



# EVALUATION OF THE NATIONAL RECOVERY PLAN (FRANCE RELANCE)

## SUMMARY OF THE FINAL REPORT

Established by the initial Finance Act for 2021, the evaluation committee for the French Recovery Plan (France Relance) carried out an independent assessment of the plan's socio-economic and environmental impact<sup>1</sup>. With a budget of €100 billion, the recovery plan had a dual ambition: to enable the economy to return to its pre-crisis level by the summer of 2022 and to improve the competitiveness of French businesses, while preparing all economic players for the long-term challenges ahead. The committee focused its work on the macroeconomic impact of the plan as a whole, and on a detailed analysis of a dozen measures, which account for 50% of the budget. The main findings are set out below.

From a short-term perspective, part of the dynamism in employment since 2020 is attributable to the recovery plan. This is shown by simulations based on the ThreeME macroeconomic model, but also by two *ex-post* evaluations commissioned by France Stratégie. According to a study by the OFCE (a French economic policy think tank), nearly 100,000 jobs would have been created in 2022 by the €10 billion of measures targeted at renovation. The study by the French Institute of Public Policy (IPP) suggests that the exceptional support for apprenticeships would have generated 80,000 new jobs in 2020.

Favourable effects have also been demonstrated in terms of CO<sub>2</sub>eq emissions. According to the IPP, which focused its analysis on one scheme, €400 million in subsidies for decarbonisation in industry would have helped to reduce CO<sub>2</sub> emissions from the facilities concerned by around one million tonnes. The vehicle incentive (which was increased by the recovery plan and cost €1 billion in 2022) would, for its part, help to increase the share of electric vehicles in new vehicle sales by 3.3 points and reduce annual emissions from new vehicles by around 90,000 tonnes. With regard to "MaPrimeRénov" (MPR) and the energy renovation of public buildings (REBP), which represented an equivalent budget cost – around €4 billion – we were unable to obtain the actual consumption data needed to evaluate them *ex post* (in particular to take account of the rebound effect). If the theoretical energy and CO<sub>2</sub> savings are calculated, based on information provided by the project leaders (for REBP) or estimated on the basis of ADEME scales according to the actions declared (for MPR), they are around ten times higher for MPR than for REBP. Even if this result were to be confirmed on the basis of real data, this would obviously not mean that subsidising the renovation of public buildings should be stopped, as their self-financing capacity is very low, unlike the household investments subsidised by MPR, and part of the subsidised renovation of public buildings has broader aims than decarbonisation.

It has thus been shown, to a certain extent, that it is possible to put in place a recovery plan aimed at stimulating activity in the short term, without abandoning more structural objectives, with measures to support the productive fabric and its decarbonisation. Although the committee is bringing its work to a close, certain research projects financed by France Stratégie will continue and will be published in 2024 (notably on the reduction in production taxes and on the macroeconomic impact of the recovery plan).

1. For the full report, see France Stratégie (2024), *Comité d'évaluation du plan France Relance - Rapport final*, vol. I, Approche macroéconomique, vol. II, Évaluation des dispositifs, January.

**Xavier Jaravel**  
Committee Chairman

**Sylvie Montout**  
Rapporteur, Economics  
Department

The *Summary Report* is published under the editorial responsibility of the General Commissioner of France Stratégie. The opinions expressed are those of the authors and are not intended to reflect the position of the French government

## GENERAL OVERVIEW

In the wake of the health crisis, the crisis arising from the war in Ukraine and the sharp rise in inflation, the French government has announced a succession of plans, ranging from emergency measures<sup>2</sup> to the Economic and Social Resilience Plan, and including the France Relance and France 2030 plans. In this context, the France Relance plan, itself a hybrid with its dual cyclical and structural ambitions, presents many points of convergence<sup>3</sup> with these plans, even if each has its own specific characteristics. For example, over and above its specific short-term objectives, France Relance shares with France 2030 the longer-term objective of transforming our economy, but the latter also aims to provide large-scale support for disruptive innovation, whereas the former is limited to modernising (and greening) the production system.

*At the end of November 2023,  
93% of the recovery plan had been committed*

France Relance is built around three pillars: “Ecology”, “Competitiveness” and “Cohesion”.

- The “Ecology” pillar (€30 billion), while supporting the economic recovery, is designed to help France meet its environmental and climate commitments. It includes measures to support energy renovation, the rail sector, the production of low-carbon hydrogen, the decarbonisation of industry, clean vehicles, agriculture and biodiversity.

- The “Competitiveness” pillar (€34 billion) helps to support the economic recovery on the supply side by strengthening business competitiveness. In the short term, the aim is to support businesses, particularly those weakened by the crisis, including through support for industrial investment. In the long term, the measures under this pillar should help to correct certain weaknesses in the French production system, notably through a permanent reduction in production taxes and support for innovation.
- The “Cohesion” pillar (€36 billion) brings together measures designed to ensure territorial and social cohesion by promoting a uniform recovery across all regions and for all generations. These funds are intended in particular to safeguard employment through extended short-time working, to increase the employability of young people with the “1 young person, 1 solution” plan, to support areas where public services are most difficult to access, and to invest in the health-care system.

At the end of November 2023, the recovery plan had a 93% commitment rate (89% at the end of 2022, with a target of 100% by that date) and a 73% spending rate. The differences in implementation of the various pillars are moderate<sup>4</sup> (see Table 1).

**Table 1 – Budget implementation of the recovery plan by component at end-November 2023**

COMPONENT	Initial budget (in €bn)	Commitments to end November 2023 (in €bn)	Commitment rate compared with initial budget	Spending to end November 2023 (in €bn)	Spending rate compared with initial budget
<b>Ecology</b>	30	30	100%	21	71%
<b>Competitiveness (including reduction in production taxes)</b>	34	32	94%	27	80%
<b>Competitiveness (excluding reduction in production taxes)</b>	14	12	84%	7	52%
<b>Cohesion</b>	36	31	87%	24	67%
<b>TOTAL</b>	<b>100</b>	<b>93</b>	<b>93%</b>	<b>73</b>	<b>73%</b>

Source: Budget Department

2. Assessed by the evaluation committee on financial support measures for businesses dealing with the Covid-19 epidemic in [its final report in July 2021](#).

3. This convergence can go as far as dual designation, with the €11 billion in support for business investment being designated under “France Relance” and “France 2030” at the same time.

4. In terms of spending, the Competitiveness component stands out as having a higher implementation rate when not adjusted for the reduction in production taxes.



### *A scale comparable to the German recovery plan*

The German and French recovery plans each have a budget of 3.8% and 4.1% respectively of their 2019 nominal GDP. By contrast, the Italian and Spanish plans amount to 12.5% and 13.1% of 2019 GDP respectively.

The amount of subsidies and loans granted by the European Commission depends on four criteria, namely the size of the population in 2019, the inverse of GDP per capita in 2019, the unemployment rate between 2015 and 2019 and finally the cumulative loss of real GDP observed over the period 2020-2021. This is why Spain has obtained a large subsidy (6.4 points of GDP) and has therefore chosen not to supplement its plan with its own national resources<sup>5</sup>. Italy was awarded a subsidy of 4 points of GDP and opted to call on a large amount of loans to supplement it (6.8 points of GDP). France obtained a subsidy corresponding to 1.7 points of GDP (financing 40% of its recovery plan) and Germany 0.8 points (covering 22% of its recovery plan).

France opted to pre-finance the entire recovery plan from national funds to ensure its rapid implementation, and to obtain reimbursement afterwards. By early January 2024, France had already received €23.4 billion in grants under the Recovery and Resilience Facility (FRR), representing 58% of the grants to which it is entitled under the FRR (€40.3 billion), ranking it first among the Member States. The remaining €17 billion will be distributed by 2026.

### *Two thirds of the France Relance plan has been analysed in terms of territorial deployment*

At the instigation of its members, the committee secretariat carried out as exhaustive a review as possible of the amounts committed to the France Relance plan at employment zone level. Of the €93 billion committed since 2020, it has collected data for around forty schemes, representing €68 billion that could be broken down by employment zone.

The conclusions drawn from the territorial distribution of the recovery plan depend on the criteria used. If the amounts received are related to the population, Île-de-France appears to be the best served.

However, if they are related to the region's economic activity, which may be justified for a recovery plan that aims to restore pre-crisis GDP, Île-de-France falls to ninth place, with French Guiana in first place.

