

# Chapter 7

## The French automobile industry: state of play, electromobility and employment change

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### Introduction

In France, as in many other European countries, the automotive sector plays a vital role both in industry and in research and development. The specificity of the French automotive sector is that it is mainly organised around PSA and Renault development centres and plants. Within the automotive sector, powertrain manufacturing and R&D has a well-established core position. Over time, powertrain activities have fared better than full-vehicle assembly, under the double threat of relocation and market decline. These activities, on which the future of substantial industrial capacities depends, cover a wide range of mechanical components (engines, gearboxes, etc.).

This chapter describes the trends we have observed across the sector based on numerous empirical observations in the field and on our consultancy work for employee representatives. Section 1 provides an overview of the situation and the weak points of the French automotive sector as a whole. Section 2 focuses on powertrain (PWT) activities, with an emphasis on the employment and skills structure, while section 3 discusses possible economic and employment scenarios for the future of the sector in the light of electrification and decarbonisation trends. Finally, in section 4 we present what we believe to be the main challenges to making a successful just transition for powertrain-related activities and jobs in France.

### 1. The progressive de-integration of the French automotive industry

#### 1.1 The French automotive sector – an overview

##### Some historical points of reference

In terms of vehicle assembly, France ranks third in Europe, with around two million vehicles produced annually. It remains far behind Germany and, starting from the early 2000s, lags also behind Spain (the country where Renault and PSA produce around one million French-branded cars per year).

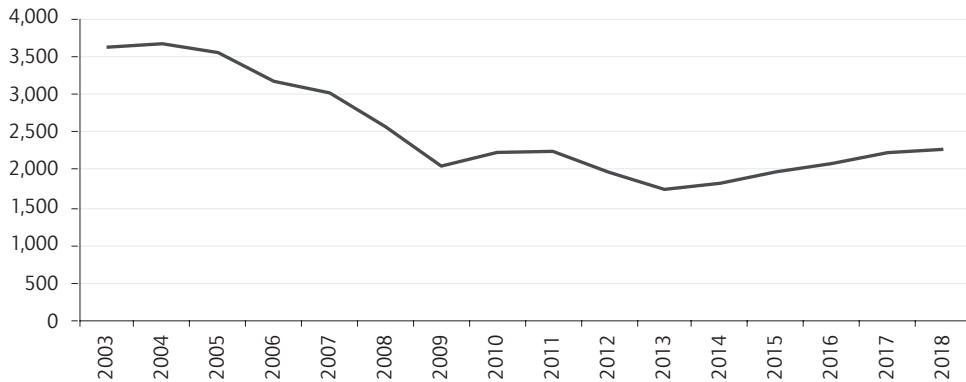
The French automotive sector is dominated by two manufacturers, Renault and PSA. Until the beginning of the 2000s, they registered huge successes, banking on

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1. With the contribution of Anne-Gaëlle Lefeuvre.

original designs (including the first family minivan, the Espace). Since then – as they were specialising in mass market products – both manufacturers have resorted to restructuring aimed at cutting costs which has, most often, meant relocating production. This is the main reason behind the decline in vehicle assembly in the country. The 2009 crisis plunged the sector into a very difficult situation, but vehicle assembly volumes had already been declining since 2005, as Figure 1 shows.

Figure 1 Production of light vehicles in France (in thousands)

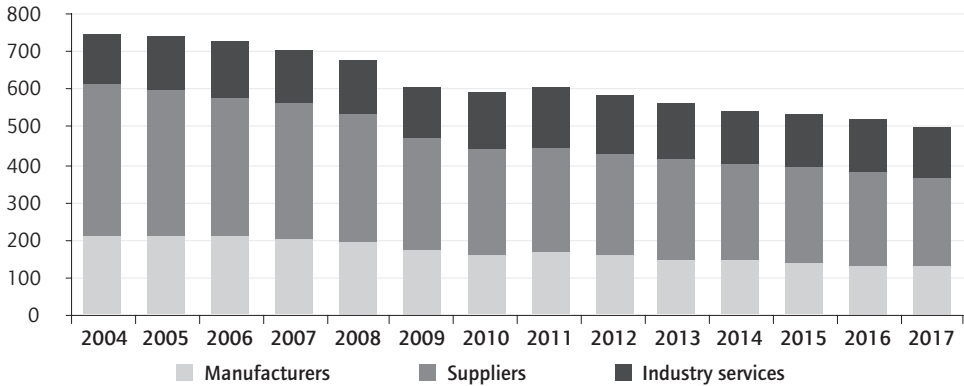


Source: CCFA (2018).

In effect, production was halved in fewer than ten years – from 3.5 million vehicles in the mid-2000s to 1.75 million in 2013-2014. Volumes have subsequently increased slightly, to over two million (including around 0.3 million vehicles from the Toyota and Smart-Daimler plants), a level forecasted to remain stable. The increase in the last couple of years has been due mostly to Renault’s decision to increase its assembly volumes in France.

Of course, the trajectory of the French automotive sector cannot be summed up simply by looking at the volumes produced by original manufacturers. The sector includes many companies with a wide range of profiles, including top-tier equipment manufacturers and second-tier SMEs, which export a significant portion of their production and often play a role in the development of new products. Figure 2 shows the development of the number of jobs in the broad automobile sector and their distribution along the supplier chain. Two-thirds of industrial jobs in the upstream sector (equipment manufacturers and subcontractors) belong to foreign-owned international groups.

Figure 2 Evolution of the number of jobs in the French automotive industry and their distribution across the supplier chain (in thousands)



Source: Syndex, with CCFA data.

