Letter to Europe.

Advocacy for a sustainable, inclusive and competitive automotive industry

LUCA de MEO

My letter to Europeans

From 6 to 9 June, EU citizens go to the polls to elect their parliament for the next five years. Straight after these elections, a new commission will take office in Brussels. This is an extremely important event in the democratic life of the continent. Through its decisions and regulations, Europe influences not only the economy but also our daily lives. Its decisions have a far-reaching impact on many sectors of activity, starting with the automotive industry, of which I am a representative. And it is the elected members of the European parliament who will debate and approve the most important decisions for the years to come.

I would like to make it clear that I am very much pro-European. I have held positions of responsibility in several European countries, such as Germany, Belgium, Spain, France and Italy. I am a firm believer in the future of the European automotive industry, which is strongly committed to the energy transition.

But this massive commitment (€250 billion) requires a clear and stable framework.

Before the electoral campaign gets under way with its attendant arguments, I wanted to make my voice heard, not to get involved in policy but to contribute to a decision on the right policy. The sort of policy that will enable European business to meet the technological and geopolitical challenges of today. I believe that we can achieve our aims through joint efforts and partnerships between the public and private sectors. With Airbus, we have already seen what Europe can do. By stepping up cooperative initiatives, we will set our industry on the road to revival.

Luca de Meo
CEO, Renault Group
March 2024

01

DIAGNOSIS

A pillar of the European economy, the automotive industry is facing an onslaught of electric vehicles from China

The automotive industry employs 13 million people in Europe: 7% of employees and 8% of production workers. These figures are in line with the economic weight of this sector, which accounts for 8% of European GDP. It is an industry that exports more than it imports, with a trade surplus of €102 billion between Europe and the rest of the world [1]. This figure is roughly equivalent to the trade deficit of France in 2023 (€105 billion). The automotive industry is a major innovator and investor, with a research and development budget of €59 billion. This figure is equal to 17% of total R&D spend, including the public sector, and 26% of industry spend. At the same time, one-third of investments in Europe are made by the automotive industry. Without the automotive industry, Europe would be outpaced in the innovation race, since the share of GDP dedicated to R&D would drop below 2%, widening the gap with the United States (3.4% in 2021) to a yawning chasm. For day to day use, the car is far and away the preferred means of transport (80% of passengers and goods carried per kilometre). Studies show that this trend is likely to remain stable through to 2040. At the same time, the automotive industry is a huge source of revenue for government, generating €392 billion and over 20% of tax revenue within the European Union.

Nevertheless we are seeing growing signs of weakness that could be a cause for real concern if nothing is done.

[1] ACEA pocket guide 2023-2024_(all figures except for France)

First, the centre of gravity of the global automotive market has shifted to Asia, with 51.6% of new passenger cars now sold in this part of the world. This is double the figure for North and South America combined (23.7%) and for Europe (19.5%) [2].
Electrified models (electric vehicles and plug-in hybrids) are leading the way, accounting for 14% of global sales [3]. China is making rapid inroads into the all-electric vehicle segment. Buoyed by its huge domestic market (8.5 million electric vehicles sold in 2023, according to the Chinese Passenger Car Association, or 60% of the global total), it already had market share of close to 4% in Europe in 2022. In 2023, around 35% of electric vehicles exported worldwide were Chinese. As a logical consequence of this trend, European imports from China have increased fivefold since 2017. This has sharply widened the trade deficit between Europe and China, which now stands at almost €400 billion after doubling between 2020 and 2022!
The brands with the highest exports in the first half of 2023 were MG and BYD. They were followed by Tesla, which ships the Model Y from its Shanghai plant to Europe.

The shift to electric vehicles is a huge challenge that is completely transforming the industry

The value chain of vehicle manufacturing remained unchanged for around 140 years. It took between four and five years to develop a model and between seven and eight years to build and sell it.
The revolutions currently under way have seen the emergence of at least four new value chains: electric vehicles, software, mobility (including finance and energy services) and the circular economy. The result is a doubling of the potential scope for business: an industry opportunity estimated at US$ 200 billion within the geographical scope of Renault.
Manufacturers need to acquire expertise in these new disciplines, each of which has its own rules and business potential. The new automotive world demands a horizontal, ecosystemic approach.