However, several findings appear to be consistent across all criteria:

- All employment zones have benefited from the recovery plan, with a fairly low dispersion overall (interquintile ratio of 1.5), despite the fact that very large differences can be observed (from 1 to 10 between the best and worst served zones).
- The amounts received do not appear to be correlated with the socio-economic characteristics of the employment zones: i) our estimates do not establish any correlation between the pre-Covid employment trends and the amounts received; ii) the recovery plan amounts are distributed relatively evenly between the different groups of employment zones based on their socioeconomic vulnerability, which are divided into quintiles: the most vulnerable zones include zones where the amounts received from the recovery plan per inhabitant are high (Nevers, Gien, Maubeuge, Épinal, Saint-Dié-des-Vosges) and zones where the amounts received are low (Le Nord-Caraïbe, Le Sud, Cambrai, Vitry-le-François, Saint-Dizier, Nîmes).
- Lastly, France Relance funding is directed more towards highly industrial areas (in the broadest sense of the term, including manufacturing, mining and activities linked to the production and distribution of energy and water). Overseas and tourist regions (most of which are on the coast) are at the bottom of the list of beneficiaries. Overseas and tourist areas (most of which are on the coast) are at the bottom of the list of beneficiaries.

### *The short-term macroeconomic objective has been achieved*

An analysis of the economic situation is clearly far from sufficient to assess the effectiveness of the recovery plan, but it does allow us to compare France with its main European partners, to verify whether the short-term objective of the recovery plan has been achieved and to assess the extent to which the recovery plan remains appropriate in the light of changes in the macroeconomic situation.

The aim of the recovery plan was to return to the pre-crisis level of GDP by the summer of 2022. This objective was achieved in the fourth quarter of 2021 and, as an annual

5. On 17 October 2023, the European Council approved the revision of the Spanish recovery plan, which now amounts to €163 billion (€80 billion in subsidies, €83 billion in loans), or 13 points of GDP, compared with the initial subsidy of €70 billion.

**Box 1 – Macroeconomic estimate of the recovery plan by the OFCE**

The OFCE was selected as part of a call for research projects launched by France Stratégie to assess the macroeconomic impact of France Relance. The work will be completed in the second half of 2024, but initial results can already be presented for two modules<sup>6</sup> (the second, the ex-post evaluation of the territorial impact of construction support measures, is presented below with the analysis of the measures).

The research team uses the ThreeME multi-sector macroeconomic model, developed jointly by Ademe and the OFCE for the economic analysis of environmental and energy policies. This model has the advantage of differentiating between a large number of business sectors and consumer goods and services, which is particularly appropriate for modelling the recovery plan.

According to the OFCE, the macroeconomic impact of the recovery plan<sup>7</sup> on growth would be 1.2 points of GDP in 2021 (as a deviation from a scenario without the recovery plan), then 1.4 points in 2022 before falling sharply (0.5 points in 2023, 0.2 points in 2025). The impact of the France Relance plan on GDP in 2021 and 2022 would primarily be achieved through investment (public and private), followed by household consumption and public spending.

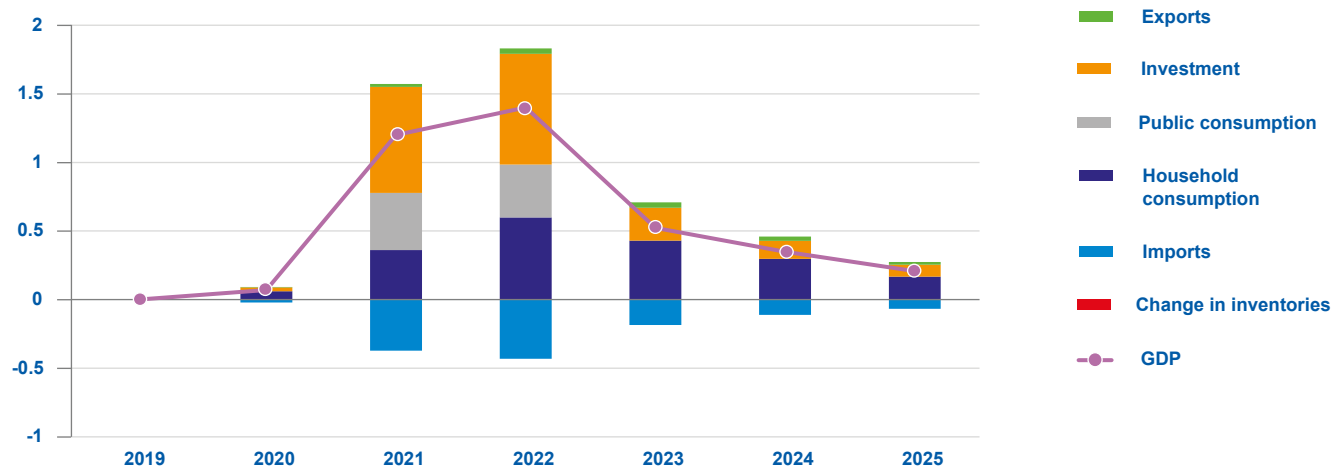
The France Relance plan would have made a significant contribution to the faster recovery in employment in

France in the post-Covid period (with a peak of +350,000 jobs in 2022), but this effect would gradually diminish and disappear by 2027.

In total over the period 2020-2025, if the effect on GDP and employment is related to the amounts of the France Relance plan, we obtain a cumulative multiplier of 1.05 and a cost of around €84,000 per job created, respectively.

The advantage of this assessment, based on a macroeconomic model, is that it takes account of the channels through which the different types of measure in the recovery plan are distributed in the economy, depending on whether they relate to household demand (MaPrimeRénov', vehicle incentive and conversion premium), business employment ('1 young person 1 solution', APLD), business investment (support for industrial investment, decarbonisation of industry) or government investment (thermal renovation of public buildings). However, the model is not based on an empirical analysis of any windfall effects (spending that would have taken place independently of France Relance) and does not account for the effect of the measures on potential growth (which is assumed to be fixed). Finally, the simulations carried out are almost entirely independent of the economic situation, which means that it is not possible to assess whether the complete change in the macroeconomic environment between 2020 and 2022 has had an impact on the effectiveness of the recovery plan.

**Graph 1 – Impact of the recovery plan on GDP by component**



Interpretation: in 2022, total investment would contribute 0.8 points of GDP to the gain in GDP generated by the recovery plan.

Source: OFCE; calculations based on the ThreeME model

6. See Malliet P. and Sauntally A. (2024), "Une évaluation macroéconomique multisectorielle du plan de France Relance à l'aide du modèle ThreeME", Working Paper 2, draft, January; and Saussay A., Williatte B., Jullien de Pommerol O., Joutard X. and Timbeau X. (2024), "Évaluation ex post de France Relance", OFCE, January.

7. The simulation is based on the €100 billion recovery plan, and therefore on the reduction in production taxes for 2021 and 2022 alone, even if this reduction is permanent.



average, in 2022. According to OFCE estimates, based on a New Keynesian macroeconomic model, the recovery plan would have contributed to a cumulative increase in economic activity of 3.7 points over the period 2020-2025, and 1.4 points in 2022 (see Box 1 on previous page). According to this estimate, without the recovery plan, the French economy would not have returned to its pre-crisis level until 2023.

Several points of clarification are in order. Firstly, between 2020, the year in which the recovery plan was presented, and 2022, French GDP grew by 9%, meaning that the

recovery plan's contribution to the upturn in activity is very small compared with the rebound effect generated by the lifting of health restrictions.

Secondly, since the fourth quarter of 2021, economic activity has slowed, with GDP growing by just 1.3% over the last seven quarters. Developments on the international stage, including the consequences of the war in Ukraine and the sudden hike in interest rates following the sharp rise in inflation, are not unrelated to the current stagnation in economic activity. Moreover, although France was one of the first major European economies to return to its

## Box 2 – Macroeconomic situation: points of reference

*While French GDP is now above its 2019 level, this is not the case for **manufacturing value added**, which remains 4.4% lower, whereas it is higher in Germany, Spain and Italy.*

