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Circular plastics in France

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Circular plastics in France

Sector study

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Executive summary

The Netherlands Enterprise Agency (RVO), the Embassy of the Kingdom of the Netherlands in France and the Netherlands Business Support Office in Lyon (NBSO Lyon) have commissioned Technopolis to conduct a sector study on circular plastics in France. It aims to provide information that would help Dutch companies to understand and assess market and cooperation opportunities in France (in R&D, public procurement or via European programs).

Scope of the study

Design	End of life	Other
<ul style="list-style-type: none"> • R&D&I • Ecodesign of products 	<ul style="list-style-type: none"> • Reuse • Recycling • Remanufacturing • Upcycling • Waste-recovery 	<ul style="list-style-type: none"> • CE-products • CE entrepreneurship

The plastics industry represents a significant sector of the French economy, accounting for 65 billion euros (roughly 4% of industrial GDP¹), with 5,000 companies and 230,000 employees. It is mainly composed of SMEs and spread across three hubs: the Hauts-de-France (Northern France), Grand Est (East) and Auvergne-Rhône-Alpes (South-West) regions. France is in a transitional phase with regard to the adoption of circular practices in the plastics sector (see sub-section 1.3.1). A dynamic regulatory framework is gradually creating new opportunities for business, with the entry into force of the progressive ban on single-use plastics (see table below). The price of recycled plastic is slowly declining and becoming more affordable for industry, whereas the demand for high-quality recycling and sorting technologies is increasing.

Progressive bans on different categories of products (2021-2050)

As of January 2021	Starting in January 2022	From January 2022 to 2050
<ul style="list-style-type: none"> • Sale bans extended to straws, plasticware, confetti, coffee stirrers, and boxes in expanded polystyrene. • Companies and public establishments can no longer distribute free plastic bottles. • During cultural, festive or sport events, sponsors cannot impose the use of plastic bottles. • Sorting bins will have to be installed in supermarkets to collect plastic packaging. • The production and import of plastic bags are prohibited. 	<ul style="list-style-type: none"> • Plastic packaging on fresh fruits and vegetables of less than 1.5 kg will be prohibited. Bonus-malus scheme implemented. • Mandatory water fountains in public establishments. • Press releases and advertisements will be disseminated without plastic packaging. • Non-biodegradable plastic tea bags will be prohibited for sale. • Plastic toys included in children's menus will be prohibited. • Biodegradable labels only will be allowed on fruits and vegetables. 	<ul style="list-style-type: none"> • Disposable tableware in restaurants will be prohibited, notably in fast foods, for on-site consumption. Re-usable tableware will have to be used in this sector, as well as the delivery sector. • The sale of medical appliances containing microplastics will be prohibited. • Washing machines will have to incorporate a micro-plastics filter.

¹ Fédération de la plasturgie (2014).



The plastics ecosystem is well organised, with an important number of [trade organisations](#) (FEDEREC for recyclers) and clusters, otherwise locally known as « pôles de compétitivité » (Polymeris, Axelera, Materalia). The most recent French regulation concerning plastics is the [2020 Circular Economy Law](#) ("loi Agec") which sets unprecedented objectives for the recycling of plastics. By the 1st of January 2025, the goal is to reach 100% of recycled plastics. This law also aims to include circular practices in [public procurement](#). France's national recovery plan ("Plan de Relance") has earmarked 140 million euros² to help the plastics sector become circular. Other policy measures for plastics are supported by the Ministry for the environment, ADEME and the Banque Publique d'Investissement (Bpi).

France has historically been a frontrunner in the development of Extended Producer Responsibility ([EPR channels](#)). The plastics sector is represented by several producer responsibility organisations, notably Citeo, the EPR scheme for household packaging waste.

Given the current development of the sector, [what opportunities are available for Dutch companies in France](#)? While France has some key strengths in the sector, the Netherlands is perceived as a country with better collection rates and key expertise in chemical plastics recycling. The study finds that current opportunities for Dutch companies in the French circular plastics sector today are mainly concentrated in the product design and end-of-life phases.