### The positioning of French manufacturers across vehicle segments

The fact remains, however, that manufacturers' strategies are decisive for the whole sector. We therefore need to keep their trajectories in mind in assessing the overall dynamics of the sector. We can, however, give a broad outline of the main trends of the last decade:

- French manufacturers have been lagging behind in the upmarket segments where profitability is higher and German manufacturers are dominant. Recent relaunch attempts with the DS brand for PSA and Alpine at Renault illustrate an interest in catching up, together with the difficulty involved in regaining a market position based largely on brand awareness. Due to these difficulties, French manufacturing sites continue to compete with low-wage locations in the medium-range passenger vehicle (PV) segments. This fuels the drive to relocate industrial capacities outside the country;
- conversely, their leading positions in Europe in the field of light commercial vehicles (LCV — another segment with good margins) has allowed the two manufacturers to produce large volumes in France, in partnership with other European manufacturers. More than one-quarter of the vehicles assembled in France are light commercial vehicles. The reconversion of Renault's Sandouville site is the best illustration of this trend, with losses in the upmarket range but a resurgence of LCV production;
- in recent years, French manufacturers have also increased their PV volumes, benefiting from the rise of the sport utility vehicles (SUV) market and from a (relatively) successful range of models. Although it has lagged behind its partner Nissan, with its highly successful Qashqai, Renault has managed to catch the wave of SUV growth while PSA has had great success with its new range (including

the 3008) with which it has boosted volumes at its French factories. However, although SUVs allow non-specialised manufacturers to grow and register good margins without accessing the upper segments of the PV market, the two French manufacturers are far from being ahead of their competitors in this field. SUVs make up around one-third of their volume, similar to the European average, while Nissan accounts for two-thirds of the SUVs produced in Europe.

### **Powertrain activities, especially diesel-related ones, are extremely important to the French automotive sector**

Although the overall position of French manufacturers has witnessed major decline, it is still very significant when it comes to powertrain. The engine is a component that enhances the credibility of a manufacturer's motor vehicle range and is a major driver of technological excellence. Furthermore, it still represents around forty per cent of a vehicle's value (FIEV 2018).<sup>2</sup>

PSA produced 3.5 million engines in 2003-2004, a large number of which were for its partners. These partnerships have since dried up. Today, PSA has two engine plants in France, which comprised 100 per cent of its engine production, at least up to the Opel/Vauxhall takeover. The Tremery plant assembles two million engines per year, of which 75 per cent are diesel engines. The Douvrin plant (whose ownership was formerly shared 50/50 with Renault and is now fully owned by PSA) assembles some 800,000 engines per year, 75 per cent of which are petrol engines.

Renault significantly increased its production of engines in Spain (Valladolid) in the 2000s and it has done the same more recently in Turkey (Bursa), to the detriment of French manufacturing sites. It currently has an engine plant in Cléon, where it produced 900,000 engines in 2017. This factory, which had been focused on producing engine components and assembling diesel engines, started manufacturing electric engines in 2015 and is expected to continue to do so on an increasingly larger scale. The site should also begin to manufacture petrol engine components.

France is known for its strong engine and transmission industry: ten per cent of the light vehicles assembled in Europe are made in France while the figures for engines and transmissions go as high as fourteen per cent and sixteen per cent respectively (Syndex 2018b). The share of diesel engines produced in France is particularly high: in 2018, France produced 22 per cent of all diesel engines made in Europe compared to thirteen per cent for Germany, twelve per cent for Hungary and ten per cent for Poland.

### **In search of competitiveness: the key post-crisis challenge**

The continued integration of eastern European countries in transnational automotive supply chains, along with the 2009 crisis, has led to an increased amount of benchmarking between sites. In consequence, the main companies have been focused on improving the productivity and flexibility of their French sites. In this regard,

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2. FIEV is the French Federation of Vehicle Equipment Industries.

social agreements have been signed at both major manufacturers and at some of their suppliers. Through these agreements, stakeholders have been seeking greater security. Even so, the additional pressure on employment levels and flexibility has not necessarily resulted in better performance.

In parallel, new investment, which previously involved new capacities and employment growth, has been largely oriented towards boosting productivity at existing plants — by introducing more compact, flexible and automated lines and processes. At PSA, for example, these organisational changes have made the French sites very competitive relative to other European sites — a fact admitted even by its management.

## 1.2 A rebound in the activity of the automotive sector in the past five years

Several of the projects carried out by Syndex provide the opportunity for an in-depth observation of automotive companies and, together, they deliver a solid empirical basis for assessing production trends and social characteristics. They also provide an insight into the strategic orientations of large and small-sized automotive companies.<sup>3</sup>

Since 2014, we have noticed a very sharp recovery in activity. On average, revenues increased by over ten per cent between 2014 and 2017, with the exception of powertrain companies whose revenues stagnated in this phase of the European automotive industry's recovery. Profitability has been boosted significantly by this growth, jumping from an average of 4.3 per cent in 2015 to 7.3 per cent in 2017.<sup>4</sup> This trend is visible for almost all the companies in our panel.

This very strong recovery, with budgets exceeding expectations, has placed many players under pressure, often resulting in increased overtime coupled with work becoming both more intense and more complex. This becomes more apparent if we consider that employment has fallen significantly in our sample, by ten per cent between 2015 and 2017 for permanent staff, while the number of temporary workers has increased by fifty per cent.<sup>5</sup> The balance is strongly negative especially since, for the remaining employees, the use of temporary workers leads to increased workloads (Syndex 2018a).

Such a change is anything but surprising in a sector in which the major players are continually seeking productivity gains and flexibility, and are very cautious about hiring in France. This wariness is not being accompanied by increased rewards for the additional efforts demanded of employees in the name of competitiveness. Nevertheless, agreements in this direction have been signed at one-half of sites, or are otherwise the result of a national pact that aims to reduce the burden by facilitating, in return, more recruitment.

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3. Based on a panel of some forty establishments (including seven manufacturing sites) covering a total of 27,000 jobs. This represents ten per cent of automotive industrial jobs in France, or fifteen per cent if we focus only on suppliers.
  4. Operating income/revenue ratios.
  5. In 2016, temporary workers comprised twenty per cent of employment in production. If we focus on blue collar workers, the share of temporary employees is between thirty and fifty per cent of total registered headcount.

