (CIRAD, CNRS, INRA, etc.)⁴⁰ to deepen knowledge of our country’s biodiversity and explore new farming solutions.
- **Impact:** In 2019, research by programme participants accounted for 1.54% of the corpus of internationally renowned scholarly publications, 5.8% at EU level (EU 28) and 13.5% in the France-Germany-United Kingdom area.

Developing space research technology for improved Earth observation

- **Amount allocated from Green OAT proceeds:** €427 million
 - **Description:** The purpose of the French Space Research Centre’s (CNES) “Space research” programme is to ensure that both France and Europe master the technologies and space systems needed to meet the research, security, economic development, land and urban planning and environmental challenges facing them. The programme also funds France’s contribution to the European Organisation for the Exploitation of Meteorological Satellites (Eumetsat), which develops and operates a fleet of European meteorological satellites in geostationary (Meteosat) and polar (Metop and EPS) orbit, and publishes the findings.
- One of the major challenges of the programme is to improve knowledge of the major scientific issues regarding sciences of the universe and the functioning of the Earth system, in particular to better understand and monitor global warming.

40 - CIRAD: French Agricultural Research Centre for International Development; CNRS: French Centre for Scientific Research; INRA: French Institute for Agricultural Research.

- **Impact:** Space techniques play an essential role in scientific progress as the data obtained by the main space observatories could generally not have been obtained otherwise: the scientific use of space has been revolutionary for the study and exploration of our universe.

Globally, and particularly in Europe, France's scientific communities play a significant role in the choice of programmes and their scientific use, as witnessed by the share of international and European publications attributable to French programme participants. In 2019, French laboratories wrote 3.6% of international reference publications on space research, 13.0% at EU level (EU 28) and 28.4% in the France-Germany- United Kingdom area.



Seaside, Saint Malo

POLLUTION

Pollution has significant health implications in France..

- Pollution remains a highly-publicised, persistent problem: in 2018, French public opinion ranked air pollution as the second most worrisome environmental problem, just after global warming. Pollution of water, rivers and lakes was fourth⁴¹.
- These concerns are closely related to the direct implications of pollution on public health: in 2016, the French Public Health Agency estimated that air pollution would result in the premature death of 48,000 people per year, representing 9% of France's mortality rate, with life expectancy at 30 years of age possibly being reduced by more than two years.
- Moreover, pollution of soil, groundwater and streams by micropollutants from agriculture (pesticides) and industry (heavy metals, PCBs, hormones, medication, etc.) has an adverse effect on consumer health that is still difficult to quan-

tify: these harmful compounds enter the food chain, either through dissolution in drinking water or through bioaccumulation in products grown or reared by the Agro-Food Industry.

Pollution represents a major economic cost for the country

- The health impact of pollution naturally has an economic cost. It includes the cost of treating illnesses such as cardiovascular disease, cancer, respiratory disease and developmental disorders, and also the intangible human and psychological cost of poorer health and quality of life. The French Senate Select Committee has estimated the economic and financial cost of air pollution at between €70 and €100 billion per year⁴².
- On top of the health cost is the cost to the environment, whether due to the chemical breakdown of building materials, lower agricultural productivity and quality or the endangering of ecosystems, particularly through the process of eutrophication.



The Tarn flowing through Albi

41 - ADEME Poll: French citizens and the environment (Les français et l'environnement), 2018

42 - <http://www.senat.fr/rap/r14-610-1/r14-610-11.pdf>

For air pollution, international action is required as pollutants can spread over large distances.

- Two European directives have set the maximum air concentrations for each class of pollutant. The directives oblige member states to list and measure pollutants, monitor pollutant concentrations and take the necessary measures to correct exceeded thresholds.
- At the same time, each country is required to set targets for reducing concentrations of the most harmful pollutants. As a result, France has pledged to reduce the following emissions by the year 2030 compared to 2005 levels: sulphur dioxide (SO₂) by 77%, nitrogen oxides (NOx) by 69%, non-methane volatile organic compounds (NMVOC) by 52%, particulate matter (PM_{2.5}) (fine particles with a diameter of 2.5 microns or less) by 57%, and ammonia (NH₃) by 13%⁴³.

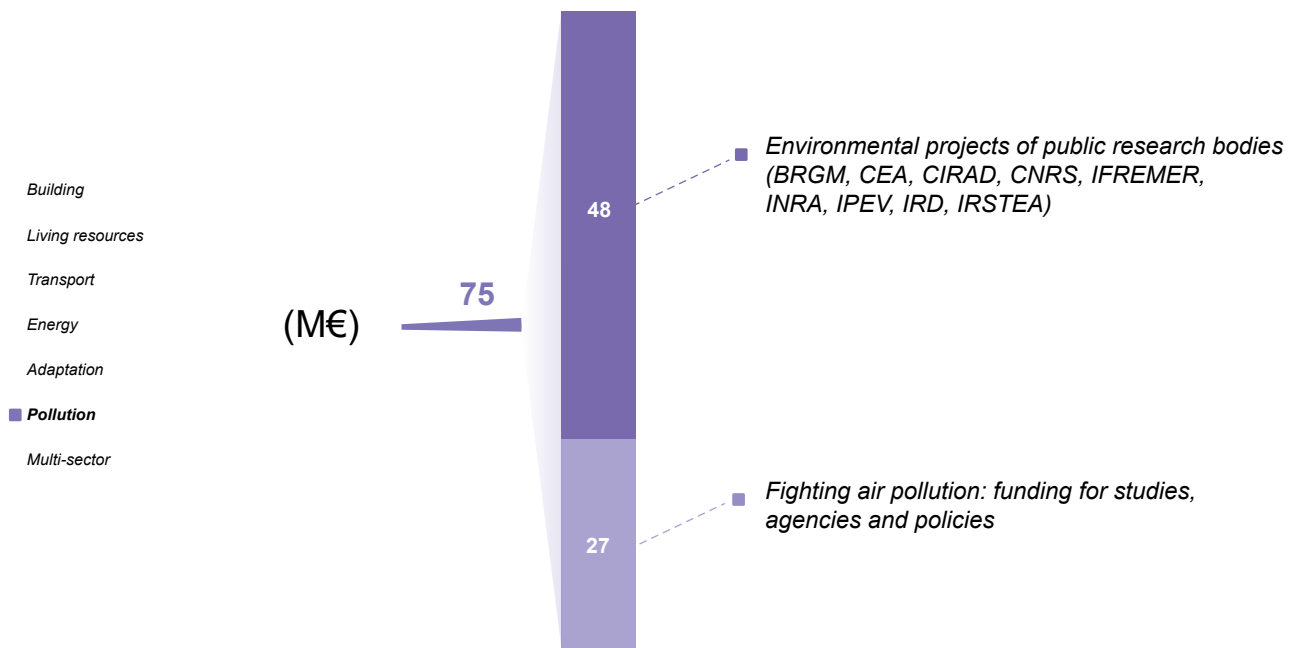
All major industries of our economy are responsible for pollution.