As well as improving the design of products so that they retain their value for longer, it is essential to better capture plastic waste and to increase the quality and quantity of recycled plastics. The research also suggests that there are opportunities for collaborative R&D and manufacturing for circular plastics (improved sorting technology, biomass recovery, upcycling).

Opportunities in the design and end-of-life phases

Design phase	<ul style="list-style-type: none">• Growing need for locally sourced, good quantity and quality Recycled Plastic Material (RPM) for industry.• More demand for virgin plastic alternatives, and notably biobased plastics (Polylactic acid (PLA), starch-based plastics, cellulose based plastics).
End-of-life phase	<ul style="list-style-type: none">• Improved technological solutions for sorting are needed, by exploring innovations such as infrared or triboelectricity.• Higher demand for chemical recycling as a complimentary solution to mechanical recycling, a field in which Dutch actors excel.• Untapped collaborative R&D opportunities exist to optimise the composition of plastics for upcycling rather than recycling. Players in the chemical industry sector could be strong partners.

A variety of [support tools for doing business in France](#) are available for Dutch companies interested in doing business in France. The Dutch Economic Network in France is the first entry point for companies interested in pursuing business opportunities, but local clusters also provide many possibilities to network and set up matchmaking events. Turn to our last section of the report for more information.

² Please note that this figure was announced in 2021 with the official launch of the Plan de Relance. However it is not a fixed number and may evolve over time.



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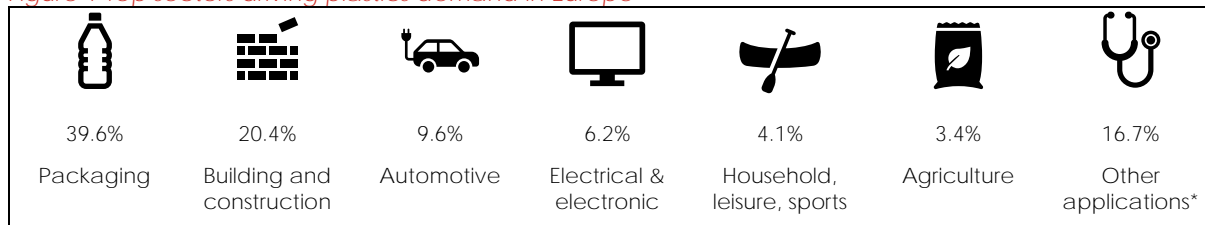
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Introduction

Plastics are a group of polymeric materials that can occur naturally or synthetically. They are mouldable, resistant, and can be tailored to pre-determined performance properties such as rigidity, durability, weight, chemical and corrosion resistance, thermal stability, etc.³ Once the engine of economic growth and innovation of the most advanced economies in the period 1920s-1990s, plastics are present in virtually all industries, systems and products.

The global plastics industry manufactures today about **358 million tonnes a year**, with a projected two-fold growth rate by the year 2028. In Europe alone, it employed over 1.5 million people in 55,000 companies in the year 2019. In the same year, its turnover was 350 billion EUR with a production of 57.9 million tonnes. Germany (24 %), Italy (14 %) and France (10 %) are the top countries driving the demand for plastics in the pan-European region, meeting the demand of a broad range of applications in B2B and B2C markets (see Figure below).

Figure 1 Top sectors driving plastics demand in Europe



Source: Plastics Europe (2020), after PEMRG and Conversio market data.

Note (*): other application includes: appliances, mechanical engineering, furniture, medical, etc.

Traditionally, plastics' manufacturing has been primarily based on the availability of a handful of natural, non-renewable raw materials such as coal, natural gas, salt and crude oil. Plant-based alternatives are commercially available in the European market for over a decade now,⁴ with a growing demand and installed capacity for several bio-degradable/ non-biodegradable plastics.⁵ Adopting the circular economy enables the closing of the plastics value chain loop, ensures sustainable design and allows product durability to become the norm.⁶ As shown in the following diagram, circular plastics deliver solutions throughout the entire plastics value chain. Manifold opportunities exist to provide solutions in raw materials (re)sourcing, refining (monomers), polymerisation (polymers) and compounding (pellets), eco-design, manufacturing, retail, distribution, and use (and product life extension), and end-of-life (collection, sorting, recycling) of "conventional" and bio-based plastics.⁷

³ Plastics Europe (2020). Plastics – the facts 2020. An analysis of European plastics production, demand and waste data. Association of Plastics Manufacturers. Brussels. Available at: <https://www.plasticseurope.org/en/resources/publications/4312-plastics-facts-2020>

⁴ Shen, L., Haufe, J. & Patel, M. K. (2009) Product overview and market projection of emerging bio- based plastics. Utrecht, Copernicus Institute for Sustainable Development and Innovation, Utrecht University.