### 1.3 Despite a favourable context, the situation remains difficult at several sites

Behind this general trend of recovery in activity and improvement in margins without any positive impact on employment, we can observe extremely divergent situations from one production site to another.

We have identified four typical situations, which are shared across our panel to almost equal extents, from the most risk intensive plants to ones with the most sustainable future:

**Sites in great difficulty:**

sites that have been restructured repeatedly, whose sustainability is clearly in question.

**Sites barely investing in the future:**

good fundamentals but relocation threats weigh on future projects, and investments are limited.

**Promising prospects with some weak points:**

good products but industrially fragile; or, inversely, a solid industrial base but no sound product prospects.

**Positive outlook:**

a buoyant market; company is investing in innovation, is in a leading position and/or is present across niches.

Some companies are pursuing strategies which has them more or less banking on accumulated know-how. Others, however, are more management-focused and have more prudent approaches. We believe such an assessment should not be seen as a verdict but rather as a challenge for managers to promote their sites and secure the sustainability of their activity and jobs by convincing corporate decision-makers and clients.

## 2. Employment in the French powertrain industry: a dense and complete chain of skills

This section focuses on powertrain activities and employment in France. As mentioned above, France's automotive industry produces some fourteen per cent of all the engines assembled in Europe. Moreover, engine manufacture has historically been characterised by relatively high employment density due to the large number of mechanical parts being manufactured and assembled.

Syndex has built a unique database on employment in the powertrain sector, covering 95 sites with a total of 56,000 employees. This gives us a strong insight into developments in the PWT sector, on which the following analysis is drawn.

We identified a slight increase in overall employment between 2014 and 2016, but our data suggest that job losses among permanent workers are largely compensated through the recruitment of temporary workers. New jobs are being recorded in the innovative parts of the sector, but their impact falls short of compensating for losses in 'traditional' activities such as foundry or assembly. Ultimately, however, it is the relatively high proportion of older workers in the sector that is likely to be fuelling the decline in employment.

## 2.1 A complete chain of powertrain skills

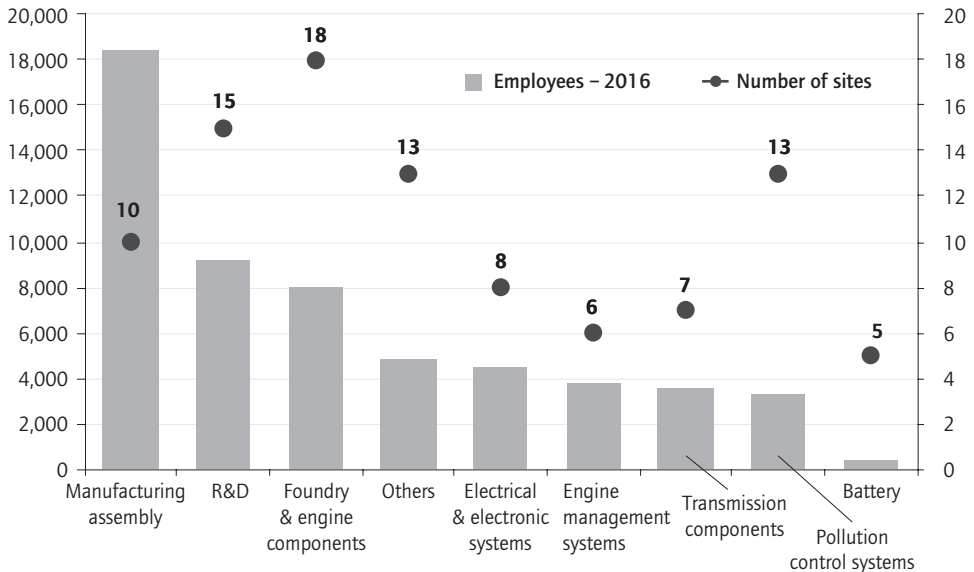
Figure 3 and Figure 4 provide an overview of employment in the French powertrain industry as at the end of 2016.

One-half of all jobs (47 per cent) remain concentrated in what can be described as the traditional activities of the sector – namely assembly (33 per cent; or almost 18,000 jobs), and foundry and engine components (fourteen per cent; with some 8,000 jobs). Additionally, R&D sites are important employers, representing about sixteen per cent of overall powertrain employment (9,000 jobs). We have identified fifteen R&D centres, mainly located at supplier sites.

Current levels of employment depend on a wide range of powertrain-related activities and products: engine management systems; pollution treatment systems; electrical and electronic systems; transmission components; and also filtering systems, turbochargers and re-building/repair activity mainly for engines and transmissions. However, we were also able to identify several small new companies assembling batteries for vehicles.