- **Total employment** in the third quarter of 2023 is 6.3% higher than its pre-crisis level. France's growth rate thus remains much stronger than that of the other countries studied: 1.3% in Germany, 2% in Italy, 3.5% in Spain and 2.3% in the United States.
- France's average position in terms of activity and its very favourable situation in terms of employment can be explained by the fact that **productivity** has fallen more in France. This is in part due to the sharp rise in the number of work-study students and to labour-retention patterns, particularly in manufacturing, where there are significant recruitment challenges. In this sector, in the third quarter of 2023, productivity in France was 6.9% below its pre-crisis level, even though it is in this sector that productivity gains have traditionally been concentrated.
- **According to INSEE, household purchasing power** would have stagnated in 2022 (falling by 0.1% on a per capita basis), despite the support policies implemented, as wages struggle to keep pace with inflation. Per capita purchasing power would nevertheless continue to be more favourable in France in 2022 than in other countries. It would have been 2.3% above its 2019 level in France, +0.6% in Germany and +0.4% in Italy, while it would have deteriorated in Spain and the United Kingdom to -3.4% and -1.9% of its 2019 level respectively.
- **Cumulative inflation** between December 2019 and October 2023 in France is 12%, lower than in the other countries studied. This more modest slowdown is the result of inflation remaining among the lowest in the eurozone for a long time in 2022, thanks in particular to the tariff shield and fuel rebate introduced by the French government, which helped to bolster household purchasing power.
- **France's current account balance** has deteriorated by 2.5 GDP points from the fourth quarter of 2019, when it was already starting from a less favourable position than its partners. The good performance of the services balance has been unable to offset the sharp deterioration in the goods balance. The current account balance has also deteriorated in Germany, Italy and the UK, but not in Spain.
- **France's debt-to-GDP ratio** in 2022 is 112% of GDP, well above that of the eurozone (92%) and Germany (66%). However, it is lower than in Spain (113%), Italy (142%) and the United States (129%). France's debt increased by 14 points of GDP between 2019 and 2022, compared with 8 points for the eurozone as a whole.
- After recovering in 2021 to reach an all-time high in the second quarter of 2021 as a result of business support measures and lower production taxes, **the profit margin of French businesses** decreased and amounted to 32% on average in 2022 according to INSEE, its 2019 level (adjusted for the double year of the CICE).

pre-crisis level of activity, in the third quarter of 2023 French GDP was 1.7% above its level in the fourth quarter of 2019, compared with +2.3% for the eurozone<sup>8</sup>.

Finally, the return of GDP to above its pre-crisis level does not mean that the impact of the crisis has been neutralised, as the lost growth in the economy – that which would have occurred in the absence of the crisis – has yet to be made up. Quantifying this loss involves estimating changes in the economy's productive potential outside the economic cycle, known as "potential GDP"<sup>9</sup>, the measurement of which is open to debate. For France, the OECD estimates that between 2019 and 2023, economic growth will have fallen by a cumulative 3.3% compared with the growth in the economy's productive potential estimated before the crisis.

The macroeconomic environment has changed completely since the recovery plan was approved in 2020. A sharp rise in the unemployment rate seemed certain, there were fears of deflation and zero interest rates seemed set to remain in place for a long time. In 2022, and until the first half of 2023, inflation and the unemployment rate were respectively at their highest and lowest levels for over twenty-five years, and the tightening of monetary policy was unprecedented in its speed and scale. In addition, since 2020, our partners have implemented policies in areas targeted by the recovery plan (which may, for example, have supported global demand but reduced France's competitiveness), which should be taken into account when assessing certain industry support measures. The recovery plan and decisions to redeploy or extend it must also be assessed in the light of this changing macroeconomic environment.

## ANALYSIS OF THE SCHEMES

The report contains a section devoted to the assessment of each of the schemes selected by the committee. Not enough time has yet elapsed for a full assessment to be made. The schemes have not yet been fully deployed (decarbonised hydrogen), or have been deployed but the investments have not been completed (decarbonisation of industry, renovation of local authority buildings), or the data are only available up to 2021 (reduction in production taxes) or are still partial (MaPrimeRénov', APLDF/FNE-Formation), or were not sent to the secretariat in time (plant proteins, equity capital).

When data was available, the committee drew on existing theoretical and empirical tools, either through the work of its secretariat or by commissioning research projects by university teams. There have been various obstacles: the post-Covid economic disruption (supply problems, soaring energy prices) makes it even more difficult to identify the effects of the measures (e.g. support for clean vehicles); some measures have a medium-term impact (such as the reduction in production taxes or the measures in the "1 young person, 1 solution" plan), which cannot be identified at this stage<sup>10</sup>; moreover, it will never be possible to assess the impact of certain measures due to the lack of a satisfactory "control group".

That said, for most of the measures, the secretariat has been able to obtain sufficient data to draw some useful initial conclusions and, for some measures, to carry out initial impact assessments. These analyses make it possible to identify positive results and areas for attention. These main findings are set out herein.

### "Ecology" component

#### Energy renovation of public buildings

The recovery plan has earmarked €4 billion for the energy renovation of public buildings: €2.7 billion for State buildings and €1.3 billion for local authorities (€650 million for municipalities, €300 million for departments and €300 million for regions). The projects were selected on the basis of two main criteria: the project leader's ability to implement the project quickly, and overall environmental performance.

An analysis of the data collected by the secretariat on a project-by-project basis reveals the following findings.

- The subsidy is relatively well distributed for local authority renovation, with the exception of the major catchment areas such as Paris, Lille, Toulouse, Lyon and Bordeaux, which received a much lower subsidy than the average. For State buildings, the subsidy is more unevenly distributed: catchment areas with fewer than 20,000 inhabitants and those with more than one million inhabitants (excluding Paris) are the main beneficiaries.
- In the renovation of local authority buildings, there is no correlation between the level of subsidy and energy

8. Excluding Ireland.

9. The potential GDP of an economy corresponds to its maximum sustainable level of production, which is consistent with long-term price stability.

10. For all these reasons, when the secretariat launched seven calls for research projects in spring 2022, four were unsuccessful.



efficiency. When it comes to renovating government buildings, the most efficient types of work receive the highest subsidies.

- School buildings are the main beneficiaries, for each level of local authority. They account for 63% of the total budget. In the case of government buildings, those of the Ministry of Higher Education and Research account for 50% of the total budget.
- The renovation of government buildings has particularly benefited buildings considered to be in a poor state of repair, with the proportion of poorly performing buildings renovated being twice as high as the average number of buildings renovated.
- According to the data provided by project leaders, the average reduction in energy consumption in renovated buildings was 42% for local authority projects and 37% for State projects. Since the savings announced by the project leaders only concern a very small proportion of public buildings, they are insufficient to achieve the target set by the Élan law of a 40% reduction in energy consumption by 2030 for the tertiary sector as a whole. Naturally, these averages mask contrasting distributions. For example, in twelve departments, at least 30% of the subsidies awarded by local authorities support projects with an energy efficiency rating of less than 20%: Eure, Marne, Bouches-du-Rhône, Puy-de-Dôme, Somme, Haute-Vienne, Oise, Indre, Meuse, Cher, Loiret and Corrèze.
- According to the figures announced by the project leaders, every euro invested will result in equivalent energy savings: around 216 Wh/ef/year for local authorities, and 212 Wh/ef/year for the State. In total, the renovation of public buildings would result in a theoretical reduction of 0.9 TWh per year, or 0.4% of the consumption of the tertiary sector.
- All these figures relate to expected energy savings, which will need to be confirmed ex post, on the basis of actual consumption data. According to the data provided by the leaders of government building renova-

tion projects<sup>11</sup>, the France Relance subsidy per tonne of CO<sub>2</sub> avoided would average around €700, despite the optimistic assumption of a zero rebound effect (see Table 2 in the conclusion).

### MaPrimeRénov'

There are many schemes to promote energy-efficient home renovation. The tax credit for the energy transition (CITE) was replaced in 2020 by MaPrimeRénov' (MPR), which provides grants, based on the type of project and the associated theoretical energy performance, targeted at low-income and very low-income households. In total, over the two years 2021 and 2022, €4.4 billion was spent on MaPrimeRénov'.

As part of the recovery plan, MaPrimeRénov' has undergone a number of changes since January 2021: it has been extended to include households on higher incomes<sup>12</sup>, landlords and work on the common areas of condominiums<sup>13</sup>. Lump sums have also been introduced for comprehensive renovations that result in greater energy savings.

The contribution made by MaPrimeRénov' to reducing greenhouse gas emissions and energy consumption cannot be accurately estimated, even ex ante, as neither the initial energy source nor the surface area of the dwelling is specified in the subsidy applications. Furthermore, and above all, without actual consumption data, before and after the work, it is not possible to assess the effectiveness of the renovation, or even the extent of any rebound effect<sup>14</sup>.

Despite these limitations, a number of observations can be made.

Although MaPrimeRénov' is open to all homeowners, the fact that grants are adjusted according to income means that low-income households are still the main beneficiaries of the scheme, accounting for 66% of approved applications and 81% of total grants in the first half of 2023.

This targeting makes it more likely that there will be fewer windfall effects.

11. Some of which have broader aims than solely decarbonisation (bringing buildings into line with standards, comfort, etc.). It should be noted that the distribution of costs per tonne of CO<sub>2</sub> avoided is highly uneven across the projects, and that the reliability of the data on CO<sub>2</sub> emissions avoided provided by the project leaders could not be verified.

12. Prior to the recovery plan, this extension was scheduled for 1 January 2021, but with the exclusion of households in the 9th and 10th deciles.

13. Via the MPR Copropriétés scheme.

14. Furthermore, in order to make a rigorous assessment, it would be necessary to distinguish between contributions under the recovery plan and those resulting from the ramp-up of the scheme introduced on 1 January 2020.