- To limit the socio-economic and environmental consequences of pollution, the State has committed to various measures affecting all pollution-intensive sectors in the economy. For water and soil pollution, the “Nitrates Directives” and the General Tax on Polluting Activities (TGAP) for detergents, have introduced measures limiting the release by industry of harmful micropollutants (nitrates, phosphates) into groundwater and streams. Making it obligatory to use the “best available technologies” as they are defined at EU level helps control pollution from industrial waste⁴⁴.
- The measures to be taken to reduce concentrations of main pollutants are specific to each sector:
 - In 2019, transport represented 63% of nitrogen oxide emissions, 11% of NMVOC emissions, 15% of PM₁₀ particulate matter (fine particles with a diameter of 10 microns or less) and 18% of PM_{2.5} particles. A key driver for action is reducing combustion engine road transport, and the associated exhaust emissions;

- Building sector activities (residential and tertiary) emit the highest levels of PM₁₀ particles (34% in 2018), PM_{2.5} particles (53% in 2018) and NMVOC (45% in 2018), mainly as a result of air-conditioning and heating systems. Renovating residential and tertiary property and changing energy sources, can therefore significantly reduce the pollution generated by this sector;
- Industry is responsible for a high percentage of SO₂ (52% in 2018) and NMVOC emissions (37% in 2018). In addition, certain pollutants are specific to particular industrial activities: chromium, nickel, mercury, cadmium, arsenic, etc. Improvements in industrial processes and productivity (through technological research), progress in recycling and the circular economy, the energy transition, and the development of sustainable energy generation methods (without combustion) are solutions for reducing these emissions;
- Agriculture is responsible for almost all NH₃ emissions (94% in 2018) and 24% of PM₁₀ particulate matter. New types of agriculture such as organic farming and agroforestry generate fewer emissions.

43 - French Order No 2017-949 of 10 May 2017, available in French on the Légifrance website

44 - “IED” Directive on industrial emissions (integrated pollution prevention and control approach)



MONITOR AND REDUCE

Two actions are required to comply with international directives: on the one hand, keeping track of pollutants and their appropriate spatial and temporal concentrations, on the other hand, implementing effective measures to achieve national pollution reduction targets.

Anti-pollution measures appear to be very similar to those for tackling climate change. Through synergies, expenditure in the five other Green OAT sectors (Building, Living Resources, Transport, Energy and Adaptation) is also contributing to pollution reduction.

In conjunction with sector-specific regulations, European directives require a second initiative that calls for specific anti-pollution funding: monitoring the quality of the environment (air, water, soil). Monitoring is performed by various scientific entities.

Environmental research at France’s leading state-funded research bodies:

- **Amount allocated from Green OAT proceeds:** €48 million
- **Description:** The funding was allocated based on the same logic as presented earlier: in order to reduce pollution and pursue the downward trend in pollution concentrations, new regulations must be implemented and innovation introduced in all sectors of the economy.

Funding for entities monitoring air quality (CITEPA, LCSQA):

- **Amount allocated from Green OAT proceeds:** €27.4 million
- **Description:** Funds the activities of various organisations measuring air quality, including CITEPA and the Central Laboratory for Air Quality Surveillance (LCSQA) as well as local bodies. CITEPA prepares and distributes an independent annual report on France’s air pollutant and greenhouse gas emissions. In 2018, France generated 749 thousand tonnes of NO_x, 594 thousand tonnes of NMVOC, 595 thousand tonnes of NH₃, 216 thousand tonnes of PM₁₀ and 134 thousand tonnes of PM_{2.5}.
- **Impact:** Total annual emissions were lower in 2018 compared to 2017. NO_x emissions fell by 7% between 2017 and 2018, COV_{nm} emissions by 4%, NH₃ emissions by 1%, PM₁₀ by 5%, and PM_{2.5} by 6%. In general, there has been an overall decrease in concentrations of pollutants in ambient air, and fewer cities where concentration limits have been exceeded.



Instruments for measuring air quality



APPENDICES





KPMG S.A.
Registered Office
 Tour EQHO
 2 Avenue Gambetta
 CS 60055
 92066 Paris la Défense Cedex
 France

Telephone: +33 (0)1 55 68 86 66
 Fax: +33 (0)1 55 68 86 60
 Website: www.kpmg.fr

Agence France Trésor

139, rue de Bercy
 75012 Paris
 France

Limited Assurance Report on the allocation at 31 December 2019 of proceeds from the Green OAT issued by Agence France Trésor

This is a free English translation of the Assurance report issued in French and is provided solely for the convenience of English-speaking readers. This report should be read in conjunction with, and construed in accordance with professional standards applicable in France.

In compliance with the engagement entrusted to us, we hereby provide limited assurance on the allocation at 31 December 2019 of proceeds from the Green OAT issued by Agence France Trésor (hereinafter “the Verified Information”) in accordance with the Guidelines set out below.

The information is presented as total allocated amounts in the statement on 2019 Performance and Use of Proceeds on pages 22 to 25 of the “Allocation and Performance Report for 2019 Green OAT Issuances” available on Agence France Trésor’s website¹.

Agence France Trésor’s responsibility with regard to the Verified Information

The Verified Information was prepared under the responsibility of Agence France Trésor Management in accordance with the principles set forth in paragraph IV of the Green OAT Framework Document dated 10 January 2017 (hereinafter the “Guidelines”) available on Agence France Trésor’s website¹.

Agence France Trésor’s management is responsible for preparing the Allocation and Performance Report for 2019, including the Verified Information, in accordance with the methods and processes described in the Guidelines. It does so based on:

- information sources used by Agence France Trésor to determine the amounts allocated to eligible Green OAT projects;
- internal control procedures it deems necessary to ensure that the information is free from material misstatement, whether due to fraud or error.

¹ <https://www.aft.gouv.fr/en/green-oat>



Agence France Trésor
*Limited Assurance Report on the allocation at 31 December 2019
of proceeds from the Green OAT issued by Agence France Trésor
19 June 2020*

The Methodology associated with the Verified Information, available on pages 74 and 75 of the Appendices to the Allocation and Performance Report for 2019, provides details on the methods used to collect and measure the Verified Information.

Independence and quality control

We apply International Standard on Quality Control 1² and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements set out in the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

KPMG's responsibility

Our responsibility is to express a conclusion on the allocation of proceeds in compliance with the Guidelines, based on the work performed. We conducted our engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000³. The Standard requires that we plan and perform our work to obtain limited assurance about whether the information has been prepared, in all material respects, in accordance with the Guidelines.