[2] ACEA, May 2023 (https://www.acea.auto/figure/motor-vehicle-registrations-around-world-share-per-region/)

[3] IEA, Global EV outlook 2023 (https://www.iea.org/reports/global-ev-outlook-2023/executive-summary)

European players in this sector are under huge pressure. In the battle for sustainable development, they are taking on six challenges simultaneously:

6 simultaneous challenges

- **Decarbonisation.** With the need to achieve net zero in Europe by 2035. No other industry is facing an ambition on this scale. The investments required are considerable, with €252 billion committed between 2022 and 2024 by European carmakers [4].

- **Digital revolution.** Although this is a hardware-based industry, software will continue to account for a growing percentage of value (20% of the cost of a car in 2022). This figure is set to double to 40% by 2030. The market for mobility software is expected to triple to over US$100 billion by 2030.

- **Regulations.** Between eight and ten new regulations are introduced every year. Cars are required to be more sophisticated, more fuel-efficient, and less costly all at the same time. They need to comply with new standards and meet new environmental and social requirements involving an array of tests and inspections. This has already had an effect that is totally counterproductive: passenger cars are now 60% heavier on average. Since the 1990s, this policy has objectively favoured premium models to the detriment of more mainstream models. To adapt to these constraints, manufacturers have not only relocated their production (40% of jobs lost in France and a similar trend in Italy), but also increased the price of their vehicles (+50%) [5]. As a result, the age of the vehicle parc is rising to dangerous levels, from seven to twelve years [6]. The overall carbon balance is adverse, with emissions from vans rising the fastest (+45% since 1990) [7].

- **Technological volatility.** New technologies burn through cash. It costs between €1 and 3 billion to build a 'gigafactory' that could well become obsolete in just a few years or – worse – before it even opens its doors. Battery technology is still far from stable, with innovations still coming thick and fast.

- **Price volatility.** We are seeing wild swings in the prices of critical raw materials (CRMs). To take just one example: the price of lithium increased twelvefold over two years, before dropping by half! The reason is simple: unlike oil, where prices are governed by OPEC, there is no organisation managing these markets. Little wonder then that these materials now account for a significant share of the overall cost of a car. The price of the lithium alone in an average battery is equivalent to that of a combustion engine.

[4] Lazard survey based on the annual reports of vehicle manufacturers (April 2022)

[5] https://www.etui.org/publications/heavier-faster-and-less-affordable-cars

[6] https://www.eea.europa.eu/publications/ENVISSUENo12/page031.html

[7] Report "Transport et environnement" "Emissions de CO2 des automobiles : les faits" / "Transport and environment" "The facts on carbon emissions from cars", 2018.

- **Worforce reskilling.** 25 million jobs in industry are impacted by the digital and environmental transitions. For this reason, many people will need to be trained quickly. This need concerns not only the automotive industry, but also the sectors around it. And that's without other parts of the value chain (mining, circular economy). In France, the internal combustion engine industry represents 50,000 jobs (2019 estimate). All these people will require retraining to learn new skills. At the same time, 8,000 new jobs will be created in the electrical sector and 4,000 in software. In the ICE sector, the transition will impact 500,000 jobs across Europe and create 120,000 more. At the same time, 800,000 employees will need to be trained between now and 2025 to meet the labour requirements of the battery manufacturing sector.

An imbalance in competition: industry incentives in the US, strategic planning in China, and new regulations in Europe

In an open economy, competitive performance is measured by the comparative advantages of the different players. We can start with one clear fact: building cars in Europe costs more. A C-segment car made in China has a cost advantage of between €6,000 and €7,000 (around 25% of the total price) compared with an equivalent European model.
In terms of industry financing, China is thought to be handing out increasingly large subsidies to its manufacturers at an ever increasing pace. A report by Polytechnique university sets the total amount for the period up to 2022 at between €110 and €160 billion. Since passing the Inflation Reduction Act (IRA) in August 2022, the United States has injected €387 billion into its economy, primarily in the form of tax credits. Of this total, US$ 40 billion in tax credits has been granted to develop green manufacturing technologies [8]. Europe has no system of this type.
Concerning the statement of operations, energy costs are twice as low in China and three times lower in the United States, compared with Europe. At the same time, wage costs are 40% higher in than in China.