The quantitative targets set for MaPrimeRénov' have been exceeded: while the France Relance plan was aiming for 400,000 applications to be approved in 2021, 640,000 applications<sup>15</sup> were approved in 2021, after just 117,000 in 2020. A decline then began in the second half of 2022, accentuated in the first half of 2023 with only 284,000 applications. In addition to stagnating purchasing power, this could be a consequence of rising prices for maintenance and improvement work, supply difficulties and the tightening of the price scale.

MaPrimeRénov' is also struggling to find its audience in multi-family housing (which accounts for 6% of subsidised renovations<sup>16</sup>, even though it represents 43% of primary residences).

In the first half of 2023, MaPrimeRénov' continued to support mainly single-phase renovations, with 73% of applications approved, representing 53% of subsidy amounts. Extensive renovations, which are necessary to achieve the objective of reducing end-use energy consumption, are insufficient: excluding MPR Copropriétés and MPR Sérénité (see below), 4,484 MaPrimeRénov' comprehensive renovation applications<sup>17</sup> were approved in the first half of 2023 (i.e. 1.6% of approved applications).

Low-income households undergoing comprehensive renovation benefit from the "MaPrimeRénov' Sérénité" scheme, which replaced the "Habiter Mieux Sérénité" scheme that existed prior to the recovery plan. In the first half of 2023, 14,000 applications were approved, down from 38,000 in 2022. It is interesting to note that these comprehensive renovation projects, which result in significant energy savings, do not systematically result in the removal of heat leakage or the achievement of low-energy buildings. This is the case for renovations that improve energy efficiency from G to F, which are among the projects that generate the greatest energy savings (an estimated average saving of 24 MWh per year). Furthermore, although the large number of grants available for energy renovation has reduced the remaining costs, these are still too high for low-income and very low-income households to afford. It would therefore appear necessary to supplement direct public subsidies by reducing the remaining costs.

With regard to the reductions in emissions generated by the work subsidised by MaPrimeRénov', it should be noted that, based on the estimates of average savings per project from the French National Energy Renovation Observatory (ONRE), the projects approved under MaPrimeRénov' in 2022 would result in annual savings of 3.5 TWh (i.e. 0.8% of the energy consumed by main residences in France), and 1.85 MtCO<sub>2</sub> per year, according to the DPE metric (taking into account direct and indirect emissions<sup>18</sup>, under conventional behavioural assumptions). This emission saving may seem relatively close to the target set by the SGPE (2.5 MtCO<sub>2</sub>) in the preparatory work for the next National Low-Carbon Strategy (SNBC), but it should be remembered that as well as being based on rather fragile estimates of the average saving per action (which in particular take no account of the initial energy source or the surface area of the dwelling, which are not specified in the subsidy application files), this comparison suffers from two major biases. The first is that the sectoral objectives of the SNBC only cover direct emissions. The second is that they relate to actual reductions in emissions. Over and above the question of the quality of the work carried out, these reductions may be lower than those estimated on a conventional basis due to the restrained behaviour of low-income households before the work was carried out, and the difference may be even greater if they choose to increase the heating temperature after the work has been completed (rebound effect). The use of actual consumption data would therefore appear to be necessary in order to specify the contribution of the work assisted by MaPrimeRénov' to the objectives of the SNBC. This should be possible by 2024, thanks to the availability of individual data on both energy consumption after work and use of MaPrimeRénov'. Finally, it is not enough to estimate the savings generated by the work subsidised by MaPrimeRénov' to assess the effectiveness of this scheme, as some of this work might have been undertaken even without this aid (what economists call the "windfall effect", which, based on initial evidence, appears limited for low-income households).

Assuming that there are no windfall or rebound effects - obviously an unrealistic assumption - the subsidised work would have reduced CO<sub>2</sub> emissions to the tune of €70 of MaPrimeRénov' per tonne of CO<sub>2</sub> avoided<sup>19</sup> (see Table 2 in the conclusion).

15. Excluding MPR Sérénité and MPR Copropriétés.

16. Including MPR Copropriétés.

17. We include projects that have benefited from the comprehensive renovation grant, as well as those that enabled the building to be converted from a heat sink or to achieve low-energy building status.

18. Direct emissions are those resulting from the combustion of fossil fuels in homes. Indirect emissions are linked to the production of electricity consumed, the production of heat distributed by the network and the extraction and transport of fuels.

19. It should also be remembered that, unlike for public buildings, the cost of MaPrimeRénov' is much lower than the cost of the work subsidised (by a factor of around 4), since it subsidises only part of the work.





There does not appear to be a positive correlation between the amount of MPR and the efficiency of the measures taken, measured in terms of energy gains per euro invested: the installation of air-to-water heat pumps accounts for 34% of the expected energy gains, whereas it accounts for only 14% of the grants paid out. Little used, internal wall insulation generates an average energy gain per euro of subsidy that is 3.5 times higher than the average. Conversely, pellet boilers and individual solar water heaters represent an average energy gain per euro of subsidy of 6 and 8 times below average respectively. Nor does MPR appear to subsidise the most efficient actions in terms of CO<sub>2</sub> savings. The installation of an individual solar water heater is subsidised at a rate of 70%, but the average reduction in GHG emissions per euro of work is low (0.11 kgCO<sub>2</sub>/year/€). In contrast, the installation of an air-to-water heat pump, which achieves an average reduction in GHG emissions of 0.44 kgCO<sub>2</sub>/year/€, has a lower subsidy rate (25%). Despite the differences in the savings achieved by the individual measures, it is important to note that the results must be interpreted with caution, as a heating system cannot be efficient without adequate insulation - insulation being a prerequisite in a coherent and optimised renovation programme.

### Impact on employment of measures targeting renovation

The measures in the France Relance plan have been deployed in a variety of ways across the country, and this heterogeneity can be exploited to estimate their impact. The OFCE has chosen to focus its analysis on the measures to support construction, for three reasons: employment in construction can be monitored at the level of employment zones; the recovery plan measures targeted at construction are on a massive scale (around €1.0 billion, mainly MaPrimeRénov' and the thermal renovation of public buildings); lastly, activity in the construction sector is largely local.

Using an econometric strategy to ensure that the deployment of aid can be considered as independent of changes in construction employment, the OFCE's work suggests that the recovery plan measures would have had a significant causal impact on construction employment, amounting to around 100,000 jobs created in 2022. If jobs created before and after 2022 are included, the cost per job created would be around €60,000<sup>20</sup> (see Table 2 in the conclusion). However, given the low level of unemployment in 2022, it could have been feared that the efficiency of this

measure would have been affected. These results will have to be confirmed in 2024 using alternative econometric strategies.

### Support for clean vehicles

The SNBC adopted at the beginning of 2020 provides for a ban on the sale of new combustion-powered vehicles from 2040 (a ban that will be brought forward to 2035 in the future SNBC currently being prepared). To achieve these objectives, several instruments coexist in European and French regulations.

Firstly, all European countries are subject to emission standards for motor vehicles, known as "Euro" standards, which are evolving and becoming increasingly stringent. Secondly, French regulations (like those of the vast majority of European Union member states) provide for a bonus-malus system on purchase and a conversion premium (when a vehicle over fifteen years old is scrapped), both of which have been strengthened under the recovery plan. A total of €1.9 billion<sup>21</sup> was allocated over the period 2020-2022, via three measures:

1. an increase in the ecological incentive for the purchase or long-term lease of a clean vehicle (€985 million), which essentially consists of an increase of €1,000 from 1 June 2020 to 30 June 2021 for electric vehicles (from €6,000 to €7,000) and €2,000 for plug-in hybrid vehicles (which were initially ineligible), lowered to €1,000 on 30 June 2021;
2. the extension of the conversion incentive (€795 million) to the return of Crit'air 3 vehicles;
3. support for the installation of charging stations at all public service areas for electric vehicles (€100 million), with the aim of reaching 100,000 charging points for electric vehicles open to the public on motorways and the national road network by 2022.

The share of electric vehicles and plug-in hybrids in new vehicle sales has risen sharply since 2020. While these vehicles accounted for just 2.1% of new vehicle sales in 2018 and 2.8% in 2019, this figure rose to 10.8% in 2020 and reached 21.2% of sales in 2022. For electric vehicles alone, the market share has risen from 1.9% in 2019 to 13.1% in 2022.

20. This calculation does not include jobs generated in other employment zones as a result of increased demand for industrial inputs.

21. Subsequently adjusted to €1.6 billion via redeployment.

These increases have therefore occurred simultaneously with the reinforcement of the measures described above (incentive and European standard in particular) and the manufacturers' supply policy (launch of new models of electric cars and plug-in hybrids). However, it is premature to attribute the increase in the market share of electric and hybrid vehicles from 2020 onwards to the recovery plan measures, for several reasons.