It is not our responsibility to provide an opinion on:

- project eligibility criteria defined in the Guidelines and validated in the Second Party Opinion provided by Vigeo-Eiris prior to issuance of the Green OAT;
- compliance, in all material respects, of eligible projects mentioned in the Annual Report with the Green Bond eligibility criteria defined in the Guidelines, validated in the Annual Review of the Second Party Opinion delivered by Vigeo-Eiris on 29 May 2020;
- the accurate breakdown of amounts allocated to the eligible projects in millions of euros, by Green Bond sector, based on the French Energy and Ecological Transition for the Climate (TEEC) label⁴, as well as their intended objective in climate terms, as defined in the Guidelines and validated in the Annual Review of the Second Party Opinion delivered by Vigeo-Eiris on 29 May 2020;

² ISQC1 – Quality control of firms conducting audit or review engagements, as well as other assurance and related services.

³ ISAE 3000 – International Standard on Assurance Engagements other than audits or reviews of historical financial information.

⁴ <https://www.ecologique-solidaire.gouv.fr/label-transition-energetique-et-ecologique-climat>



Agence France Trésor
*Limited Assurance Report on the allocation at 31 December 2019
of proceeds from the Green OAT issued by Agence France Trésor
19 June 2020*

- management of net Green Bond proceeds pending allocation of proceeds;
- the use of proceeds for eligible projects subsequent to allocation;
- performance indicators disclosed in the Allocation and Performance Report for 2019.

Our work only concerned the allocation of proceeds and not the Allocation and Performance Report for 2019 taken as a whole.

Nature and scope of our work

We used our professional judgement to select appropriate procedures for our limited assurance engagement, and to assess the risk of material misstatement in the Verified Information, whether due to fraud or error.

To assess risk, we took into account Agence France Trésor’s internal controls on the preparation of the Verified Information in order to design appropriate assurance procedures, and not to express a conclusion as to the effectiveness of the entity’s internal control system.

We conducted interviews with the persons responsible for preparing the Verified Information, with those in charge of collecting the information and, where appropriate, with those responsible for internal control and risk management procedures.

Our work entailed:

- gaining an understanding of France’s sustainability policies and any actions or programmes arising from them;
- gaining an understanding of the procedures implemented by Agence France Trésor to determine the information presented in the Allocation and Performance Report for 2019;
- assessing the appropriateness of the Guidelines in terms of relevance, completeness, reliability, neutrality and understandability;
- verifying the implementation of a process to collect, compile, process and control data to ensure completeness and consistency of the Verified Information and gain an understanding of the internal control and risk management procedures used to prepare the Verified Information;
- gaining an understanding of the information sources used by Agence France Trésor to determine the amount of proceeds allocated, in millions of euros, to eligible Green OAT projects at 31 December 2019;



Agence France Trésor
*Limited Assurance Report on the allocation at 31 December 2019
of proceeds from the Green OAT issued by Agence France Trésor
19 June 2020*

- verifying that procedures were properly applied and performing tests of details, using sampling techniques, in order to verify the calculations and reconcile data with the supporting documents, including:
 - annual performance reports appended to the French Budget Settlement Act,
 - statements of roles and responsibilities extracted from the tax expenditure tools used by the French Ministry for the Economy and Finance,
 - extracts of funding per project from the information systems of the Secretariat General for Investment for the year ended 31 December 2019 under the “Invest for the Future” programme.
- ensuring that the Verified Information is consistent with other publications, including the Budget Settlement Acts and reports by the National Audit Office;
- gaining an understanding of external controls that have already been performed on the Verified Information, including by the National Audit Office;
- performing analytical review procedures on the Verified Information and checking its consistency with the information provided in the statement on Performance and Use of Proceeds.

We believe that the sampling methods and sample sizes we have used, based on our professional judgement, are sufficient to provide a basis for our limited assurance conclusion; a higher level of assurance would have required us to carry out more extensive procedures.

Due to the use of sampling techniques and other limitations inherent to information and internal control systems, the risk of not detecting a material misstatement in the Verified Information cannot be totally eliminated.



Agence France Trésor
*Limited Assurance Report on the allocation at 31 December 2019
of proceeds from the Green OAT issued by Agence France Trésor
19 June 2020*

Conclusion

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Based on the procedures performed, nothing has come to our attention that causes us to believe that the allocation of proceeds from issuance of the Green OAT is not presented fairly, in all material respects, in the statement on Performance and Use of Proceeds on pages 22 to 25 of the Allocation and Performance Report for 2019, in accordance with the principles described in paragraph IV of the Green OAT Framework Document.

Paris La Défense, 19 June 2020

KPMG S.A.

Anne Garans
Partner
Sustainability Services

CARBONE 4 METHODOLOGY

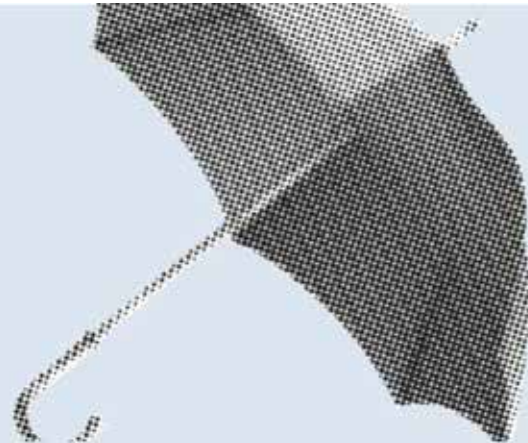
Main objective: to describe how allocated green expenditures from the Green OAT fit in with the current environmental context, and how the programmes funded contribute to the major ecological transition issues defined by the French government.

Our methodology is as follows:

- Carbone 4 first worked on a general overview of the allocated expenditures, giving a certain distance from which to assess the way Green OAT investments were allocated to the four main objectives - combating climate change (or mitigation), adapting to climate change, protecting biodiversity and reducing pollution – and the six sectors with heavy considerations for the environmental challenges of the 21st century.
- To highlight the performance of these investments, a deeper analysis of each individual sector was carried out. The setting and major issues of Building, Living resources, Transport, Energy, Adaptation and Pollution are presented to help the reader understand the problems facing each sector, as well as possible solutions. The report strives to demonstrate how each OAT expenditure supports these solutions. To do so, it introduces performance indicators chosen because they are the most relevant and cover most expenditures.
- The report is mainly based on the Annual Performance Reports (RAP) of the funded programmes, as well as a large number of other public documents, a complete list of which is provided in the Appendix.