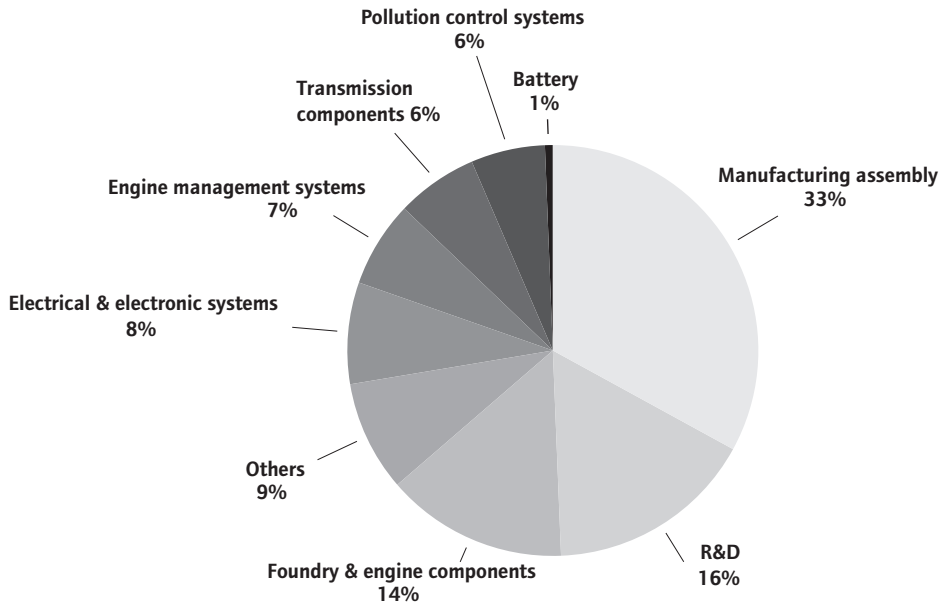
Another interesting feature reflected in our data is the distribution of employment per site. Whereas traditional automotive plants are (or were) large-scale factories with thousands of workers, the new innovative activities appear to be taking place in smaller establishments.

Figure 3 Employment in the powertrain industry at the end of 2016



Source: Syndex database on powertrain industry employment in France.

Figure 4 Distribution of employment at end of 2016 (per cent)



Source: Syndex database on powertrain industry employment in France.

## 2.2 Behind employment stability: fewer permanent jobs

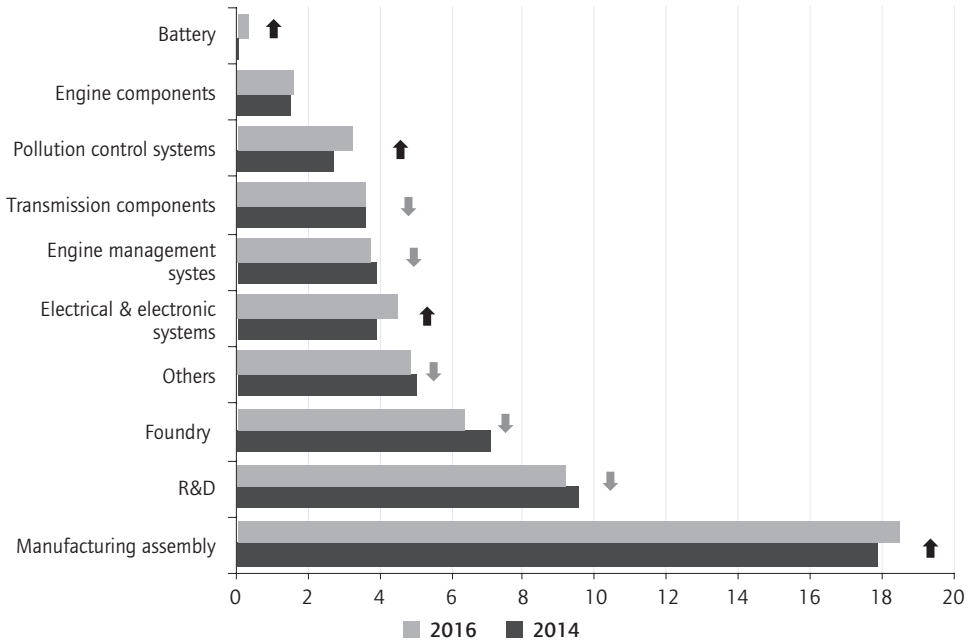
Between 2014 and 2016, employment in the powertrain industry has been generally stable (+1 per cent overall). Looking at the different activities (see Figure 5), however, we can observe an important disparity: employment growth in manufacturing assembly, electrical and electronic systems, pollution control systems and battery activities; but employment decline in foundry, research and development, engine management systems and other activities.

Moreover, if we look at the evolution in the number of permanent and temporary workers between 2014 and 2016,<sup>6</sup> we observe a five per cent decrease in permanent jobs and a boom in temporary employment (see Figure 6). Two main reasons for the rise of temporary workers can be identified. The first is that, after the 2009 crisis, and numerous restructuring plans, many companies have become more cautious about recruiting permanent workers. The second reason is the permanent cost pressure that has resulted in management targeting wages to take a decreasing percentage of revenues. These fears appear to have been stronger than concerns about hidden costs and the delayed effects of turnover fluctuation and indirect costs (costs of sub-quality production, training and management costs, disruption and delays...).

6. We obtained information on permanent and temporary workers for 55 per cent of the employment of our database.

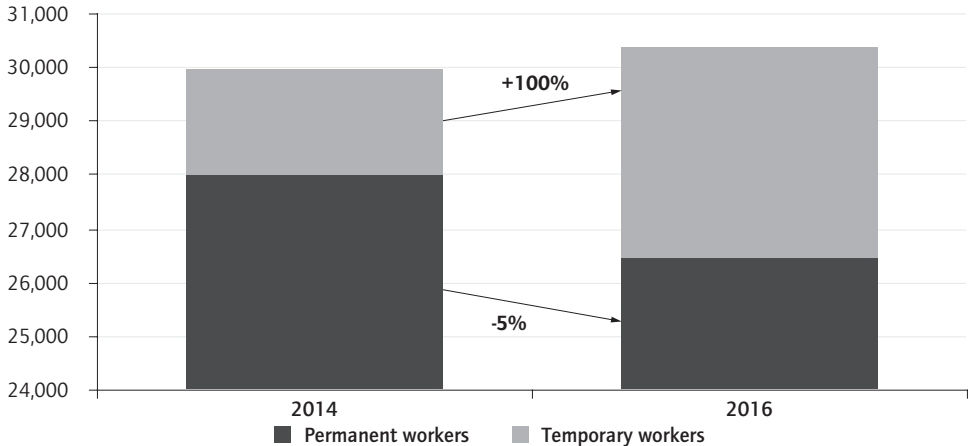


Figure 5 Evolution of overall employment between 2014 and 2016



Source: Syndex database on powertrain industry employment in France.