First of all, all the European countries studied are showing similar or even greater momentum, meaning that budgetary support and tax incentives need to be compared. Secondly, this increase in market share in France occurred as early as January 2020, with electric cars almost quadrupling (to 7.5%) and plug-in hybrids doubling (to 2.5%) their share of new passenger cars, just a few months before the recovery plan. Lastly, the increase in the market share of clean vehicles has continued since the summer of 2021, despite the fact that the temporary €1,000 increase in the incentive was withdrawn.

Generally speaking, the relative cost of purchasing electric vehicles compared with combustion vehicles is obviously an important criterion when it comes to household choices, but it is not the only one. The availability of recharging facilities, forecast electricity and petrol prices, and the extent of households' present bias are also important criteria.

The committee decided to draw on the expertise of academic and research teams to assess the causal impact of the recovery plan's support measures for clean vehicles. The results are as follows.

**With regard to the bonus-malus system**, the research team focused on the empirical estimate of the impact of the penalty, given the small variation in the incentive over the period studied (2015-2021). By retaining the assessment made of the impact of the penalty<sup>22</sup> and making the significant assumption of a symmetrical effect between the penalty and the incentive, the Public Policy Institute (IPP) can simulate vehicle sales from 2015 to 2021 that would have occurred without the bonus-malus system. The market share of electric vehicles, which grew from 1.9% in 2019 to 9.8% in 2021, would have risen from 1% to 5.8% in the absence of the bonus-malus system. Put

another way, the bonus-malus system would have contributed 40% of the increase in the market share of electric vehicles from 2019 to 2021.

More broadly, if the impact of the bonus-malus is taken into account for all new sales, not just electric vehicles, it would contribute to reducing their emissions by 10.6 gCO<sub>2</sub>/km in 2021, compared with 3 gCO<sub>2</sub>/km in 2019. Without the bonus-malus system, average emissions from new cars would therefore have fallen by 16 gCO<sub>2</sub>/km, compared with the 24 gCO<sub>2</sub>/km drop observed from 2019 to 2021: the bonus-malus system would account for a third of the fall in average carbon emissions associated with new sales from 2019 to 2021. Finally, again according to these IPP estimates, the bonus-malus system would have a slightly favourable effect on the proportion of vehicles assembled in France, but this would not have changed between 2019 and 2021.

It should be remembered that the recovery plan changed only the amount of the incentive (by €1,000). It is therefore worth isolating the specific effect of the incentive from 2019 to 2021, even if this estimate is indirect, as seen above, obtained under an assumption of all other factors remaining constant. The contribution of the incentive to the reduction in emissions would be 1 gCO<sub>2</sub>/km in 2019 and 4 gCO<sub>2</sub>/km in 2021 (out of a total reduction associated with the bonus-malus system of 3.1 gCO<sub>2</sub>/km in 2019 and 10.6 gCO<sub>2</sub>/km in 2021).

In other words, the entire ecological incentive (€6,000 on average) contributes to 36% of the reduction in average vehicle emissions attributable to the bonus-malus system in 2021. However, the contribution of the incentive to the increase in the proportion of electric vehicles would be much greater than that of the penalty: +3.3 percentage points in 2021 compared with +0.6 percentage points.

Based on these IPP results, the incentive would generate savings of 0.09 million tonnes of CO<sub>2</sub>eq in 2022, at a cost to the budget of €1 billion. In relation to the CO<sub>2</sub> savings directly attributable to it, the incentive would therefore have cost the public purse €600 per tonne of CO<sub>2</sub>eq avoided<sup>23</sup> (see Table 2 in the conclusion).

22. Over the period 2015-2020, in France, the IPP estimates that an increase of €1,000 in the penalty would generate an average fall in sales of the vehicles concerned of 11% after several months.

23. According to the empirical analysis, the bonus would reduce emissions from new passenger car sales by 4gCO<sub>2</sub>/km in 2021. Assuming this figure remains stable in subsequent years, 14,000 km travelled per vehicle/year, and 1.65 million new vehicle registrations, savings of 0.09 MtCO<sub>2</sub>eq are achieved each year, and 1.6 MtCO<sub>2</sub>eq cumulatively over eighteen years. Compared with a budget cost of €1 billion, this gives €600 per tonne of CO<sub>2</sub>eq saved.



**With regard to the conversion premium (PAC)**, this measure is likely to accelerate the transition of the car pool in two ways, which are not mutually exclusive: by encouraging the definitive withdrawal of old, polluting thermal vehicles and by influencing the characteristics of new vehicles purchased (CO<sub>2</sub> emissions, engine). Empirically, it is difficult to demonstrate a sound relationship between PAC eligibility and the rate of withdrawal from the vehicle pool when the age of the vehicles is taken into account. In other words, the age of vehicles is an important determining factor in their probability of leaving the pool permanently, which is not the case for PAC eligibility, at a given age. On the other hand, at municipal level, the descriptive estimate reveals that a 10 percentage point increase in the rate of use of the PAC is associated with an average reduction in CO<sub>2</sub> emissions from new cars of 1.1g. This observation could be explained by the influence of the conversion premium on the characteristics of new vehicles purchased.

### Decarbonisation of industry

Between now and 2030, the industrial sector will need to accelerate the pace of its decarbonisation, while at the same time pursuing the objective of relocating production. To meet this dual challenge, France Relance is specifically deploying €1.2 billion in aid. In addition to existing tools, and in particular the European Emissions Trading Scheme (EU-ETS), three calls for projects, operated by Ademe, support investments in energy efficiency and process decarbonisation (IN-DUSEE and DECARBIND) as well as renewable heat (BCIAT).

An investment support scheme for energy efficiency improvement projects has also been set up for smaller-scale projects. In addition, this support for investment in decarbonisation is being extended by France 2030, which is allocating €5.6 billion to this area.

An analysis of the net present value (NPV) of the projects, based on available data, shows that the profitability of the investment is highly sensitive to energy prices. The recovery plan was designed before the high energy inflation observed from the second half of 2021. Given the level of energy prices in 2022, it would have been in the applicant companies' interest to carry out the planned investments even in the absence of aid. However, this inflation was not foreseeable, and seems to

have been largely transitory, so the aid would have been necessary for the profitability of most of the projects submitted by the applicant companies according to the NPV calculation.

At present, insufficient time has elapsed for a causal assessment of the aid provided under the recovery plan to be carried out. However, this evaluation has been carried out on the BCIAT calls for projects from 2009 to 2019, which have been extended under the France Relance plan. Using a stacked event study, the IPP research team measures how company performance – both economic and environmental – is modified by the granting of aid, distinguishing between beneficiary and non-beneficiary companies. The results show that an increase in investment and a reduction in emissions can be attributed to the granting of aid. Two to three years after receiving the aid, an increase in biomass consumption and a decrease in natural gas consumption were observed. IPP estimates suggest that, in 2010, the scheme will have saved 15,000 tonnes of CO<sub>2</sub>eq per beneficiary establishment. On the basis of these results, the amount of aid for these projects, per tonne of CO<sub>2</sub> avoided, would be around €19<sup>24</sup>, before taking into account the effects on the European carbon market<sup>25</sup> (see Table 2 in the conclusion).

### Support for low-carbon hydrogen

Hydrogen and its derivatives (ammonia, methanol, e-fuels) are one way of meeting climate objectives and decarbonising uses for which direct recourse to electricity is not possible. Following the presentation on 8 July 2020 of the hydrogen strategy for the European Union, in September 2020 France presented the national strategy for the development of low-carbon hydrogen, with the mobilisation of €7 billion by 2030<sup>26</sup>, including €2 billion financed by the recovery plan from 2021-2022.

The €2 billion from the recovery plan is based on four schemes:

- the “Hydrogen Territorial Ecosystems” call for projects, with a budget of €275 million for the period 2021-2023, including €75 million from the recovery plan. This funds projects designed to encourage the deployment of local ecosystems that bring together infrastructures

24. It should be noted that project leaders have announced that 4.5 MtCO<sub>2</sub>eq will be saved under the recovery plan's “Decarbonisation of industry” scheme; the amount of aid for these projects, per tonne of CO<sub>2</sub> avoided, would be around €15.

25. This cost should be considered as a low estimate, as it does not take into account the effect of integration with the European carbon market, which remains unchanged.

26. The amount has been increased to €9 billion in the national strategy currently under consultation.

for producing hydrogen by electrolysis and distributing hydrogen, as well as the various uses of this energy;

- the €350 million “Hydrogen technological building blocks and demonstrators” call for projects, jointly labelled France Relance and PIA. The aim is to support innovation work to develop or improve components and systems for the production, storage and transport of hydrogen and its uses, and to support projects for demonstrators or the first commercial projects in the sector;
- the “Hy2Tech” Important Project of Common European Interest (IPCEI) (€1.575 billion, including €1.275 billion from the recovery plan and €0.3 billion from the PIA). This project aims to support research and innovation, as well as initial industrial deployment, and is targeted at electrolysis and mobility in particular;
- the support mechanism for the production of low-carbon hydrogen (€650 million). This will be deployed outside the France Relance programme and will ultimately mobilise €4 billion of public support.