Founded in 2007 by Alain Grandjean and Jean-Marc Jancovici, Carbone 4 is an independent consultancy firm and leader in climate strategy, specialising in energy transition and climate change. Our team assists companies in their transition to a low carbon and climate resilient economy.



VIGEO EIRIS ASSURANCE REPORT



ANNUAL REVIEW OF THE SECOND PARTY OPINION¹ ON THE SUSTAINABILITY OF THE FRENCH REPUBLIC'S GREEN OAT

29 May 2020

In January 2017, the French Republic issued the first French sovereign green bond (Green OAT 1.75% 25 June 2039) (hereafter referred to as the "Green OAT"), dedicated to finance expenditures in line with the commitments that France made for the implementation of the Paris Climate Agreement under the terms of the Energy Transition and the Green Growth Act. Agence France Trésor (AFT), tasked with managing the government debt and cash positions, had mandated Vigeo Eiris as an independent expert to deliver a Second Party Opinion on the Green OAT².

Since then, to maintain the liquidity of this Green OAT through tap issues after the initial issuance, as for conventional benchmark OATs, AFT has issued nine times, bringing the total outstanding Green OAT debt standing at €25.3 billion as at April 2, 2020.

During the same period, AFT kept its commitment to set up the Green OAT Evaluation Council, which met for the first time on December 11th, 2017. The AFT plans to publish an allocation and performance report in 2020, and the Council continues its work on impact assessments.

SCOPE

Vigeo Eiris, acting as an independent third-party expert, was commissioned by AFT to update its opinion on the sustainability and social credentials and management of the Green OAT, according to Vigeo Eiris' Environmental, Social and Governance (ESG) assessment methodology and in line with the Green Bond Principles issued by the French government in 2017.

Our opinion is prepared in accordance with our exclusive social responsibility performance and risk assessment methodology (Environmental, Social and Governance Factors - ESG) of sovereign issuers, and in line with the Green Bond Principles (the "GBP") edited in June 2018. This review involves updating our initial opinion on the following two components:

- **Issuer:** evaluation of the issuer's sustainability performance as regards its contribution to the sustainable development goals.
 - Comparative analysis, as of November 2019 (date of the last rating cycle), of the level of integration of sustainable development principles and objectives in the Issuer's institutional systems and public policies.
- **Green Expenditures 2019:** commitments and practices in order to take account of their views and opinions for the year 2019.
 - Use of proceeds: document-based review of the correspondence of these green expenditures 2019 with the six Green Sectors defined in the "Framework for the Green OAT".
 - Process for Projects Evaluation and selection: review of transparency and implementation of AFT's commitments regarding the evaluation and selection of Green Expenditures and the application of the eligibility criteria initially defined by AFT.
 - Reporting: assessment of AFT's ability to report on the allocation, performance and impact of Green Expenditures 2019, and the compliance of the processes put in place and AFT's reporting with the commitments made at the time of the inaugural issuance.

Vigeo Eiris' sources of information are gathered from our sovereign issuers' rating database, public information, the issuer and data published by its stakeholders. We were able to access all solicited documents. Vigeo Eiris has carried out its due diligence from May 7 to May 29, 2020.

¹ This opinion is to be considered as the "Second Party Opinion" described by the International Capital Market Association (www.icmagroup.org).

² <https://www.aft.gouv.fr/files/archives/attachments/25562.pdf>



VIGEO EIRIS' OPINION

- **Issuer** (see Part I.):
 - France's overall sustainability performance as a sovereign bond issuer is advanced and stable: France continues to demonstrate an advanced³ performance (best level on our rating scale), among the best issuers at the European and global scale, particularly in the environmental domain.
- **Green Expenditure 2019** (see Part II.): We express a reasonable level of assurance on the green credentials of the Green Expenditures associated with all contributions made in 2019, those of the inaugural issuance and the tap issues subsequent to it, and on the compliance with the commitments made at the time of the issuance concerning these contributions.
 - To date, selected expenditures are consistent with the six Green Sectors initially defined by the issuer in the "Framework for the Green OAT". We maintain a reasonable level of assurance on the issuer's capacity to use the Green OAT proceeds for projects contributing to climate change mitigation and adaptation, protection of natural resources and reduction of ecosystems degradation, in line with seven UN SDGs, and in accordance with its initial commitments. Process for Projects Evaluation and Selection
 - We consider that the overall level of implementation of the issuer's commitments is good in terms of evaluation and selection process of the projects, application of eligibility criteria and allocation of proceeds from the OAT.
 - We have a reasonable level of assurance on the issuer's capacity to report on the funds allocation and on the environmental performance of Green Expenditures.

This Second Party Opinion is based on information provided by the Issuer, assessed using our evaluation methodology and the voluntary Green Bond Principles (June 2018). The French Republic recognises that if there is a change in these standards and practices or market expectations, VIGEO EIRIS shall not be held liable for use of the Second Party Opinion and its compliance with the standards, best practices and market expectations at the time of writing.

Paris, May 29th, 2020

Project team

Amaya London
Sustainable Development Consultant
Project manager

Rebecca Smith
Sustainability
Consultant

Emilie Béral
Director of Methodology at Vigeo Eiris
Supervisor

For more information, contact:

Sustainable Finance Team

VESustainablefinance@vigeo-eiris.com

Disclaimer

Transparency on the relation between Vigeo Eiris and the issuer: since 2013, Vigeo Eiris has executed several audit missions for the French Republic (Second Party Opinion in 2017 and review of the Second Party Opinion in 2018 and 2019). No established relationship (financial or other) exists between Vigeo Eiris and the French Republic.

This opinion aims to explain to investors why the 2017 Green OAT and its tap issues are considered responsible. It has been established based on the information that has been made available to Vigeo Eiris by the Issuer. The accuracy, comprehensiveness and reliability of the information collected are the Issuer's responsibility. The Issuer is fully responsible for attesting the compliance with its commitments defined in its policies, for their implementation and their monitoring. Providing this opinion does not mean that Vigeo Eiris certifies the materiality, the excellence or the irreversibility of the impacts from endeavours and projects financed by the Green OAT. The opinion delivered by Vigeo Eiris neither focuses on financial performance of the Green OAT, nor assurance on the effective use of proceeds as set forth in the section entitled "Use of proceeds". Vigeo Eiris is not liable for the induced consequences when third parties use this opinion either to make investment decisions or to make any kind of business transaction.