Figure 6 Changes in employment in the French powertrain industry from 2014 to 2016



Source: Syndex database on powertrain industry employment in France.

Table 1 Variation in permanent employment in powertrain activities (2016/2014)

Engine management	7%
Electrical & electronic systems	3%
Transmission components	-1%
Others	-3%
Manufacturing assembly	-7%
R&D	-9%
Foundry	-12%
Engine components	-15%
TOTAL	-5%

Source: Syndex database on powertrain industry employment in France.

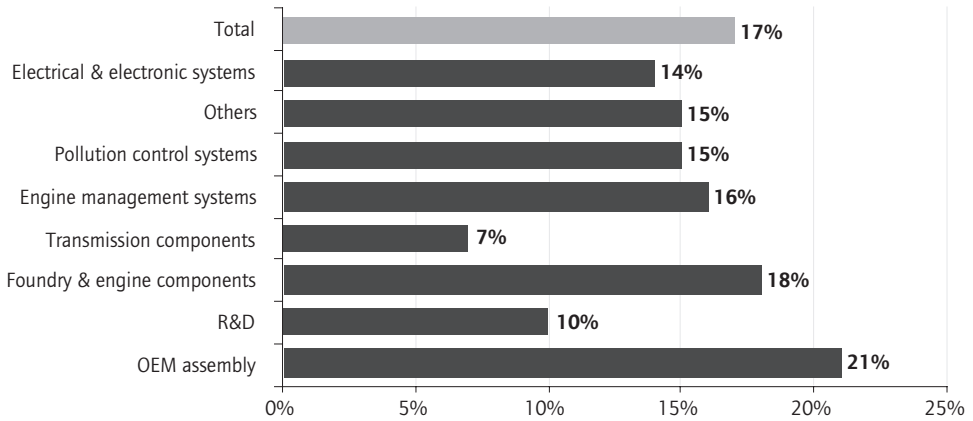
The result of this swing is that permanent employment has decreased in most powertrain-related activities, as Table 1 shows: from assembly to traditional powertrain components, foundry, and also in research & development. However, a few increases can be noticed — for engine management systems (mainly due to preparations for new powertrain regulations) and for electrical and electronic systems. There are some interesting contrasts between Table 1 and the employment change areas in general as documented in Figure 5.

### 2.3 A significant share of older staff

Our data suggest that the replacement rate for redundancies is relatively low and that spikes in activity are, to a large extent, being absorbed via flexible forms of employment, most notably through temporary work. Looking at the age of the workforce, we find that seventeen per cent are 55 years of age or older (Figure 7). Given that the retirement age is 62 years in France, these employees are due to leave their companies by the end of 2023 at the latest. The share of older workers is particularly high for assembly sites, where one worker in five is aged 55 or more. Sites with a focus on R&D record lower shares of older workers (ten per cent).

It is worth noting that these figures should not be regarded as entirely independent of those discussed previously. More specifically, the six per cent drop in employment in the industry between 2014 and 2016 includes cases of retirement and our data does not permit a distinction to be drawn between retirement and other reasons for leaving a company. It is likely that the number of employees reaching legal retirement age will increase significantly over the next few years: all the available evidence suggests that the automotive industry is faced with the challenge of an ageing workforce, with an increasing number of people approaching retirement age.

Figure 7 Workers 55 years of age and above, 2016 (per cent of permanent employment)



Source: Syndex database on powertrain industry employment in France.

### 3. Perspectives on the French powertrain industry: downsizing and reshaping... or outright disintegration?

#### 3.1 Assessment of the potential decrease in employment: between -20 per cent and -30 per cent by 2025

Given the continuing change in the powertrain mix, it is clearly difficult to forecast employment needs in the engine sector since the emerging technologies, at least at present, have a small presence and are costly. However, using the projected ratios used in some companies for estimating the employment requirements of different types of powertrain systems, we can make an attempt to assess the potential impacts. Our assumptions for the composition of the fuel mix by 2025 for France and the EU are summed up in Table 2.

Table 2 Assumptions pertaining to the fuel mix, based on 2025 estimates of engine production in France and Europe

	2017-FR	2025-FR	2025-EU
Diesel	67%	41%	5%
Gasoline	32%	12%	25%
Hybrid - Diesel	0%	8%	15%
Hybrid - Gasoline	0%	22%	35%
Electricity	1%	16%	20%

Source: IHS (2018).

## Our assumptions

Our starting point of reference for assessing employment requirements is the diesel engine (components and assembly); for petrol engines, we assume a level of sixty per cent of the diesel employment requirement. While assuming that employment requirements for assembly are more or less identical for diesel and petrol,<sup>7</sup> and knowing that assembly represents one-third of jobs in the sector, the employment requirements for petrol components would represent only forty per cent of those corresponding to diesel components (due to fewer parts and operations, larger tolerances and a smaller level of required precision). For small cylinder petrol engines, we assume that the petrol-diesel employment ratio is around fifty per cent (with four times fewer jobs in components).

We believe that the employment requirement for an electric engine would be only ten per cent of that of a diesel engine (assembling the electric motor is simple, with only four main operations and far fewer components). It shares some materials and operations with combustion engine manufacturing, but introduces winding.

With respect to hybrids, which are equipped with both a combustion engine and an electric one, but with the former smaller than in traditional vehicles, we assume that the employment requirements of hybrid technology is just slightly higher than that of a pure combustion engine (five percentage points higher).

## Our results

With respect to engine production prospects for France,<sup>8</sup> the change in fuel mix would cause around twenty per cent of jobs to be lost by 2025. If we look at the European context, for which a more marked decline in diesel is forecast, the fall in labour demand in the engine sector would be around thirty per cent.