With the hydrogen IPCEI and the “Hydrogen Territorial Ecosystems” call for projects, the recovery plan is targeting electrolysis as a means of producing hydrogen.

As emphasised in the report by the commission on abatement costs chaired by Patrick Criqui<sup>27</sup>, this approach is likely to lead to new technological and industrial developments in electrolysis, and therefore to possible future industrial leadership. However, it can only be implemented in France on a massive scale and under conditions that effectively contribute to decarbonisation, if there is very strong development of decarbonised electricity generation, which will take us at least as far as 2040, and if there is also development of flexible systems to absorb variations in production. Although not a necessary condition in the Territorial Ecosystems call for projects, the use of decarbonised electricity is encouraged by an associated increase in the subsidy rate. At this stage, the recovery plan does not fund blue hydrogen, which consists of capturing and sequestering the carbon from methane reforming.

It has not been possible to carry out a complete and accurate assessment of the schemes, as most of the projects supported will not be completed until between the beginning of 2024 and 2025, and the data available is particularly limited.

Chapter 8 (of Volume II) dedicated to low-carbon hydrogen therefore provides a description of the projects supported under the four schemes, within the limits of the information provided or available at this stage.

### **Support for the “plant proteins” sector**

France produces only half of the plant protein-rich materials needed for animal feed (soybean meal, rapeseed meal, sunflower meal, etc.) and a third of those for human consumption. Yet the plant protein sector is of strategic importance. The recovery plan provides the financial leverage to drive forward the National Strategy for the Development of Plant Proteins. The strategy aims to increase the area sown with plant protein-rich species by 40% in 2023 (i.e. 400,000 hectares more than in 2020). These include seed legumes (soya, chickpeas, lentils, dried beans) and forage legumes (alfalfa, clover, sainfoin, etc.), which will be used for animal feed and human consumption. It also provides for the preservation of two million hectares of oil-seed crops (sunflower and rapeseed), for their essential contribution to protein independence from soybean imports. The measures are aimed at reducing dependence on imports and securing supplies, improving the economic situation of livestock farmers, meeting environmental and climate challenges, and combating imported deforestation.

To achieve this, the budget allocated by France Relance to develop plant proteins is divided into six schemes, the three main ones being:

- a €50 million budget dedicated to structuring the industry. The call for projects is divided into a collective component, supporting collective projects for structuring the sectors led by economic operators, and an individual component encouraging material investments downstream that meet the objectives of post-harvest logistics or processing for human or animal consumption;
- a €75 million budget for investment in farm equipment (growing, harvesting and drying), as well as for the development of forage legume overseeding (purchase of seeds);
- lastly, a €20 million budget allocated to research and innovation by funding the Cap Protéines programme.

In total, as of 29 December 2022, almost €150 million had been committed and €102 million spent.

27. France Stratégie (2022), *Les coûts d'abattement. Partie 4 - Hydrogène*, report by the commission chaired by Patrick Criqui, May.



The committee secretariat was unable to access individual data on the projects selected under these schemes. The analysis of project characteristics can therefore only be partial. It should also be noted that the deadlines for the calls for projects (some of which closed on 31 December 2022), as well as the time required to carry out the investments (not to mention the uncertainty surrounding exploratory research), make a causal assessment premature in any case. In addition, the lack of data relating to non-recipients means that it is not possible to identify a satisfactory control group for estimating the windfall effect.

On a macro level, however, it is possible to say that the objectives are not on track to be achieved in terms of areas sown with plant protein-rich species, which were down by 2% in 2021 and then by 4% in 2022, compared with 2020 (against an objective of +40% in 2023). On the other hand, oilseed acreage did increase over the period 2020-2022 (+9%).

### *“Competitiveness” component*

#### **Reduction in production taxes**

The €10 billion cut in so-called “production” taxes is characterised by its long-term nature (€20 billion included in the recovery plan, corresponding to the first two years of the cut, 2021 and 2022) and its effect on all businesses based on initial evidence. Combined with the gradual reduction in the corporation tax rate (from 33.3% in 2017 to 25% in 2022), the aim is to boost the competitiveness of French businesses over the long term and encourage the establishment of production sites, particularly those of industrial companies.

Production taxes cover a wide range of compulsory levies. Broadly speaking, a distinction can be made between taxes based on production (the corporate social solidarity contribution or “C3S” - in this case based on sales, which is similar) or added value (the company value added tax, “CVAE”) and taxes based on production factors, in particular property (property tax paid by property-holding companies and business rates, “CFE”<sup>28</sup>). All these taxes have the characteristic of being payable by companies regardless of their profitability, unlike corporation tax. The others have different characteristics: broadly speaking, taxes on production have the main disadvantage of distorting the structure of the value chain,

by taxing a company differently depending on its degree of vertical integration (this is also the case with the CVAE for the smallest companies, as the entry threshold is calculated on the basis of turnover). Taxes on property lead to companies being taxed according to the number of square metres they occupy (and own), which, all other things being equal, provides an incentive to reduce their property capital and the amount of space they use, and helps to make France less attractive as a location, particularly for production sites<sup>29</sup>.

The reduction in production taxes in the recovery plan took the following form:

- halving the CVAE tax rate for all companies, regardless of their business sector, by eliminating the regional portion; halving the rental value of industrial establishments, used as a reference for calculating the CFE and the property tax on built properties (TFPB);
- lowering the cap on the regional economic contribution (CET) by one percentage point, thus setting the combined sum of the CVAE and CFE at 2% of a company’s value added, so as not to limit the effects of the first two measures.

These measures resulted in estimated tax revenue losses over 2021-2022 of €14.8 billion for the CVAE, €3.5 billion for the TFPB and €4 billion for the CFE - i.e. a gross cost of around €22 billion. The cost of these measures is less than €20 billion once the knock-on effect on corporation tax revenue is taken into account.

The French Institute of Public Policy (IPP), selected following a call for research projects launched by France Stratégie, initially characterised the companies benefiting from the reduction in production taxes (in practice, the reduction in the CVAE and CFE, as property tax data was not available). Although benefiting all businesses, the reform is of particular benefit to industrial companies (32% of the reduction benefits the manufacturing sector, i.e. twice its weight in the market economy). Within the industrial sector itself, there is considerable disparity, with companies in the “Other manufactured products”, agri-food and electronics sectors benefiting much less from the reform than those in the chemicals, pharmaceuticals and energy sectors. Furthermore, this reform is of

<sup>28</sup>. This tax, levied on companies, can be compared to household property tax (taxe d’habitation).

<sup>29</sup>. This incentive to minimise the use of space could, on the other hand, be seen as desirable from an ecological point of view, if the tax base related to the space made artificial by the floor area, which is not the case.

little benefit to small businesses, which benefited from lower rates or exemptions prior to the reform, and appears to be complementary to general reductions in contributions, with exposure to these two reforms being negatively correlated. Finally, there is a marked correlation between the export presence of companies and the benefits of the reform.

The targeting observed in the data analysis therefore suggests that the reform helps to strengthen the competitiveness of French companies.

However, a microeconomic evaluation based on tax data will be necessary to measure the causal effect of the measure to reduce production taxes on the profitability and competitiveness of French companies and the attractiveness of the country, and to compare the economic benefits of this reform with its budgetary cost.

The work entrusted by France Stratégie to the IPP for 2024 should provide some initial answers.

Although the reduction in production taxes was not targeted at the companies most affected by the health crisis, it did provide welcome support for economic activity. Companies in the decile most affected by the health crisis in 2020 benefited from a reduction in production taxes equivalent to almost 0.5% of their value added, close to the average of 0.6% for all companies.

### **Support for industrial investment and modernisation, and for the industry of the future**

To kick-start industry as it emerges from the crisis and accelerate its transformation, the France Relance plan has allocated €2.5 billion to “support for investment in and modernisation of industry” (via calls for projects) and €0.9 billion to the “industry of the future” (a direct subsidy for the acquisition by SMEs and ISEs of certain equipment and technologies).

With regard to support for industrial investment and modernisation, the committee secretariat was unable to carry out a causal evaluation with a view to identifying a wind-fall effect, in particular by setting up a control group of non-recipients with scores fairly similar to those of successful applicants. The impact of the projects supported on the resilience or vulnerability of production chains is not

certain. The indicative list of products given in the specifications targets a wide range of projects with varying degrees of impact on resilience or innovation. For example, the projects targeted in the healthcare sector include both innovative manufacturing processes, with no specific impact on resilience, and less innovative medical devices subject to short-term pressure (PCR test reagents, syringe pumps, respirator filters). No quantitative objective has been associated with resilience.