Restriction on distribution and use of this Opinion: the deliverables remain the property of Vigeo Eiris. The draft version of Vigeo Eiris' Second Party Opinion is provided solely on an information basis and shall not be disseminated by the Client. Vigeo Eiris grants the Issuer all right to use the final version of the Second Party Opinion delivered for external use, on any medium chosen by the issuer on a global scope. The Issuer has the right to disclose only the complete Second Party Opinion with no modification, i.e. without any selections, deletions or additions and with no changes to either the substance or the form. It must not be used for purposes other than those relating to the bond under consideration. The Issuer recognizes and accepts that Vigeo Eiris reserves the right to publish the final version on the Vigeo Eiris website as well as on internal and external documents and communications of Vigeo Eiris.

³ Vigeo Eiris rating scales: Performance level: advanced, good, limited, weak. Level of assurance: reasonable, moderate, weak.



DETAILED RESULTS

Part I. ISSUER

Level of the issuer's sustainability performance⁴

As of November 2019 (date of the last rating cycle), France's overall level of integration of sustainable development objectives in its institutional systems and public policies is considered to be advanced (81/100) and has remained stable during the last six years. France's sustainability performance ranked 5th out of 178 countries worldwide, three points higher than last year, and 5th out of the 28 European Union (EU) member states.

France's sustainability policy, in institutional, social and environmental terms, is considered advanced. France has ratified all international conventions and texts related to sustainability themes, apart from the Convention on the Rights of Migrant Workers.

- France achieves an advanced performance in terms of Environmental responsibility with a score of 74/100, or a point above last year's score, ranking 10th out of 178 countries. Amongst France's strengths to be noted are the commitments taken regarding the reduction of atmospheric emissions and the effort in favour of biodiversity protection. France is among the worldwide leaders regarding the protection of terrestrial and marine areas. The country has also actively piloted and ratified the Paris Agreement and jointly committed with EU member states to reduce EU GHG emissions by 40% by 2030 compared to 1990. It is achieving advanced performance in CO₂ emissions, being the economy with the third-lowest carbon intensity in the OECD (0.11 kg de CO₂ USD/GDP). Room for improvement still lies in the transition towards green growth, notably in terms of nuclear waste production per Gross Domestic Product and renewable energy production (except for hydroelectricity).
- France still achieves an advanced score in terms of Social responsibility and solidarity (79/100), or a progression of one point compared to last year, now ranking 7th out of 178 countries. This increase can be explained by the positive evolution of the score of the "Promotion of social protection" criteria, particularly on the "Promotion of workers' rights". The social strengths of France relate to education, social infrastructure management, gender equality, with top leading scores attained, namely on both primary school and secondary school education indicators, as well as on the Gender Inequality Index. Performance relating to social protection is uneven, with advanced score on poverty reduction but moderate score on employment. Development aid displays a stable score.
- France achieves an advanced performance in Institutional responsibility (90/100), up two points over last year, ranking for the third consecutive year 11th out of 178 countries. The increase stems from the higher score in the "Participation in International Human Rights Conventions" criterion, linked to France's ratification of the Protocol against the Illicit Manufacturing of and Trafficking in Firearms, their Parts and Components and Ammunition. France regularly reaffirms its commitments to democracy and human rights. France plays an active role in supporting and facilitating the advocacy efforts of human rights and anti-corruption associations within United Nations agencies and organisations.

Part II. ISSUANCE

Green Expenditures 2019

We express a reasonable level of assurance on the green credentials of the Green Expenditures associated with all contributions made in 2019, those of the inaugural issuance and the tap issues subsequent to it, and on the compliance with the commitments made at the time of the issuance concerning these contributions.

Use of proceeds

To date, 44 expenditures have been financed by the Green OAT proceeds in 2019, corresponding in their entirety to the six Green Sectors initially defined by the issuer in the "Framework for the Green OAT", namely:

- Buildings
- Transport
- Energy

⁴ The review of sustainability-related stakeholders' feedback is not included in our evaluation of sovereign bond issuers.



- Living resources and biodiversity
- Adaptation
- Pollution control and Eco-efficiency

We consider that the Green Sectors targeted by the Green OAT – and associated tap issues – are aligned with the following UN SDGs: 7. Affordable and clean energy, 9. Industry, innovation & infrastructure, 11. Sustainable cities & communities, 12. Sustainable consumption & production, 13. Climate action, 14. Life below water and 15. Life on land.



To date, selected expenditures are consistent with the six Green Sectors initially defined by the issuer in the “Framework for the Green OAT”. We maintain a reasonable level of assurance on the issuer’s capacity to use the Green OAT proceeds for projects contributing to climate change mitigation and adaptation, protection of natural resources and reduction of ecosystems degradation, in line with seven UN SDGs, and in accordance with its initial commitments.

Process for Projects Evaluation and Selection

The projects evaluation and selection process follows a structured and controlled process, with potential for improvement to strengthen the prevention of opacity risks, but at this stage in line with France’s environmental policies.

- The selection and validation of Green Expenditures was ensured via an interministerial working group, put in place by the Prime Minister’s cabinet and involved the concerned ministries (Ministry of Ecological and Solidary Transition, Ministry of Economy and Finance, Ministry of Public Accounts Action, Ministry of Higher Education, Research and Innovation, Ministry of Territorial Cohesion and Relations with Territorial Collectivities, and Ministry of Agriculture and Food).
- Selection and exclusion criteria, notably based on the Greenfin label (formerly the “Energy and Ecological Transition for Climate” label), appear to have been appropriately applied during the evaluation and selection of Green Expenditures.

The involvement of external experts and/or independent scientific committees in the process of selecting and defining the conditions for updating eligible expenditure is identified as a potential area for progress.

- The €5.88 billion issued in 2019 was allocated, of which €1.24 billion were attributed to the remaining 2018 expenditure that had not been financed by the Green OAT and €4.64 billion were attributed to expenditure incurred in 2019. The final amount of budgetary expenditure for 2019 is determined by the draft law on the regulation of the budget and approval of the State accounts for 2019, which was presented to the Council of Ministers on May 2nd, 2020.
- All 2019 green expenditures have been documented through pre-existing government expenditure and accounting tracking and management systems, and the majority are detailed in public documents such as the Annual Performance Reports annexed to the Settlement Finance Act. All expenditures are tracked in the State Expenditure Information System (“Chorus”) and subject to monitoring of budgetary tax revenues or expenditure management of the Future Investment Programme. In addition, records of decisions were kept for interdepartmental meetings (i.e. “bleu” de Matignon), allowing the traceability of selection decisions.

We consider that clarifying the method for classifying and selecting expenditure is an area for improvement, in order to straighten its reproducibility and the definition of the conditions for updating eligible expenditure.

- Generally, when bills are submitted to Parliament, they include an economic, financial and social impact study. Additionally and more specifically, the Green OAT Evaluation Council oversees specific studies on the environmental benefits of expenditure matched to green bond issuance. After publishing reports on the energy transition tax credit and the French waterways board, *Voies navigables de France*, the Evaluation Council plans to study each type of eligible expenditure separately. One area for progress would be to specify which mitigation measures are in place for the potential environmental and social risks associated with eligible expenditure, over the entire lifespan of the funded projects.