⁵ Set to grow from 2,1 to 2,8 million tonnes by 2025 for the manufacturing of PLA (polylactic acid), starch-blends plastics, and bio-based PP (polypropylene), PHAs (polyhydroxyalkanoates), PET (polyethylene terephthalate), PEF (polyethylenefuranoat), among others. See European Bioplastics report 2020: <https://www.european-bioplastics.org/market-update-2020-bioplastics-continue-to-become-mainstream-as-the-global-bioplastics-market-is-set-to-grow-by-36-percent-over-the-next-5-years/>

⁶ TNO (2021). A circular economy for plastics. TNO and Holland Circular Hotpot. Available at : <https://publications.tno.nl/publication/34637978/cSKNrZ/TNO-2021-circular.pdf>.

⁷ TNO (2021). IDEM

recycling and circularity, Dutch companies are well placed to tap into the concrete market opportunities offered by the circular plastics economy in France.

Scope of the study

The Netherlands Enterprise Agency (RVO), the Embassy of the Kingdom of the Netherlands in France and the Netherlands Business Support Office in Lyon (NBSO Lyon) have commissioned Technopolis to conduct a sector study on circular plastics in France. It aims to provide information that would help Dutch companies to understand and assess market and cooperation opportunities in France (in R&D, public procurement or via European programs).

Figure 3 Scope of the study



Given the profile of most Dutch companies in this sector, the study focuses on market opportunities in the design and end-of-life (waste) stages. The three-part study will include:

1. An overview of the market trends and challenges plus a stakeholder mapping.
2. A presentation of the legislative framework in France for plastics, including compliance support tools.
3. A summary of business and cooperation opportunities for Dutch companies.

Methodology

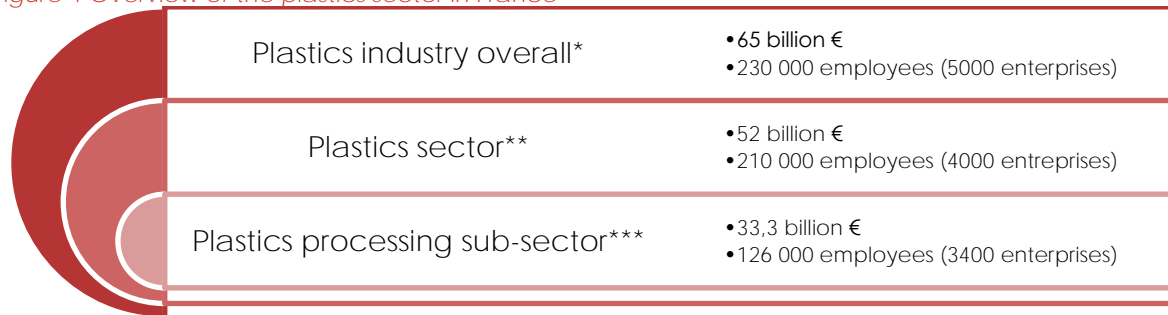
This study is the result of a qualitative research combined with a literature review, a stakeholder mapping and interviews with French and Dutch players. Interviewees are listed in 0.

1 The circular plastics sector in France

1.1 Facts and figures

According to estimates by POLYVIA, the main union of plastics processing companies in France, the plastics sector overall accounts for 65 billion euros, with 5,000 companies and 230,000 employees.

Figure 4 Overview of the plastics sector in France



Source: POLYVIA estimations based on INSEE data (25/03/2021).