With regard to the “Industry of the Future” scheme, two observations stand out:

- The scheme seems to have financed the modernisation of ageing production lines towards programmable production machines, i.e. “Industry 3.0”<sup>30</sup>, rather than the transition to “Industry 4.0”.

Indeed, 79% of the budget was used to finance programmable or numerically-controlled production machinery.

- The beneficiaries tend to be dynamic companies with high labour productivity (pre-crisis) that were already better equipped prior to using the scheme. They are more likely to be at the top end of the distribution in terms of sales growth between 2015 and 2019, and more productive, even if around 30% are below the median productivity of companies in the industrial sectors. Finally, beneficiary companies were relatively more technologically advanced than those not receiving aid.

### **Support for companies’ equity capital**

Following the crisis in 2020, several surveys (including those by Bpifrance and the Banque de France) showed that a small minority of companies would have difficulty meeting their State-backed loan (PGE) repayment schedules from 2022 onwards. More generally, it was feared that the equity capital of certain SMEs and ISEs had been permanently weakened by the crisis. In this context, France Relance created three additional targeted measures to support companies’ equity capital, totalling €3 billion. As a causal assessment of the schemes is not possible due to the data available, the report focuses on a description of the scheme and its beneficiaries.

**The label « Relance »**, launched on 19 October 2020, is a scheme enabling SMEs and ISEs to access financial resources

30. Third industrial revolution made possible by programming (programmable and numerically controlled machine).



in the event of proven difficulties. It enables savers to identify and subsequently redirect their savings towards investments most likely to provide equity and quasi-equity support for French SMEs and ISEs affected by the crisis. This “Relance” label is awarded to certain undertakings for collective investment, known as UCIs, whose activities benefit the recovery of French businesses. It was granted until the end of December 2022 for a period of four years. As at 31 October 2022, 204 Relance funds had been registered, including 26 new funds registered since the beginning of 2022 with €13 billion in assets under management. This figure could rise to €24.5 billion if the fundraising targets for funds in the process of being launched at that date are to be relied upon. Taking into account the fundraising and investment targets of funds in the process of being launched, as of June 2022, more than 73% of labelled funds were invested in French companies through equity and quasi-equity, and 59% in French micro-enterprises and SMEs and ISEs.

Overall, Relance funds have contributed to nearly 1,000 capital increases or IPOs since 31 December 2020.

**A system of equity loans and subordinated bonds**, available to French SMEs and ISEs between May 2021 and June 2022, was set up to simplify access to finance for economically viable companies, enabling them to resume their development.

By July 2023, outstanding “Relance” equity loans had reached €3 billion for 1,075 beneficiary companies. Most of these loans are allocated to the specialised, scientific and technical activities sector (21.1%), followed by manufacturing (17.1%) and wholesale and retail trade (12.8%). The majority of equity loans benefit ISEs (69% of the fund’s assets), followed by SMEs (29%) and micro-enterprises (2%). The weighted average rate of the loan portfolio is 4.6%.

As for the Relance bonds, at the beginning of June 2022, 38 companies - 16 ISEs (€283 million) and 22 SMEs (€128 million) - had made use of them, for financing totalling €410 million. The majority of investments were made in the manufacturing (22%), construction (16%) and specialised scientific and technical (15%) sectors.

Finally, the recovery plan supported by Bpifrance created the **France Relance State-Regions Fund (FFRER)**. Endowed with €250 million, the FFRER is designed to increase the support available to SMEs at local level.

The FFRER has invested €67 million across ten different funds. In total, FFRER beneficiary funds have invested €197 million in 42 companies. No individual data was available at the time of writing

### “Social Cohesion” component

#### 1 young person, 1 solution

The “1 young person, 1 solution” scheme was rolled out from summer 2020 to mitigate the effects of the health crisis on young people, at a time when many economists were expressing fears of a sharp rise in the youth unemployment rate. In particular, it aims to limit the risk of an increase in the number of young people experiencing exclusion and insecurity as a result of the Covid-19 crisis.

It complements and, above all, extends pre-existing measures to support employment, training and support for young people.

The plan has three main components.

Help young people enter the labour market. The main measures under this component include exceptional support for apprenticeships and professional training contracts, support for the recruitment of young people (AEJ) and the relaunch of subsidised contracts for young people, which had largely been phased out before the health crisis.

Support young people excluded from the labour market. This mainly involves increasing the number of places on schemes run by local services and the Pôle Emploi (French employment service), in particular the Contractual Support Scheme for Employment and Autonomy (PACEA), the Youth Guarantee (for local services) and Intensive Support for Young People (AIJ, for Pôle Emploi).

Guide and train young people. This component comprises a wide range of measures, including an increase in the number of training places, notably as part of the Skills Investment Plan (PIC), but also additional resources for a myriad of smaller-scale schemes (internat d’excellence, Cordées de la réussite, personalised pathways for 16-18 year-olds not fulfilling their training requirements, etc.).

In 2022, the youth employment rate was 5.4 points higher than in 2019. Most of this increase, 3.2 points, is explained by work-study schemes, which are heavily subsidised by

the “1 young person, 1 solution” programme: new recruits on apprenticeship or professionalisation contracts are entitled to €8,000 (or €5,000 for minors) up to Master’s level<sup>31</sup> in the first year of the contract, until 31 December 2022, for all companies (but subject to conditions for companies with more than 250 employees). The proportion of young people in neither employment nor training has continued to fall slightly (12% in 2022, after 13% in 2019). There are still a significant number of young people excluded from the labour market and from any form of training or education, despite major efforts to increase the number of young people receiving support from local services or the Pôle Emploi, or benefiting from training.

This situation, which could not have been foreseen two years ago, could call for policies to be targeted more at the least qualified, where the measures under the “1 young person, 1 solution” plan that have been extended – including the exceptional aid for work-study contracts (from February to June and then December 2022) – have been done so without changing eligibility criteria.

According to an empirical analysis, the provisions of the “1 young person, 1 solution” plan, in particular the exceptional aid for apprenticeships, have contributed significantly to the increase in apprenticeship recruitment. The conclusions of the research team at the French Institute for Public Policy (IPP) suggest that around 80,000 jobs would have been created by this measure in 2020 (around 55,000 at or above baccalaureate level, and 25,000 at or below baccalaureate level), i.e. 50% of the additional apprenticeship entrants. Assuming that this ratio is maintained in 2021 and 2022, the budget cost per job created would be around €20,000 (see Table 2 in the conclusion). Although small businesses were taking on fewer qualified apprentices before 2020, the France Relance plan has helped them to take on more apprentices with a level of education equal to or higher than the baccalaureate, and therefore to catch up.

In addition, the increase in work-study programmes is said to have a positive impact on integration into the labour market. It emerges that vocational training centre (CFA) leavers have a much higher employment rate than those leaving vocational secondary schools, for a given diploma. However, further work is needed to ensure that this result holds true once all the differences (including unobservable differences) between the two groups have been accounted for.

### **APLD/FNE-Formation**

Introduced in the summer of 2020 to take over from the short-time working scheme deployed on an emergency basis, at a time when the end of the health crisis was beginning to take shape and its economic consequences were concentrated in a few remaining sectors, the extended short-time working scheme (APLD) is more restrictive than the short-time working scheme: it is subject to a company or branch agreement, and is normally capped at 40% of the employee’s working time. On the other hand, the remaining cost to the company is only 10%, whereas the cost of short-time working was gradually increased to reach 24% in the summer of 2021. The FNE-Formation (National Training Fund) was reactivated to cover training costs, with the aim of using the time off to train employees in the company’s future challenges. In 2021, the situations in which the FNE-Training could be used were extended to companies in difficulty, companies undergoing change or taking over a business, and the training funded had to be structured around training paths.

Three years on, the following observations can be made.

- By the end of 2022, €1.7 billion of the €6.6 billion earmarked in the recovery plan had been allocated to the APLD. This under-utilisation can be explained in part by the fact that the ordinary short-time working scheme remained generous for longer than anticipated due to the multiplication of Covid-19 waves until 2021. The proportion of employees in the APLD on the short-time working scheme thus remained close to 10% until the spring of 2021, before rising sharply when the ordinary short-time working scheme was curtailed, stabilising at around 50-60% during the autumn and winter of 2021-2022, and levelling off at around 85% until December 2022 (the latest date available).
- From July 2020 to December 2022, 760,000 employees were placed at least once in the APLD for a total of 138 million hours. From the beginning of 2021 to the start of spring 2022, the monthly number of employees in the APLD remained almost constantly above 150,000 (with a peak above 250,000 in spring 2021, before falling to 100,000 in the fourth quarter of 2022).

31. As a result, employers have a monthly outlay of €95 for an apprentice aged 18 to 20 (€272 for an apprentice aged 21 to 25).