We consider the general level of deployment of the issuer's commitments to be good in terms of process for projects evaluation and selection, implementation of the eligibility criteria and allocation of the funds resulting from the Bond.

Reporting

The issuer produces a report combining allocation reporting and performance reporting. This report will be supplemented by the publication of an ex-post evaluation report, carried out under the supervision of the Green OAT Evaluation Council.

Issuer's capacity to report

Indicators on funds allocation are reported. In addition, the issuer provides information on the environmental performance of the Green Expenditures. These are based solely on existing State's expenditures indicators and mainly on performance indicators identified in existing government budget documentation, specifying calculation methodologies. AFT selected 42 indicators on the proposal of an external third party who evaluated their relevance.

External reviews

In addition to the audits carried out by the Court of Auditors, France is committed to have its report on the funds allocation reviewed by an independent auditor including:

- All operational processes leading to the allocation of eligible Green Expenditure backed by OAT issuances in 2019.
- The proper implementation of eligible Green Expenditures.

We have a reasonable level of assurance on the issuer's capacity to report on the funds allocation and on the environmental performance of Green Expenditures.



METHODOLOGY

In Vigeo Eiris' view, Environmental, Social and Governance/Institution (ESG/I) factors are intertwined and complementary. As such they cannot be separated in the assessment of ESG management in any organisation or activity, including the issuance of bonds. In this sense, Vigeo Eiris writes an opinion on the Issuer's sustainability performance as an organisation, and on the Issuance's objectives, management and reporting of the expenditures (re)financed by this transaction.

Part I: ISSUER

Level of the Issuer's sustainability performance

Vigeo Eiris has revised its sovereign rating research, resulting from a continuous improvement process and based on permanent monitoring of international normative developments as well as stakeholder expectations and debates. This enhanced version includes 69 new factors to meet market needs. The 172 indicators are put into perspective with the UN Sustainable Development Goals and are organized into 56 criteria, 17 sub-domains and 3 rating domains. Of note, the new methodology leads to a decrease in the absolute scores of the majority of countries.

Vigeo Eiris' methodology, the Sustainability Sovereign Rating®, measures and compares the level to which the issuer commits to integrate into its legislative and regulatory framework and into its public policies the sustainable development principles and goals as they are broadly defined by international public law conventions, as well as by the guidelines and recommendations formulated by international organisations. For the recent period we have included the Sustainable Development Goals (SDGs), and the action programmes of Agenda 21, adopted by 173 countries at the Rio Earth Summit in 1992. We pay particular attention to the commitments, policies and impacts of public policies in terms of respect of fundamental human rights, access to economic, social, cultural and environmental rights, quality of governance, as well as international solidarity and cooperation. Based on the analysis of a universe composed of 178 countries, the results provide a comparative view of risks and performances, with regard to universally acknowledged sustainability objectives.

The sustainability performance of the French Republic was evaluated by Vigeo Eiris in November 2019 based on three rating domains: Environment (i.e. environmental protection), Social (i.e. social protection and solidarity) and Institutions (i.e. rule of law and governance). These three domains are analysed through 56 criteria, which bring together 172 indicators of two types:

- Commitment indicators: reflecting the state's level of commitment to the goals and principles set by major international agreements: Conventions, recommendations and statements of the ILO; UN Charters and treaties; guiding principles of the OECD; regional instruments (assuming their full compliance with the United Nations Charter); the Universal Declaration of Human Rights and its related protocols and treaties.
- Result indicators: measuring the efficiency of the country's sustainable development actions.

Vigeo Eiris gathers information from diversified sources including international organisations such as intergovernmental organisations, international trade unions and NGOs.

The review of sustainability-related stakeholders' feedback is not included in our evaluation of sovereign bond issuers.



Part II. ISSUANCE

In the initial opinion, our analysis included:

Use of proceeds

The use of proceeds requirements are defined to ensure that the funds raised are used to finance and/or refinance an Eligible Projects and are traceable within the issuing organisation. Each project endorsed shall comply with at least one of the Eligible Project Category definition in order to be considered as an Eligible Green Project. Vigeo Eiris evaluates the relevance, visibility, and measurability of the associated environmental and/or social objectives. The sustainability purpose of the Green OAT's associated Eligible Green Expenditures has been precisely defined, with regard to the Issuer's commitments, and assessed based on the described and estimated benefits of Eligible Projects. The contribution of Eligible Projects to Sustainable Development is evaluated based on the United Nations Sustainable Development Goals.

Process for expenditure evaluation and selection

The evaluation and selection process has been assessed by Vigeo Eiris regarding its transparency, governance and efficiency. The relevance and exhaustiveness of selection criteria and associated supporting elements integrated in the Green OAT framework, and the coherence of the process are analysed based on material issues considered in Vigeo Eiris' methodology.

Reporting

Reporting indicators, processes and methodologies are defined by the Issuer to enable annual reporting on fund allocation, environmental benefits (output and impact indicators) and on the responsible management of Eligible Projects financed by the Green OAT proceeds, collected at project level and potentially aggregated at bond level. Vigeo Eiris has evaluated the relevance of the reporting framework according to three principles: transparency, exhaustiveness and effectiveness.

Levels of commitments and processes: advanced, robust, limited, weak
 Levels of assurance on the issuer's capacity: reasonable, moderate, weak.

We have updated our initial opinion on the green credentials of the Green Expenditures associated with all the contributions made in 2019, those of the inaugural issuance and its subsequent tap issues, France's respect of its commitments made at the time of the issuance concerning these contributions, and the issuer's performance in terms of sustainable development.

VIGEO EIRIS' ASSESSMENT SCALES

| Performance evaluation | | Level of assurance | |
|------------------------|---|--------------------|--|
| Advanced | Advanced commitment; strong evidence of command over the issues dedicated to achieving the objective of social responsibility. Reasonable level of risk management and use of innovative methods to anticipate emerging risks | Reasonable | Able to convincingly conform to the prescribed principles and objectives of the evaluation framework |
| Robust | Convincing commitment; significant and consistent evidence of command over the issues. Reasonable level of risk management | Moderate | Compatibility or partial convergence with the prescribed principles and objectives of the evaluation framework |
| Limited | Commitment to the objective of social responsibility has been initiated or partially achieved; fragmentary evidence of command over the issues. Limited to weak level of risk management | Weak | Lack or unawareness of, or incompatibility with the prescribed principles and objectives of the evaluation framework |
| Weak | Commitment to social responsibility is non-tangible; no evidence of command over the issues. Level of insurance of risk management is weak to very weak | | |



Vigeo Eiris is an independent international provider of environmental, social and governance (ESG) research and services for investors and public & private organizations. We undertake risk assessments and evaluate the level of integration of sustainability factors within the strategies and operations of organizations.