[8] BlueGreen Alliance report, "Pivotal Clean Manufacturing Investments in the Inflation Reduction Act", 2022

In the global battle around electric vehicles, we can see three radically different strategies.

1) China rules [9]

- In 2012, the government in Beijing decided to focus on electric vehicles. Its stated aim is for the Chinese car industry to dominate the global market.
- To achieve this, it is thought to have introduced a series of regulations encouraging manufacturers to improve the performance of their models and to increase sales. By giving all companies access to this market, it is also fostering Darwinian competition among them. The survivors will necessarily be very powerful.
- China is also reported to have invested heavily in all the sectors involved in the life cycle of the electric car, from the extraction of rare metals to the recycling of batteries.
- It has thought to have encouraged the definition of common standards, in order to ensure sovereignty (improvement incentives for local players for procurement) and competitive performance (lower entry ticket since manufacturers use resources and technologies that have already been developed)
- It is thought to have deployed a range of arguments to encourage manufacturers from other countries to enter into partnership agreements (joint ventures, technology transfers, for example) with their local counterparts.
- Finally, the government, banks and financial institutions are thought to generously shoulder the risks incurred by start-ups (93% lose money).

This strategy has brought results, since China now has a major competitive advantage across the entire electric vehicle value chain. It controls 75% of global battery production capacity, 80-90% of materials refining and half of the mines producing rare metals.

2) The United States stimulates

The purpose of the IRA programme with its €387 billion in funding is to encourage investment. It places particular emphasis on electric vehicles: only models assembled in the United States with local content are eligible for purchase subsidies, and this is boosting sales.

- The IRA is helping the US to beef up its industrial base: the capacity of the battery gigafactories to be completed by 2030 has risen from 700 Gigawatt-hours in July 2002 to 1.2 Terawatt hours in July 2023.
- What's more, these plants cost considerably less than before. Before the IRA, one gigawatt/hour required an investment of US$ 90 million. That figure has now fallen to US$ 60 million [10]. This places the US on a par with China, while the cost in Europe remains far higher: US$ 80 million per gigawatt/hour [11].

[9] Report based on a comparison of the Chinese, European and American regulatory frameworks for the transition to a decarbonized road mobility. Ecole Polytechnique, December 2023.

[10] https://www.energypolicy.columbia.edu/publications/the-ira-and-the-us-battery-supply-chain-one-year-on/

[11] Expert analyses; McKinsey Centre for Future Mobility

3) Europe regulates

Europe is in the process of drafting a whole new array of standards and regulations. On average, between eight and ten new regulations will be introduced every year by the various European Commission directorates between now and 2030 [12], despite the fact that no organisation is in place to approve the publication schedule. This places businesses at a huge disadvantage. They often struggle to meet the tight deadlines for applying the new regulations, which also require substantial engineering resources (up to 25% of an R&D department) to study their implementation.

The purpose of this regulatory burden is to make Europe a champion of environmental protection, in the hope that this will contribute to social progress at a global level. The problem is that the other trading blocks are slow to follow suit, and this is having a negative impact on the competitive performance of European business.

As a result, Europe is facing a complicated equation. It should be protecting its markets, but it is dependent on China for its supplies of lithium, nickel and cobalt, and on Taiwan for its semiconductors. It is also in Europe's advantage to learn from Chinese manufacturers, who are a generation ahead in terms of the performance and costs of electric vehicles (range, charging time, charging network, etc.), as well as the software and speed of development of new models (between 1.5 and 2 years versus 3 to 5 years). Relations with China will need to be managed. Completely closing the door to them would be the worst possible response.

[12] https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation_en

02

RECOMMENDATIONS FOR A COMPETITIVE, LOW-CARBON EUROPEAN INDUSTRY

The European automotive industry is mobilized. But it urgently needs the European Union to put in place the conditions necessary for the emergence of a genuine ecosystem for low-carbon mobility.
Here are concrete proposals for action.