Based on an estimate of the current employment level in the powertrain sector in France of 56,000 workers, this would mean job losses of between 10,000 and 15,000. However, employment decline could prove steeper due to productivity gains resulting from the automation and digitalisation of some production processes. On the other hand, it is possible that job losses could be mitigated by diversification projects (i.e. expansion into new sectors and/or new products).

### 3.2 Expected employment losses in powertrain activities and possible future strategies

The assessments that we have been able to carry out on employment trends inevitably rest on schematic assumptions and do not fully take into account the particularities of each company. However, we have followed developments in a large number of the

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7. The variances observed are around ten per cent.

8. Established by IHS Markit – <https://ihsmarkit.com/index.html>.

approximately one hundred sites in the French powertrain sector and are able to identify several types of change.

### **R&D sites: the first affected**

Research and development sites in the powertrain industry enjoy significant levels of activity at present, but this is not likely to continue to be the case in the future. Manufacturers are currently developing the final internal combustion engine platforms, and the development of future electrical systems of propulsion are not expected to mobilise as many employees as diesel platforms.

Manufacturers have anticipated job losses through a succession of voluntary departure programmes for people beyond a certain age across their entire range of R&D activities, and not only in engine manufacturing (see PSA and Renault since 2009). However, recruitment does not seem to have benefited from the same anticipation effort and it is still difficult to acquire key skills. Given these skills shortages alongside powertrain electrification, the introduction of new electrical and electronic architectures, and stronger regulatory constraints and security challenges, the current workload of powertrain R&D teams remains particularly heavy.

In parallel, R&D teams are being reallocated and restructured. The decline of diesel has led to a transfer of staff from diesel to petrol teams. Meanwhile, the stricter control of emissions is reinforcing the importance of electronic control systems in vehicle engines — and, correspondingly, that of the software teams who need to work coherently with the systems teams. Additionally, the advent of clean mobility has also led to the emergence of new types of project: for example, the development of ‘sound’ expertise for electric vehicles (i.e. sound technology) by engineers at Faurecia’s R&D exhaust site; or the manufacturers of traditional air and oil filters who are working on the continued use of filters beyond current engine-related uses.

Nevertheless, the overload in R&D activities should finish once the major deadline for future standards has passed (2021) and new electrical and electronic systems have been stabilised. This part of the development effort will, once the number of combustion engine platforms to be developed has been reduced, focus on battery electric vehicles (BEVs) whose development activities, excluding batteries, are far less complex.

The upshot is that, in both the medium- and the long-term, powertrain R&D staffing levels might decline both in manufacturers and in suppliers. The extent of this decline will depend on the trajectory of hybrid powertrain systems (full hybrid, mild hybrid, plug-in hybrid). Currently, the development efforts for hybridisation solutions are split up among several teams. At Valeo, for example, R&D efforts in propulsion are mainly oriented towards hybridisation,<sup>9</sup> but it is not clear for how long this will remain the case. Will 48V solutions and rechargeable hybrids have the expected degree of success? Is the hybrid solution itself going to prove only a temporary measure? Much will be

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9. It is the Siemens Valeo eAutomotive joint venture that is focused on BEV activities; France has only R&D competence.

dependent on the commitment of powertrain manufacturers in favour of alternative technologies (fuel cells, natural gas, etc.) but, if this is the case, then the teams currently active in hybrid technology need to be switched to other activities.

Investments in vehicle connectivity and autonomous vehicle technology have already started to limit the resources available across other areas of research and development. We might even expect additional financial constraints to limit powertrain R&D activities in the future (Syndex 2019).

Finally, both manufacturers and suppliers are banking on two other levers to reduce the operational costs of their R&D teams: the sharing of tasks between high-cost and low-cost centres; and the development of software tools capable of reducing the duration of projects and, as a result, reducing development costs. The result is that powertrain R&D headcount will decrease after 2021.

The only perspective for growth is likely to be in battery development. Until recently, the resources allocated to these activities have been relatively meagre, although battery R&D teams are present in manufacturers, in the CEA,<sup>10</sup> in start-ups and within Blue Solutions.<sup>11</sup> However, it is with the Korean LG and the Chinese CATL that PSA and Renault have developed partnerships. On the other hand, this situation appears to be changing, with the French government deciding to ‘Encourage R&D for 4<sup>th</sup> generation batteries and to support the growth of a French/European industrial infrastructure.’<sup>12</sup> On 14 February 2019, the French government announced €700m of investment aimed at producing batteries in France and supporting a Franco-German battery consortium.<sup>13</sup> It remains to be seen to what extent French R&D will benefit from these measures.

### **The transformation is already underway at most sites, albeit at a modest pace**

In engine component manufacturing, many sites have invested in both diesel and petrol components, thus delaying the effects of the decline in the diesel market. Indeed, most of the sites that were fully committed to diesel have begun to reposition themselves towards petrol. This transition is far from painless, however, and generally results in a reduction of staffing needs.

The spare parts market has again become an attractive market for sites that, in the past, had wanted to get rid of low volume production activities; the traditionally high profit margins in spare parts are now attracting sites affected by dwindling volumes and margins and unused capacities.

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10. Centre d'énergie atomique (CEA). The CEA has been involved in battery development since the 1990s through the Liten laboratory.

11. Blue Solutions is a company in the Bolloré Group. Blue Solutions designs and manufactures solid lithium metal polymer batteries for its Bluecars used in car sharing and in buses.

12. Contrat Stratégique de la filière Automobile 2018-2022 (Conseil National de l'Industrie 2018).

13. [https://www.entreprises.gouv.fr/files/files/directions\\_services/conseil-national-industrie/produire-en-france-les-automobiles-de-demain-dp.pdf](https://www.entreprises.gouv.fr/files/files/directions_services/conseil-national-industrie/produire-en-france-les-automobiles-de-demain-dp.pdf). In November 2018, Peter Altmaier, German Economy Minister, announced C1bn to support battery cell production in Germany.