Vigeo Eiris offers a wide range of services:

- ▶ **For investors:** decision making support covering all sustainable and ethical investment approaches (including ratings, databases, sector analyses, portfolio analyses, structured products, indices and more).
- ▶ **For companies & organizations:** supporting the integration of ESG criteria into business functions and strategic operations (including sustainable bonds, corporate ratings, CSR evaluations and more).

Vigeo Eiris is committed to delivering client products and services with high added value: a result of research and analysis that adheres to the strictest quality standards. Our methodology is reviewed by an independent scientific council and all our production processes, from information collection to service delivery, are documented and audited. Vigeo Eiris has chosen to certify all its processes to the latest ISO 9001 standard. Vigeo Eiris is an approved verifier for CBI (Climate Bond Initiative). Vigeo Eiris' research is referenced in several international scientific publications.

With a team of more than 240 experts of 28 different nationalities, Vigeo Eiris is present in Paris, London, Brussels, Casablanca, Hong Kong, Milan, New York, Rabat, and Santiago.

The Vigeo Eiris Global Network, comprising 4 exclusive research partners, is present in Brazil, Germany, Israel and Japan.

For more information: www.vigeo-eiris.com

METHODOLOGY

Eligible Green Expenditure is State expenditure that complies with the eligibility terms set forth in the Green OAT Framework Document⁴⁵. This memo sets out the method used to monitor disbursements and the associated performance indicators.

Expenditure is monitored exclusively using the State's existing tracking procedures and performance indicators, which provide the same level of reliability as those used for the State budget. Wherever possible, expenditure is monitored using online, publicly available documents, in which case the way to access them is explained.

Eligible Green Expenditure includes tax and investing, operating and intervention expenditure used to implement France's climate and environmental policy. Based on the Green OAT Framework Document, Eligible Green Expenditure is selected each year when the Finance Act for the following year is voted, by an Interministerial Committee, which reports directly to the French Prime Minister. Each Ministry is responsible for identifying eligible expenditure in its scope of activity, while the final decision is taken by the Interministerial Committee.

Eligible Green Expenditure is monitored separately, depending on its type (budgetary, tax or Invest for the Future). Vigeo Eiris verifies that eligible expenditure has been correctly identified based on the Green OAT Framework Document's eligibility criteria.

1. BUDGETARY EXPENDITURE

Eligible green budget expenditure comprises investing, operating and intervention expenditure. Expenditure and the associated indicators are monitored through annual performance reports appended to the French Budget Settlement Act, the Finance Act that sets the final amount of State expenditure and revenue, and the resulting financial income or expense.

The Finance Acts “determine, for a given reporting period, the nature, amount and appropriation of State revenue and expenditure, and the resulting budget and financial balance. [...] The reporting period is one calendar year. [...]” (Article 1, of French Finance Act No. 2001-692 of 1 August 2001 (LOLF)⁴⁶). All budget documents are available online: <https://www.performance-publique.budget.gouv.fr/>.

Each year, the National Audit Office issues a statement on the statutory validity of the State's accounts. In the statement, which is appended to the French Budget Settlement Bill for the prior budget reporting period, with a summary of the verification procedures performed, the National Audit Office provides assurance on the regularity and true and fair presentation of the State's accounts. The National Audit Office carries out its constitutional mandate to assist Parliament and Government in controlling the implementation of Finance Acts and, more specifically, the provisions (paragraph 5 of Article 58) of the aforementioned French Finance Act (LOLF).

The annual performance reports appended to the Budget Settlement Act are included in the budget documents verified by the National Audit Office, before being made public. They provide details of expenditure and indicators for each mission, programme and initiative, as well as the associated budget categories. Data in the reports is tracked in CHORUS, a software application used by all public sector accounting stakeholders to manage ministerial programmes and services. The annual performance reports provide an appropriate level of detail on each Eligible Green Expenditure selected.

2. TAX EXPENDITURE

Eligible Green Expenditure may also correspond to tax expenditure. Such expenditure is also tracked in budget documents, albeit with a time lag. The use of internal Ministry of the Economy and Finance documents enables quicker access to data, while providing for adjustments once the final figures are published.

45 - <https://aft.gouv.fr/files/archives/attachments/25562.pdf>

46 - <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000394028>

In accordance with the European System of National and Regional Accounts (ESA 2010)⁴⁷, in the national accounts⁴⁸ refundable tax credits are recognised as State expenditure. Tax credits are “refundable” when total credits exceed the taxpayer’s tax liability. As a result, certain tax expenditure items may be recognised as Eligible Green Expenditure.

Budgeted tax expenditure for a given year corresponds to rights granted to individuals and companies for their expenditure in the prior year. The data obtained, including the amounts and performance indicators, is derived from software associated with each tax concerned (income tax for natural persons, corporate income tax and property tax). For each of these taxes, the data extracts serve as a basis for the national accounts.

The National Audit Office assesses the entire tax chain for each of these taxes when performing procedures to issue assurance on the validity of the State’s accounts.

3. EXPENDITURE FOR INVEST FOR THE FUTURE PROGRAMMES

Finally, Eligible Green Expenditure corresponds, in part, to expenditure for Invest for the Future programmes, managed by the French Secretariat General for Investment (SGPI). The latter submits a quarterly report to Parliament which serves as a basis for monitoring expenditure.

The Invest for the Future programmes were set up by the State to fund innovative investments with strong growth potential, based on a joint funding-per-project principle. The €57 billion invested by the State in such investments was made available in three stages: €35 billion in 2010 (Invest for the Future programme 1); €12 billion in 2014 (Invest for the Future programme 2); and €10 billion in 2016 (Invest for the Future programme 3, incorporated into the “GPI” Great Investment Plan in 2018).

Management of the Invest for the Future programmes was entrusted to 12 operators (French Research Agency (ANR), Caisse des Dépôts et Consignations, etc.), which were responsible for managing national calls for proposals. The Secretariat General for Investment is responsible for overall management. Invest for the Future programmes provide funding for structuring research universities, setting up entities to capitalise on research and funding collaborative, industrial projects in areas such as the digital economy, green biotechnology and chemistry, and marine technologies. The programme operators award selected beneficiaries grants or repayable advances (intervention expenditure), or acquire equity interests (investing expenditure). Each project is assessed by independent experts and the decision to invest is made under the aegis of the Prime Minister.