1) Develop an industrial strategy for Europe, with the automotive industry as one of the main pillars. This sector makes up more than one-third of European industry. Europe needs to deploy a regulatory framework with a stable base but open-ended content, on the same lines as the Chinese model. It is essential to create the right conditions for the emergence of new European Airbus-style companies, with expertise in key technologies.

2) Bring all the stakeholders together around the table to develop this strategy: scientists, manufacturers, associations, trade unions and NGOs.

3) Put an end to the current system, with the continuous rollout of new standards, fixed deadlines and threat of fines for non-application. For new "types" (new models, new technologies), it is essential to review the list of standards scheduled for the next six years. We recommend setting up a single entry point, a body that will monitor and assess all regulations, looking at their direct and indirect impact, as well as how they interact with other standards, before they are applied to industry.

4) Adopt an approach that is horizontal rather than just vertical. The end product (the car) and its technologies cannot be the only aspects taken into consideration. To give new momentum to the use of electric vehicles, we need to make sure, for example, that the energy used is carbon-free and available in sufficient quantities.

5) Rebuild supply capacity in raw materials and electronic components, develop our software expertise and establish a European sovereignty in the cloud. For example, we could create a European purchasing platform for critical raw materials, along the lines of what has already been done for gas supplies or Covid vaccines. We could also pool stock management for the various players.

6) With China ruling and the United States stimulating, **Europe needs to invent a hybrid model.** This means starting with a defensive approach to ensure that we get off to a good start, before seeking to conquer global markets.

7) The automotive industry is not challenging the Green Deal or the need for low-carbon mobility. It has proved this by investing €252 billion in the energy transition. But we are asking for a fresh look at the conditions under which this global strategy is implemented.

How? We are suggesting a number of measures to make progress in this direction:

Adopt a principle of technological and scientific neutrality; in practical terms, this means no longer dictating "technological" choices to industry. It means setting goals for industry but not how to get there. This is what Europe used to do, but it is a principle that was sadly abandoned for the transition of the automotive industry. The e-fuels solution, for example, is highly promising and should be further explored. Our proposal is that we should measure the impact of a car over its entire life cycle, from assembly to end-of-life and recycling, rather than focusing solely on energy consumption during use. This would challenge our engineers, while also increasing our chances of success against China and the United States. We would invent a European way.

Involve the 200 largest cities in Europe in the strategy to decarbonise the automotive industry. This would bring faster, more tangible gains for the general public. For example, they could have a say in traffic management systems, local taxation and vehicle access to urban areas. One approach would be to allow free access only to small electric or hydrogen-powered cars and vans, or cars with the most recent type approvals. Hence the importance of working with city mayors. If all towns and cities adopt the same measures at the same

time, this would automatically lead to a virtuous effect of scale for the industry, which would gain a bigger market.

Introduce a sort of industrial "Champions League" through a bonus-penalty system, rewarding the champions and penalising the players who don't play the game, whatever their sector of activity. It is essential for the system not to be simply punitive.

Create green economic zones inspired by China's special economic zones. These areas would receive more subsidies and industrial investment; taxes and wage costs would be applied at a lower rate over a period of ten years; and gains on the capital invested by the financial system would be exempt from tax. Under terms to be defined, the dividends from investments in green zones could also be exempt from tax. Renault has provided an example with its ElectriCity, set up in June 2021 in northern France. An ecosystem dedicated to electric vehicles, it covers the area around the plants in Douai, Maubeuge and Ruitz. To meet its competitive goals, Renault grouped its plants and suppliers together in a defined geographical area resembling an area of attraction.

Allocate a quota of low-carbon, affordable energy to the automotive industry. This would help it to manufacture batteries, manage its cloud infrastructure and promote sustainable mobility for customers. Electrification is impossible without decarbonised electricity. Put another way, the green transition will involve mass electrification of the economy as a whole. The elephant in the room is 'greenflation', a structural increase in the price of virtuous products. Consumers are not ready to accept this. This is why electricity prices should be decoupled from gas prices, to keep them stable over the long term at a reasonable level. This is crucial to our medium- and long-term competitive performance. Without it, the success of the electric car will be compromised. The number of electric vehicles on the road in EU-27 (40 million by 2030) will require 250 TWh of electricity. This will be equivalent to just under 10% of total electricity consumption in Europe.

