En route pour un transport durable
Fuelling France's Future
Executive Summary

How can low-emission vehicles contribute to the French energy transition and the national low-carbon strategy? What are the benefits for the economy, and under what conditions? How can France and its territories improve air quality?

In order to discuss these questions, this project brought together industry and civil society. Representing the automotive industry, Renault, Valeo, Michelin, Saft and Eurobat were able to provide their valuable expertise on technological aspects. The French Aluminium Association, European Aluminium and the chemical group Lanxess provided input on materials. On the energy and infrastructure side, data evaluation was provided by ERDF, Air Liquide and ABB. Civil society was represented by the FGMM CFDT (General Federation of Mines and Metallurgy), the Nicolas Hulot Foundation and the European Climate Foundation.

The work has helped quantify the likely impact on the French economy of the transition towards more energy-efficient light-duty vehicles, principally fuelled by electricity from renewable energies and by hydrogen. Following many months of analysis and exchange, the project showed that the transition towards low-carbon mobility helps generate sizeable economic co-benefits, creating jobs in technological innovation, while reducing French dependence on oil. In order for these beneficial effects to become reality, political instruments and certain conditions are necessary. They require close collaboration between the government, local authorities, industry and civil society.

Although it is difficult to precisely quantify the resulting economic impact, we have limited the margin of uncertainty by using a conservative set of data, which has been tested according to multiple economic scenarios.

Data on the cost and potential of each low-carbon automotive technology are based on a dataset originally produced by the European Automobile Manufacturers' Association (ACEA) and the European Association of Automotive Suppliers (CLEPA) and were examined by the French experts working on the project. Oil price projections were taken from the International Energy Agency (IEA), and projections related to electricity and hydrogen were based on the "Loi de française de transition énergétique" and H2 mobility France.

The transport sector is 71% dependent on oil, of which nearly all is imported. **For every 100 euros spent on filling a tank, 33 euros leaves France and goes to producing states and foreign petroleum companies.** It is thus possible to reconcile the fight against climate change with the creation of new economic opportunities. This technology transition should be seen as an opportunity to create wealth by reducing dependence on imported petroleum products.

The transition towards efficient vehicles with an increasing level of electrification would reduce capital outflow from the French economy. It would allow French households to reduce expenses related to the use of their vehicles, thus more than offsetting the slightly higher purchase price of vehicles. By increasing the share of domestic energy, particularly that produced by renewable energy, France's energy trade balance will be improved, limiting exposure to the price volatility of crude oil.

Improvements to conventional vehicles are already saving money for motorists. Breakthroughs in engine optimisation, the use of light materials, energy-efficient tyres and the gradual introduction of electric propulsion will contribute to further cost reductions.

In France, motorists spend an average of 1191 euros per year on fuel. **By 2030, using an efficient conventional car or a more energy-efficient hybrid would save 583 euros per year, compared to today's average vehicle.** Greater savings might be made with new electric and hydrogen vehicles: Up to around 1008 euros per year per motorist However, the amount of savings made depends greatly on the decisions of the French government regarding fuel tax and energy sources for transport. If enacted at a global level, this transition to low-carbon vehicles would help reduce the price of crude oil, further boosting the economies of oil-importing countries, such as France.

While the purchase price of these technically advanced vehicles may turn out to be higher than for conventional vehicles, the **extra cost may be entirely recovered in a few years by savings made at the fuel station**. This means that overall, the percentage of French household budgets spent on buying and operating cars is lower in a low-carbon scenario.

On a national scale, by 2030, the total cost of renewing and powering vehicles in France and the associated energy distribution should be around 12.4 billion euros less thanks to the integration of low-carbon technologies compared to vehicles using current

technology. Even if petroleum prices were to remain at today's historically low levels, the cost would be 6.4 billion euros less.

Altogether, these factors are likely to boost the French economy. **The report shows that switching to low-carbon vehicles would help to create 66,000 jobs in France by 2030** through a transitional period dominated by hybrid and electric vehicles.

Furthermore, CO2 emissions from cars and commercial vehicles could be reduced by 45% by 2030 and up to 90% by 2050. In this case, air pollution caused by Nitrogen oxides and fine particulate matter would also be greatly reduced, by 97% in 2050. **The health benefits of better air quality are estimated at 5.1 billion euros for the French economy in 2030.**

The project analysis showed that, if there is a move towards smart charging systems and the use of photovoltaic solar energy combined with storage solutions, the number of electric vehicles modelled in the project would not require additional generating capacity, notably from nuclear and fossil fuels, and would facilitate the evolution towards a lower-carbon electric mix.

However, this low-carbon transition will not happen without the political will: it requires collaboration to create the right conditions for it to come about. Investment in infrastructure will be necessary; employee skills are crucial to make France more competitive. It will be key to provide training or vocational retraining for those who have lost their jobs in the refining sector or in the production of outdated technologies.