On a quarterly basis, the Secretariat General for Investment sends Parliament a report on Invest for the Future funding, presenting both commitments and disbursements, by type of funding, operator and initiative, and the percentage of joint funding provided. The Secretariat General for Investment also regularly publishes information on Invest for the Future programme⁴⁹. A Supervisory Committee, which includes members of Parliament, provides an annual assessment of programmes’ performance. These documents enable Eligible Green Expenditure to be monitored, with the related performance indicators. Operators that manage Invest for the Future programmes on behalf of third parties are audited by the National Audit Office, which verifies the financial flows between the State and the operators.

Under the Green OAT Framework Document, expenditure for Invest for the Future programmes can be Eligible Green Expenditure for current or past expenditure (if disbursements were made in 2018 or 2019 for 2019 issuances), or future expenditure (if it involves future disbursements). The Sovereign Green Bond Framework Document prioritises current and past expenditure.

74

75

47 - <https://ec.europa.eu/eurostat/documents/3859598/5925793/KS-02-13-269-FR.PDF/cfd0cb42-e51a-47ce-85da-1fb1de5c86c>, page 493

48 - <https://www.insee.fr/fr/statistiques/fichier/2832834/comptes-nationaux-base-2010.pdf>

49 - Including, for example, the annual report of the Secretariat General for Investment: https://www.gouvernement.fr/sites/default/files/contenu/piece-jointe/2018/08/ra_sgpi_2017_web.pdf

REFERENCE DOCUMENTS

- *Key Climate Figures – France, Europe and the World, SDES, 2020*
- *Revised National Low-Carbon Strategy – April 2020*
- *Energy precarity dashboard (Tableau de bord de la précarité énergétique), ONPE, 2019*
- *Primary residence, 2018 Tax Guidance, Finances publiques*
- *PLR 2018 – Excerpt from the allocation and performance report of “Ecology, development and sustainable mobility” - Programme 174*
- *SGFGAS missions - <https://www2.sfggas.fr/web/site-public/missions>*
- *Information package for the “Better Living” programme (Habiter mieux), 2016 - ANAH*
- *IGN Forest Inventory Memento (Le memento), 2019*
- *IGN Forest Inventory, Forestry Flows (Les flux en forêt), 2018*
- *Biodiversity explained (La Biodiversité s’explique), French Ministry for the Ecological and Inclusive Transition, 2018*
- *Key Transport Figures, SDES, 2020*
- *Key Energy Figures, SDES, 2019*
- *Greenhouse Gas inventory, ADEME*
- *Total number of vehicles (2019) – European Alternative Fuels Observatory*
- *ADEME poll: French citizens and the environment (Les Français et l’environnement), 2018*
- *Web of Scieance, online university research database of the Institute for Scientific Information (ISI)*
- *French Order No 2017-949 of 10 May 2017, available in French on the Légifrance website*
- *French Senate enquiry on the economic and financial costs of air pollution: <http://www.senat.fr/rap/r14-610-1/r14-610-11.pdf>*
- *SECTEN Inventory, 2020, CITEPA*
- *Report on Air Quality in France in 2016, French General Commission on Sustainable Development (CGDD):*

ABBREVIATIONS

| | |
|--------------------------------------|--|
| ADEME | French Environment & Energy Management Agency |
| AFT | Agence France Trésor |
| ANAH | French State Home Improvement Authority |
| BRGM | French geological and mining research bureau |
| CAS TE | “Energy Transition” special appropriation account |
| CBD | Convention on Biological Diversity |
| CCE | Climate and energy contribution |
| CDC | Caisse des dépôts et consignations (French public financial institution) |
| CEA | French Alternative Energies and Atomic Energy Commission |
| CEREMA | French Research Centre on Environmental Risk, Transport and Planning |
| CIRAD | French agricultural research and international cooperation organization |
| CITE | French energy transition tax credit |
| CITEPA | French Interprofessional Technical Research Centre on Air Pollution |
| CNES | French Space Research Centre |
| CO₂ | Carbon dioxide |
| COP | Conference of the Parties |
| EPS | Eumetsat Polar System |
| EPTZ | Interest-free green loan |
| EU28 | European Union |
| Eumetsat | European Organisation for the Exploitation of Meteorological Satellites |
| gCO₂e/passenger.km | Grams CO ₂ per passenger per kilometre |
| GHG | Greenhouse gas |

| | |
|---|--|
| HLM | French social housing |
| ICMA | International Capital Market Association |
| IFREMER | French marine research institute |
| IFSTTAR | French Institute of Science and Technology for Transport, Development and Networks |
| INPN | National Inventory of Natural Heritage |
| INRA | National Institute of Agricultural Research |
| IPEV | Paul-Emile Victor Polar Institute (France) |
| IRD | French Research Institute for Sustainable Development |
| IRSTEA | National Institute for Environmental and Agricultural Science and Research |
| ISI | Institute for Scientific Information |
| km | Kilometre |
| kt | Kilotonne |
| LCSQA | French central laboratory for air quality monitoring |
| Metop | Meteorological operational polar satellite |
| NH₃ | Ammonia |
| NMVOG | Non-methane volatile organic compound |
| NO_x | Nitrogen oxides |
| NTE | New energy technologies |
| OAT | Sovereign bond |
| OECD | Organisation for Economic Cooperation and Development |
| ONB | French Biodiversity Observatory |
| ONF | National Forests Office (France) |
| PCB | Polychlorinated biphenyl |
| PIA | Invest for the Future programme |
| PM_{2.5}/PM₁₀ | Particulate Matter (suspended particles with a diameter of 2.5 or 10 microns) |
| RAP | Annual Performance Report |
| SCAP | Strategy to Create Protected Areas (France) |
| SEM | Semi-public company |
| SGFGAS | French low-income mortgage intermediary |
| SME | Small and Medium Entreprises |
| SNBC | French national low-carbon strategy |
| SO₂ | Sulfur dioxide |
| tCO₂e | Tonnes CO ₂ equivalent |
| TEEC | "Ecological and Energy Transition for the Climate" label |
| TGAP | General tax on polluting activities |
| TGV | High-speed train |
| TICFE | Tax on energy products and electricity |
| TIGA | "Highly ambitious innovative regions" scheme (France) |
| TWh | Terawatt hour |
| UN | United Nations |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VNF | French waterways |
| WWF | World Wide Fund for Nature |
| ZEE | Exclusive economic zone |
| ZNI | Area not connected to the national grid (France) |



AGENCE FRANCE TRÉSOR

Contact :

Agence France Trésor

139, rue de Bercy – Télédock 287

75572 Paris Cedex 12

Tel.: 01 40 04 15 00

Fax: 01 40 04 15 93

contact@aft.gouv.fr

www.aft.gouv.fr

Reuters : <TRESOR>

Bloomberg : TREX <GO>