Accelerate the development of smart, hyper-connected autonomous vehicles. This is the second strategic value chain to be implemented. To make a comparison with mobile phones, it's like switching from an old Nokia 6510 to a new iPhone. The consumer experience is radically different in a software-defined vehicle as is the car's relationship with its environment. It is vital to ensure European sovereignty over semiconductor technology, cloud infrastructure and cybersecurity standards. A policy needs to be implemented in this area to support and stimulate digital innovation. This will require tax incentives and

collaborative platforms to 'nourish' companies and start-ups in AI, cybersecurity and other digital fields. The smart connected vehicles developed in this way will be virtuous in three ways: smoother traffic flows, lower energy consumption and fewer deaths on the road. By deploying common standards, inspired by the example of China, manufacturers could share an estimated 70% of the technical content of cars – the part that consumers do not see.

Involve people in the green transition by going back to the fundamentals of the automotive industry: the mass development of small cars for urban travel and last-mile deliveries. In the space of twenty years, the average price of city cars has surged from €10,000 to €25,000, and the annual budget for consumer mobility (fuel, servicing, insurance and tax) has soared from €3,500 to €10,000. Given that the average salary rose by just 37% over the same period, the middle classes are turning away from cars. In Europe, sales fell from 13 million units to 9.5 million between 2019 and 2023. Driving around every day in an electric vehicle weighing 2.5 tonnes is clearly an environmental nonsense. The problem is that European regulations (on safety, emissions, and so on) have had a negative impact on the profitability of the small car segment, with sales falling by 40% over twenty years. To find a solution, we should take our inspiration from Japan and its small urban vehicles or 'kei cars'. From the factory to end-of-life, the environmental impact of a small car is 75% lower. It can be sold at half the price of a mid-range model. We could rapidly reverse the current trend with an array of inexpensive measures: social leasing, free parking spaces, preferential charging prices, lower interest rates on loans, incentives for young buyers, and so on.

Implement a new deal between the public and private sectors to rapidly achieve critical mass at European level. The ecological transition is a team sport: under pressure from financial markets, European manufacturers are often forced to focus on short-term profits rather than making the investments necessary for the long term, with no guarantee of a return. China has solved the problem by consolidating all its forces, including financial institutions, around a single goal. The US is the master of ecosystems (such as Silicon Valley), able to secure funding for all projects. In Europe, our approach remains fragmented, from one country or sector of industry to the next. We also have the world's strictest anti-trust laws. And we are paying the price in that we are a full generation behind in a number of technologies and economic sectors. Further, European companies are smaller than Asian and US giants. Our recommendation is therefore to deploy ten major European projects in strategic areas, bringing together all public and private players as part of a transnational and cross-disciplinary approach. We already have a tried and tested model: Airbus!

10 projects for Europe to catch up

1) PROMOTE SMALL AFFORDABLE EUROPEAN CARS

The idea: encourage manufacturers to launch cooperative projects to develop and market small affordable cars and vans made in Europe. At the same time, encourage consumers to buy these vehicles through bonuses and benefits such as reserved parking spaces, cheaper parking and reserved charging points.

Benefits and challenges for Europe [13]: Reduce the carbon footprint of urban vehicles: 75% of the carbon impact of an average car today, from the factory to end-of-life. If all the parking spaces in Paris were sized for small city cars, the space saved would be equivalent to 55 football stadiums in the same city. These cars would also significantly improve air quality in cities (one city in four suffers from poor air quality, with 39% of emissions being caused by road traffic). They would also be an ideal alternative in the international arena: compact cars are between 20 and 30% cheaper than average; they could create a growth surplus for Europe (€500 million in GDP per year) and create over 10,000 jobs in industry.

2) REVOLUTIONISE LAST-MILE DELIVERIES

The idea: establish a framework for new European companies specialising in electrified solutions for urban deliveries. Vehicle manufacturers and logistics firms would work together to identify the best options.