Although powertrain electrification is at the heart of R&D concerns, at both manufacturers and suppliers, for now only a few electric production projects are being undertaken across the sector. Electric engines are manufactured in Cléon and some projects are also underway at the PSA site in Tremery in collaboration with Nidec.<sup>14</sup> The Forsee Power Battery site in Chasseneuil (a former piston manufacturing site) has also been launched.

At present, electric vehicle components present no major production prospects in France. Volumes are still weak and, in addition, the number of components in an electric powertrain is far lower than in a combustion engine.

There are only a few battery production projects in France (Blue Solutions, E4V, Forsee Power, etc.) and these are focused on rather marginal activities – niches and vehicle adaptations. No large-scale project is yet planned in France. In 2012, a project was envisaged linking LG Chem-Renault and CEA, but it was subsequently abandoned.

Some companies are embarking on diversification outside the automotive sector as such, as for example in the case of the Bosch site in Rodez where a joint committee is looking for non-automotive potential markets.

Several other sites are focusing their efforts on increasing productivity (on ‘operational excellence’, as it is sometimes put) to remain competitive. In the medium term, however, improving productivity will no longer suffice for maintaining jobs and margins.

Finally, some of the sites experiencing serious difficulties have been shut down in the last two years. They represent at least ten per cent of the sites in our database. There is no easily identifiable common profile for these sites: some are linked substantially to diesel, but others less so – for example, a turbo parts subcontractor and manufacturers of particle filters, pistons, diesel injectors, etc. A planned closure of a Ford subsidiary in automatic gearboxes has also been announced. Additionally, foundries are frequently facing closure or severe downsizing.

### **In production: fewer employees but increasing skill requirements**

At present, it is mainly the automation of processes (production, logistics, quality) that is driving employment requirements downwards (i.e. the generalisation of assembly lines or automated manufacturing centres, the introduction of small automatic trains for logistics, camera-controlled systems for quality control, etc.). Over the following five to ten years, however, the following factors need also to be taken into account:

- even further productivity gains are expected due to the development of connected processes. Not only will the need for production operators decline, but the same will happen to the demand for support functions;

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14. Nidec Corporation is a Japanese leader in the manufacture of electric engines.

- volumes are also likely to fall due to the growth of car sharing (estimated at ten per cent in 2025) and the development of pure electric vehicles (ten per cent to twenty per cent by 2025), leading to a decline in employment.

In parallel, jobs are gaining richer content and are consequently becoming more elaborate. A number of factors are involved.

First, versatility is being promoted: employees are required to be able to handle more diverse tasks, including first-level maintenance and quality operations; this trend will accelerate with digitalisation.

Second, companies are looking for line workers who are able to operate and adjust equipment, assist their team and help solve problems. This requires technical and managerial skills that rest on granting teams greater autonomy, potentially leading to fewer supervisors. We have already noticed such trends in certain plants: the renewal of lines/production cells that are far more compact (and automated, with the emerging problem of educating robots); or the management of factory sub-units (cells or lines) from computer-equipped cabins. The line operator has almost disappeared (a few controllers remain here and there), replaced by workers with two-year post-secondary studies who are managing production lines. This type of disruption means not only that direct labour demand is shrinking but also that existing line operators do not necessarily have the newly-required skills.

Third, within this increasingly complex context, the skills required by managers are changing radically and are turning the traditional hierarchical *modus operandi* upside down. Meeting performance targets requires management to turn towards supporting production staff and, consequently, to working in unison with workers on the ground. The upgrading of management skills is crucial in achieving the agility which is much sought after by automotive organisations.

Fourth, maintenance is a field receiving particular attention due to the digitalisation of equipment and production management systems. In the north of France, for example, human resources managers in the automotive sector have already been implementing new training programmes focused on maintenance jobs (automation specialists, etc.).

## **4. Challenges to a properly-managed transition**

### **4.1 Avoiding the vicious circle of disintegration**

Viewed from the perspective of the stagnating volumes of vehicles assembled in France (around two million vehicles per year) and of the progressive decline in the manufacture of combustion engines, the future viability of the French automobile sector is at stake. This is even more so if we consider that it has been significantly weakened by relocations and purchasing policies oriented primarily towards cutting costs. In the face of these changes, we believe the following factors will prove decisive for the future of the automotive sector in France.



### **Boosting the level of local integration**

When a manufacturer sets up a plant in a region abroad, efforts are made to create supply networks with a local integration rate of sixty to ninety per cent. Nothing of the sort exists in France, where the integration of the sector seems to be moving in the opposite direction. Several managers have indicated to us the existence of pressure from their clients to produce in low-cost European sites, in spite of proposals for equivalent costs within France. Local integration remains the best way of serving synchronised production systems in order both to be reactive and to ensure the presence of the necessary technical skills at local level.

However, the new trend in the desire of manufacturers for synchronised production flows points to a reinforced need for the proximity of customer and supplier sites. This change should logically lead to a growth in local integration for assembly sites, even in France.

### **Responsible procurement policies**

Driven by an alliance between PSA (with Opel/Vauxhall) and Renault (which, with Nissan and Mitsubishi, was world leader in 2017), procurement policies are focusing on large-scale players, operating internationally. The prospects for independent and/or small-sized suppliers located in France have deteriorated, regardless of whether these companies possess extensive know-how. In the face of such complex situations, the collective acumen of the sector will be put to the test. Will it be able to build solutions to consolidate and diversify activities while finding the financial resources to reinforce the potential of its isolated gems?