*Plastics industry overall: plastics manufacturing, recycling, machine and mould suppliers, material suppliers;

**Plastics sector: global scope of the plastics industry, including activities integrated in companies outside the NACE code Plastics industry, INSEE

***Core plastics processing: NACE code for plastics processing (E37).

The plastics industry has the particularity of being represented across all sectors of the French economy. In terms of volume, the most important business activities for plastics include the packaging industry (40%), the construction sector (20%) and the automotive sector (10%). Some areas are particularly active, the French “Plastic Valley” (in Oyonnax) or the Chemical Valley (in Lyon) but the plastics industry is everywhere, with certain local specialities (e.g., PVC carpentries in the west, chemical processing in the AURA region...) (see subsection 1.3.1).

The profession is fragmented with a large proportion of SMEs but with no global leader, contrary to other industrial sectors in France.

1.2 Market trends and challenges

France is in a transitional phase with regard to the adoption of circular practices in the plastics sector. A dynamic regulatory framework is helping but change is still slow compared to other countries. For instance, the Netherlands has one of the highest recycling rates for plastic waste in Europe (49% in 2019), while France is below the [European average at 26%](#). Some of the key trends in the industry today can be summarized as follows:

Table 1 Key market trends and associated challenges for plastics in France

Observed market trends	Key challenges
Demand for virgin plastic materials is still high	<ul style="list-style-type: none"> • Demand exceeds historical figures, partly linked to a post-covid revival of economic activity. The price of recycled plastic is slowly declining. There is potential for the demand of raw material to decrease while the demand of recycled material increases. Price evolutions for virgin plastic materials are a subject of recurrent concern for European SMEs, pushing some to consider moving away from fossil fuels and to recycled or bio-based materials.

<p>The integration of recycled plastic in industry is relatively insignificant, representing less than 5% of the total share of plastics used in industry</p>	<ul style="list-style-type: none"> • There are three main limits restricting the industrial uptake of recycled plastics: the price of recycled plastics is often higher than the virgin material (strong correlation to the price of oil), the transition represents an important financial cost and industries face technical limitations in the integration of recycled materials in their processes. • To help companies transition, a public compensatory system was developed to encourage the use of recycled plastic ("OR PLAST"). Some specific markets already have no choice (e.g., a mandatory number of recycled plastics in PET plastic bottles is required by law).
<p>The use of plastic in society is being questioned particularly of single-use plastic</p>	<ul style="list-style-type: none"> • Consumers are increasingly feeling the pressure to change their plastic use habits, with growing expectations towards producers, seeking more sustainable products and services that have a minimal environmental footprint. • Regulation is driving single-use plastic bans across many product categories, pushing for higher plastic recycling rates, which is triggering substantial changes in product design. • Alternatives to mechanical recycling are emerging, mainly through different forms of chemical recycling (pyrolytic and to a lesser extent, enzymatic recycling).
<p>France's ambition is to reach 100% of recycled plastics by 2025</p>	<ul style="list-style-type: none"> • Chemical recycling is seen as a future solution to greatly improve recycling methods within industry, but the technology is still largely unaffordable for companies. The public sector in France is divided on the potential of pyrolysis chemical recycling. • In terms of mechanical recycling, experts estimate that the sector has already explored roughly 80% of capacity. More initial sorting is needed to improve the recycling rate. There are big expectations on the EPR (Extended Producer Responsibility, section <u>2.2</u>) as well as the extension of the harmonized sorting procedures. • Recycling centers in France are gradually evolving. In 2019, there were 176 sorting centers of varying size in mainland France. Processing sites with bigger capacity are being developed as waste disposal continues to grow. Plastics manufacturers are increasingly interested in collecting and recovering their own plastic.
<p>National players are divided on the potential of biosourced and biodegradable plastics as an alternative to virgin material</p>	<ul style="list-style-type: none"> • Biodegradable plastics specifically are not financed by the public sector today due to the lack of available information on their recyclability notably. A complete product life-cycle approach is taken for the development of biobased alternatives by ADEME, the national environmental agency. • The development of bioplastics is still very limited (bioplastics represent 2 or 3% of demand). Strong questions are directed towards the real recyclable and biodegradable character of these materials. Currently they are not adapted to traditional recycling procedures. • It is estimated that global bioplastics production will amount to just 3 million tons by 2025 (6 to 7% of plastic production). The agricultural land needed for these bioplastics is limited and the cost is higher than for fossil fuels. These alternatives will not be able to displace the vast majority of plastics.
<p>Microplastics management remains a complex and largely unresolved subject.</p>	<ul style="list-style-type: none"> • Some players have already started to replace plastic microbeads with other abrasive agents (natural or biodegradable), but this is generally limited within industry as a whole.