Benefits and challenges for Europe: this is a key solution for reducing the carbon impact of the e-commerce boom: CO_2 emissions from small commercial vehicles are estimated at 74 million tonnes in Europe. The European market for electric vans is expected to grow by 40% per year between now and 2030.

3) ACCELERATE THE PACE OF PARC RENEWAL

The idea: set up a European system to monitor the vehicle parc and its emissions. A European Marshall Plan could be put in place to accelerate parc renewal and thus drastically reduce CO_2 emissions. Taking the form of a European fund, it would redistribute resources based on the capacities of each country. The principle would be the same as for the post-Covid recovery plan. At national

[13] Renault Group's data from new Twingo project

level, incentives would be put in place for the purchase of new or used electric vehicles. In order to be effective, a scheme of this type would need to be based on a timeframe of ten years.

Benefits and challenges for Europe: eliminate 1 million tonnes of CO_2 by 2030. Europe's goal is to eliminate 310 million tonnes by the same date. The time lost in achieving this would throw the result into sharper relief.

4) DEVELOP ELECTRIC CHARGING INFRASTRUCTURE AND VEHICLE-TO-GRID (V2G) TECHNOLOGY

The idea: It is the role of the European Commission to develop a strategic plan for the European electric vehicle charging network to facilitate faster deployment of charging points as part of a master plan, implement a framework to allocate cheap decarbonised energy to the charging network, extend the duration of charging network concessions to attract more operators and provide greater stability for the overall system. This would encourage the development of Vehicle-to-Grid technology by establishing common standards for future projects.

Benefits and challenges for Europe: a simplified network of greater density to boost the use of electric vehicles. Europe needs to install 6.8 million charging points to cut CO_2 emissions from passenger cars by 55% between now and 2030, in line with objectives. This will require a radical change in pace, from the present rate of 2,000 points a week to 14,000! A total 184 charging stations will be required for every 100 kilometres of road. We are still a long way from achieving this: today, six European countries have no charging points every 100 kilometres, and 17 have fewer than 5 [14]. The estimated total investment required for this network (public and private) is €280 billion, including the construction of additional capacity for generating renewable energy. In a country such as the UK, V2G technology could save €268 million a year in electricity consumption by 2030. If widely implemented, it would contribute to the management of power consumption peaks, thereby reducing the use of energy sources that are often more expensive and carbon-intensive.

[14] https://www.acea.auto/press-release/electric-cars-6-eu-countries-have-less-than-1-charger-per-100km-of-road-1-charger-in-7-is-fast/

5) ACHIEVE SOVEREIGNTY OF SUPPLY FOR CRITICAL RAW MATERIALS

The idea: set up a Europe-wide organisation to secure the required supplies of sensitive raw materials by negotiating directly with producer countries. This approach should also apply to materials processing (hydrometallurgy, recycling). Develop European value chain diplomacy to secure European supplies by negotiating with a number of countries.

Benefits and challenges for Europe: meet the growing needs of manufacturers while exercising greater control over prices, given that an electric car requires six times more critical materials than a conventional car. By 2030, only 5% of needs will be met by European sources. China controls this sector, with 90% of the world's lithium refining capacity.

6) BOOST EUROPE'S COMPETITIVE PERFORMANCE IN SEMICONDUCTORS

The idea: make a strategic investment in R&D to consolidate the position of the European champion (ASML) with a virtual monopoly in EUV (Extreme Ultraviolet Lithography) technology. This makes it possible to manufacture smaller, more powerful microchips. The aim will be to meet the needs of all industries, particularly the automotive sector. Europe should use this model to encourage the emergence of new semiconductor champions. Either by strengthening existing players (STMicroelectronics) or by setting up new ones. Industry needs a full range of semiconductors, not only the most sophisticated but also the more conventional types.

Benefits and challenges for Europe: European semiconductor companies are seven times smaller on average than their competitors. But the spectacular increase in semi-conductor needs in the automotive industry creates a new opportunity for them. Providing that they supply high-quality, zero-defect products with a long service life.