- The industrial sector is over-represented in the use of the APLD, particularly transport equipment (a sector accounting for 24% of the employees concerned by the APLD since 2020), which accounts for the over-representation of establishments with more than 500 employees, men, managers and experienced employees.
- From 2020 to 2022, collective agreements at company level accounted for 72% of the people placed in the APLD, more than 80% of the amounts compensated, and around half of the companies having made a claim for compensation. An initial analysis of all the industry-level agreements signed on the APLD shows varying levels of commitment in terms of jobs, solidarity efforts by managers and increases in compensation.
- Few studies have examined the use of the APLD. According to a study by Unédic, the probability of using the APLD in 2021 increased “all other things being equal” with the size of the company, its age, the proportion of employees on permanent contracts and the proportion of women in the workforce. According to the same Unédic study, there is a negative correlation between recourse to the APLD in 2021 and the number of redundancies for economic reasons, the APLD appearing to play a cushioning role over time on employment.
- Given the IT systems available, it has not been possible at this stage to carry out a detailed analysis cross-referencing the use of the APLD and FNE-Formation. However, it appears that from 2020 (until December 2022), almost €1.1 billion was committed under the FNE-Formation by the skills operators (OPCO), for almost 30 million hours of training. Recourse to the FNE for all short-time working involved 630,000 trainees (and €470 million), exceeding the target of 400,000 trainees set under the PNRR-FNRR. Expenditure relating specifically to companies using the APLD since 2020 amounts to almost €100 million. Around 152,000 training courses financed by the FNE benefited employees of companies making use of the APLD, compared with 760,000 employees who had been placed in the APLD at least once.
- Like the APLD, the FNE-Formation was largely geared towards the industrial sector in 2021, but this was less pronounced in 2022 (26% of trainees financed by the recovery plan, and 29% of trainees in the APLD).
- The training effort of companies is likely to have been supported in part during the crisis by the resources and flexibility of the FNE, initially for training that was primarily focused on occupational activities, in conjunction with short-time working measures, and then in a more structured way, for certain companies, with the APLD in particular, around their training plan and the challenges of structural adaptation to the post-crisis context in 2021. At this stage, it is not possible to draw any general conclusions about the specific impact of training provided under the FNE by companies using the APLD over the entire 2020-2022 period (effectiveness, windfall effect, quality and content of training, etc.).

## CONCLUSION

At the end of this work, the main empirical results of which are summarised in Table 2 below, a number of positive points can be noted:

- the recovery plan's budgets and forecast rate of spending have been adhered to;
- territorial distribution is balanced;
- the targeting of the measures, even indirectly, is encouraging in several cases, for example with the gains for industry via the reduction in production taxes, or the targeting of low-income households via MaPrimeRénov';
- empirical analyses suggest that some schemes are efficient, with, for example, a cost of around €20,000 per job created for exceptional aid for apprenticeships and €60,000 per job created for renovation subsidy measures.

It has thus been shown, to a certain extent, that it is possible to put in place a recovery plan aimed at stimulating activity and employment in the short term, without abandoning more structural objectives, with measures to support the productive fabric and its decarbonisation.

However, attention needs to be paid to a number of areas:

- the targeting of which could be improved, for example in the case of schemes to modernise industry, which have not been used for investment in the latest technologies, in the case of exceptional aid for apprenticeships, which mainly concerns higher education or baccalaureate graduates, or in the case of the very low proportion of comprehensive renovations;
- the efficiency of which sometimes appears low according to empirical analyses, for example the increase in the incentive for clean vehicles (€600 per tonne of CO<sub>2</sub>eq avoided).

More generally, the French economy has been characterised by a worrying trend in productivity since the end of the crisis caused by the Covid-19 pandemic, particularly in the industrial sector. It is not yet possible to quantify this trend, but the measures to support investment and competitiveness under the France Relance plan do not appear to be capable, on their own, of countering it.

Lastly, the committee notes that it has not always been able to obtain access to data that would enable it to analyse windfall effects, for example by comparing the trajectories of winning and non-winning companies for certain aid schemes. It is essential that this data be collected and shared more widely in the future, and that the assessment of schemes continues, so that the most effective schemes can be strengthened and the least effective abandoned.

Although the committee is winding up its work, some research projects funded by France Stratégie will continue, and will be published in 2024 (on the reduction in production taxes, and on the macroeconomic impact of the recovery plan, including an assessment of the effect on GHG emissions of the recovery plan as a whole). In particular, it will be up to the competent bodies to assess the conditions for granting the various types of aid. Beyond this, research teams need to continue assessing the most impactful policies, particularly climate policies, which are set to grow in importance over the coming years. The measures should then be adjusted accordingly, on the basis of these assessments.

**Table 2 – Background data and main empirical results**

	<b>Impact</b>	<b>Budget cost*</b>	<b>Budget cost in relation to impact</b>	<b>Assessment limit</b>
<b>Exceptional aid for apprenticeships</b>	<i>200 000 jobs created in 2021-2022</i>	€4.2 billion (average 2021-2022)	€21,000 per job created	Employment effect measured in 2020, extrapolated to 2021-2022
<b>Measures targeting renovation</b>	<i>100,000 jobs in 2022</i>	€10 billion (total recovery plan)	€60,000 per job created	Employment effect measured in 2022, extrapolated for other years
<b>MaPrimeRénov' (MPR)</b>	Theoretical annual savings of 3.7 MtCO <sub>2</sub> eq (cumulative impact of 2021-2022 measures)	€4.4 billion (cumulative 2021-2022)	€70 per tonne of CO <sub>2</sub> saved	The CO <sub>2</sub> savings are theoretical and are not based on a econometric estimate. They are overestimated, especially for MPR, as they do not include the rebound effect, which is substantial for MPR, or the windfall effect (assumed to be zero for REBP)
<b>Energy renovation of public buildings (REBP)</b>	Theoretical annual savings of 0.3 MtCO <sub>2</sub> eq** (cumulative impact of entire recovery plan)	€4.0 billion (total recovery plan)	€700 per tonne of CO <sub>2</sub> saved	
<b>Clean vehicles (incentive)</b>	<i>Économie estimée de 0,09 MtCO<sub>2</sub>eq (2021)</i>	1,0 Md€ (2021)	<i>600 euros la tonne de CO<sub>2</sub> économisée</i>	L'évaluation causale porte sur le malus, et on retient une hypothèse de symétrie pour le bonus
<b>Decarbonisation of industry (BCIAT)</b>	<i>Estimated savings of 0.015 MtCO<sub>2</sub>eq (annual, per establishment)</i>	€440 million (cumulative cost from 2009 to 2019)	€19 per tonne of CO <sub>2</sub> saved	The assessment covers BCIAT projects from 2009 to 2019. The calculation applies only to subsidised establishments, but not at the macroeconomic level, as carbon quotas are fixed

\*\* This budget calculation should not be confused with the socio-economic abatement cost and cannot be compared with the value of climate action. Furthermore, the budgetary impact calculated here is very limited, confined to the aid analysed, and does not include, for example, the impact on public revenues brought about by decarbonisation and energy savings. CO<sub>2</sub>eq savings are aggregated over eighteen years.

\*\* If the figures collected for State buildings are extrapolated to local authorities.

Note: figures are in italics when the impact is causal. On average over 2021-2022, the €4.2 billion in exceptional aid would have led to the creation of 200,000 additional jobs.

Source: France Stratégie, based on results obtained by the IPP on exceptional aid for apprenticeships, the bonus-malus system in the automotive sector and support for decarbonisation of industry, and by the OFCE on renovation support measures

GET THE LATEST NEWS FROM FRANCE STRATÉGIE AT:



[www.strategie.gouv.fr](http://www.strategie.gouv.fr)



[@strategie\\_Gouv](https://twitter.com/strategie_Gouv)



[france-strategie](https://www.linkedin.com/company/france-strategie)



[francestrategie](https://www.facebook.com/francestrategie)



[@FranceStrategie\\_](https://www.instagram.com/FranceStrategie_)



[StrategieGouv](https://www.youtube.com/StrategieGouv)



Publication Director/Editor: Cédric Audenis, Interim Chief Commissioner;  
Editorial Secretary's Office: Gladys Caré;  
Legal filing: January 2024 - N° ISSN 2556-6059;

Press Contact: Matthias Le Fur,  
Head of the Publishing-Communication-Events Department,  
01 42 75 61 37, [matthias.lefur@strategie.gouv.fr](mailto:matthias.lefur@strategie.gouv.fr)

An independent institution reporting to the Prime Minister, France Stratégie contributes to public action through its analyses and proposals. It stimulates public debate and informs collective choices on social, economic and environmental issues. It also produces public policy assessments at the government's request. The results of its work are intended for public authorities, civil society and citizens.