### **Mastering all the facets of tomorrow's automotive sector**

Volumes, skills and value will be carried over progressively to electrified powertrain systems, alongside the new energy-storing and recharging systems, and the technologies for partially or fully connected and autonomous vehicles. Maintaining a sizable automotive sector in France presupposes a presence across all these domains. This raises strategic, economic, environmental and social challenges:

- strategic, as the sector seeks to maintain a sustainable industrial fabric stretching across the activities of the future;
- economic, because managing technology allows costs to be controlled. Furthermore, the strength of local partners maintains the competitiveness of all stakeholders in the sector;
- environmental, as local exchanges within a sector reinforce the synchronicity of flows and limit the hazards and transport times;
- social, because in the context of declining labour demand, new sources of growth are vital.

The automotive sector in France is currently on a shrinking path. However, it has several assets with which it can position itself along a recovery path. This presupposes

investment not only in higher productivity but also in new activities reinforcing the links between stakeholders and helping to develop future skills — a major factor for differentiation and competitiveness both today and in the future.

## 4.2 Anticipation and consultation, vital for achieving a new balance

### **At sectoral level: creating a shared vision**

In 2009, companies in the French automotive sector created a platform (PFA) that brings together 4,000 companies: manufacturers; suppliers; subcontractors; and mobility stakeholders. They have started by sharing information and defining a common roadmap and common positions on standards, for example.

Meanwhile, the Observatoire de la Métallurgie, a joint body that unites professional and labour unions, has published several prospective studies on the impact of changes in the sector on employment and skills. According to the last study (Observatoire de la Métallurgie 2018), it is estimated that 25 per cent of jobs in the powertrain sector are exposed to risk. Based on their recommendations, we would like to emphasise the following points:

- firstly, it is important to pay attention to the employment and skills imbalances of companies, at the local level, because the greatest possible number of employment changes appear there;
- in parallel, the country's stakeholders must follow, stimulate and develop their adaptation potential (training strategies, bridges between companies, support for company transformation, etc.);
- enhancing employability and raising the value of skills through professional qualification certificates should be promoted;
- there is a need to develop initial and continuing training across key jobs;
- vulnerable sites need to be supported through new strategic directions or through new financial resources.

There are two additional elements which occur to us. With respect to supporting the transition, and for nearly ten years now, Syndex has been promoting concerted approaches involving the management of companies, employee representatives and employees themselves (Meixner 2017). Considering the complexity of the matters at hand, no-one, regardless of their expert pedigree, is able to say what the future will actually be like or be able to turn their companies around by relying only on the contribution of a limited few. The level of complexity involved requires the mobilisation of all the stakeholders concerned by these transformations in order progressively to develop viable projects that are acceptable to as many as possible.

Finally, the vital involvement of local and regional structures must not take the place of industrial policy measures initiated at national or European level.

## **Available tools for social dialogue at the company level must be mobilised**

In French companies, specific tools for anticipating change and ensuring permanent consultation with employee representatives are set in place.

### **Consultations on strategic orientation**

Each year, the works councils<sup>15</sup> of companies settled in France have to be informed and consulted regarding strategic orientations and ‘Their consequences for the activity, employment, evolution of jobs and skills, work organisation, use of subcontractors, temporary workers, temporary contracts and work placements. Consultation focuses, among other things, on the forward-looking management of jobs and skills, and on the orientations of professional training.’<sup>16</sup> In this context, managements must present fairly detailed prospects for at least three years. This represents a first step for dialogue.

Based on these consultations, the works council formulates an opinion, which is addressed to the company’s board. Following this exchange, employee representatives may discuss these orientations and submit alternative plans or proposals concerning skills development or training.

Employee representatives have a legitimate right to propose possible courses of action to management. The joint commissions operating at Bosch in Rodez or at ACI in Villeurbanne have made it possible to develop analytical approaches and to elaborate potential scenarios for companies and their employees that site managers sometimes struggle to carry out on their own.

### **Negotiation on management paths, jobs and skills**

Company trade unions may also negotiate on the issues arising from the company’s strategic orientation over the three-year medium-term period. Unions may seek to negotiate on the types of job categories threatened by economic or technological change; on the implementation of employee mobility; on the sustainable training and inclusion of young people in the company; on the employment of older workers, etc.

This negotiation framework, together with the works council consultations on strategic orientation, offers the tools with which to achieve a shared vision of a company’s strategy and outlook, and to formulate in common alternative proposals and identify secure development paths. These tools deserve to be used broadly by companies within the powertrain sector in France and in Europe more generally. Well utilised, such information/consultation practices provide the opportunity to discuss the opportunities for diversification and the detailed skills, training and employment adaptations that they will require.

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15. Currently, the Social and Economic Committee (SEC).

16. According to the French Labour Code: Article L2323-10.

## 5. Conclusions

The transformation of the powertrain sector and the structural decline of the diesel market are of national significance in France and are, therefore, not just matters of concern for the French automotive industry alone. Technical engine-related skills are core competences in France and a wide range of powertrain-related activities are present in the country, both in production and in design, totalling over 56,000 jobs.

We estimate that demand for these activities could fall by twenty per cent to thirty per cent by 2025. Such a huge decline could, inevitably, raise fears that major restructuring will ensue. However, by looking at a large sample of companies active in the industry, we found that, at the end of 2016, around seventeen per cent of staff were aged 55 and over. Retirements should thus facilitate the required adaptations as long as these are tailored to the decline in the demand for labour. However, those leaving will take their skills and practical experience with them, while those remaining might have to deal with different activities, jobs or organisational set-ups.

Providing support for recruitment and mobility (including skills improvement across technical or sectoral fields, and employability) should therefore be the main challenges for powertrain companies attempting to achieve a fair social transition.

To be effective, this social transition will need the involvement of all shareholders, manufacturers, suppliers, subcontractors and local or regional authorities. Letting subcontractors become weaker risks undermining the entire French automotive sector.

The other key points will be the development of energy storage activities but also new automotive high-tech activities in software and the combination of software and hardware systems. Without the development and reinforcement of these new kind of activities and skills, the French automotive sector is condemned to be progressively marginalised.

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