7) STANDARDISE THE SOFTWARE-DEFINED VEHICLE (SDV)

The idea: create the conditions for vehicle manufacturers to develop software-defined vehicles at reasonable prices, by pooling a number of developments and defining standards. In the same way as in China, components that are hidden could be shared by manufacturers.

Benefits and challenges for Europe: gain expertise in the aspects that will account for 40% of vehicle value by 2030. The global software market will be worth US$100 billion by 2030. Cooperation between European manufacturers would make it possible to achieve sovereignty and competitive edge in the field of onboard technologies.

8) ENCOURAGE THE EMERGENCE OF A EUROPEAN CHAMPION IN THE INDUSTRIAL METAVERSE

The idea: Europe is already meeting high standards in manufacturing, R&D and logistics. The aim now will be to take a leap into the 21st century by standardising our approach. How? By creating a European champion of the industrial metaverse, able to provide solutions to the challenges of digitalising industrial operations (design, production, logistics, etc.). Cooperative initiatives could be set up between manufacturers and the tech players with expertise in the cloud, augmented reality, artificial intelligence, the Internet of Things, and so on. This project would require governments to redirect their spending towards existing European champions, in order to develop a pool of talent, establish cloud infrastructures in Europe and set out common cybersecurity standards.

Benefits and challenges for Europe: European R&D investment in the tech sector is one-fifth that of the United States. As a result, it attracts just one-third of the funding of the United States. While the United States and China have invested massively in technologies for both consumer goods and the defence sector, Europe needs to step up its efforts. This is important for sovereignty, decarbonisation (cutting supply chain emissions by 30% over ten years) and competitive performance.

9) UNIFY BATTERY RECYCLING

The idea: pool waste management. This will be achieved by developing cooperation between industrial partners in order to create recycling champions in each battery technology. Facilitate the development of battery recycling projects. Develop partnerships in Europe with the players who own the technologies, including the Chinese.

Benefits and challenges for Europe: by 2030, electric vehicles will account for 55% of vehicle sales, compared with 8% today. Over the same period, the share of rare materials used by the automotive industry is set to explode, with

a fivefold rise for cobalt and sevenfold for lithium. We will also require eight times more nickel than at present. Every year, 11 million vehicles reach the end of their service life. By recycling them, we can recover enough steel to make eight million new cars and enough plastic and copper for five million new cars.

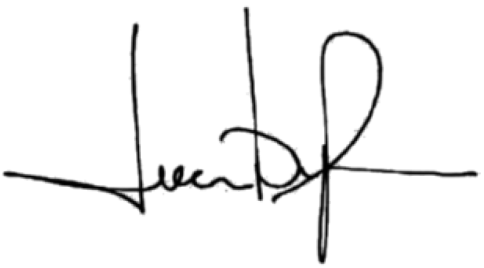
10) BOOST THE POTENTIAL OF HYDROGEN

The idea: adopt technological neutrality for hydrogen; include small-scale mobility in projects. Develop a master plan identifying the most promising areas and coordinating actions across Europe. Focus efforts on the most relevant areas: match up hydrogen pipelines and fuelling stations (HFS), coordinate the emergence of hydrogen hubs to be set up near green energy sources. Set up hydrogen distribution networks. Move closer to potential buyers.

Benefits and challenges for Europe: hydrogen-powered powertrains can deliver longer range. Hydrogen is particularly well suited to HGVs and buses and, in general, all vehicles covering very long distances. For an equivalent level of performance, the battery required for hydrogen is smaller and therefore lighter. Renault's new electric Master is one example: to achieve a real range of 500 kilometres, a dual battery-hydrogen fuel cell system (Hyvia type) would be half the weight (775 kg) of a conventional battery (1427 kg).

CONCLUSION

The proposals put forward in this advocacy paper are ambitious but practical. They show that the European automotive industry could rapidly emerge as the solution to the challenges facing the continent. We are aware that this will require a paradigm shift. The next step must be to take our inspiration from best practices elsewhere. Working together is vital, for competitors and for industrial sectors. We are ready to cooperate with all the institutions and stakeholders involved to take these ideas forward. The prosperity of Europe is at stake.



Letter to Europe

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