1.3 Key stakeholders

The plastics sector is well represented across all French regions. However, three central hubs are particularly active in the sector: Hauts-de-France (Northern France), Grand Est (East) and Auvergne-Rhône-Alpes (South-West).

Figure 5 Mapping of key stakeholders in France



Source: Technopolis Group (2021)

1.3.1 Main business hubs

- Auvergne-Rhône-Alpes (AURA)

The AURA region is characterised by a high level of industrial activity with leading global players in chemical production. The emblematic feature of the territory is the Vallée de la Chimie, an industrial platform, created in the 1960s, to host large industrial sites such as Total, Sanofi, Solvay, Air Liquide, Arkema. 2,500 researchers are active in international research centres. It is estimated that about a hundred researchers are active on the subject of plastics recycling in the Valley. Several large groups have initiated R&D initiatives, but the majority of activities are developed by SMEs or start-ups.

Home to the “Plastics Valley” (in Oyonnax) the region gathers the highest concentration of plastics companies¹² in Europe e.g. Mécaplast (plastics manufacturer for the automotive industry), Broplast (specialised in the recycling of plastics) and S.I.S.E (specialist in processing systems).

- Hauts-de-France

The Hauts-de-France region is a historically industrial region in France, formerly active in the textiles, ceramics, coal and steel sectors. For nearly a decade, it has been marked by a strong commitment to transform its industry through sustainable procedures. Since 2012, the region

¹² Full list available [here](#)

has deployed its Third Industrial Revolution (Rev3) program, a program aiming to accelerate an ecological and social transition with a total investment of 500 million euro per year up until 2030. The regional fund [FRATI](#) notably supports circular economy projects.

In a study supervised by ADEME, it was estimated that the plastics sector could constitute an important employment lever for the construction of a circular economy by 2030, with a much greater use of recycled plastics. The most optimistic scenarios foresee the creation of more than 14,000 jobs only for the "circular" plastics sector.

- Grand Est

The Grand Est region is less important in terms of jobs and turnover generated in the plastics industry, but several traditional groups such as Paprec and Macaoare are located there. Most plastics players based in Grand Est are active in the PVC sector, but the region also hosts petrochemical platforms that are interested in chemical recycling and gasification. The region has launched a working group on plastics to define a strategy for supporting and helping partners to network in the entire plastics value chain, including trade unions, eco organisations, industry and clusters. There are also a lot of key research and innovation institutions located in the region (see [3.2](#)).

1.3.2 Sector organisations

- Trade organisations

There are a number of trade organisations active in the plastics sector. Organisations have gradually integrated circular economy principles in their strategic agendas and are helping their members transition towards more circular models. They are presented in the table below.

Table 2 Main trade organisations for plastics in France

Name	Description
FEDEREC	This is the main trade organization for recyclers in France today, representing 95% of recycling companies (3100 businesses, including large companies such as Veolia, Suez, Paprec). It has existed for over 100 years. Its equivalent for the regenerator sector is SPR (Syndicat national des régénérateurs de matières plastiques).
Polyvia	Polyvia is the main union of plastics processing companies in France. It gathers and represents more than 3,500 companies with nearly 122,000 employees, mainly from SMEs throughout the country.
Elipso	This is the national professional association representing plastic and flexible packaging manufacturers in France. It has over 100 member companies present in all sectors of the economy.

As a leading industrial country, France hosts some important events specifically focused on materials, as well as broader sectoral fairs, notably in the automotive sector. An overview of the most important trade fairs in France is available in [0](#).

- Clusters and "Pôles de compétitivité"¹³

Clusters and "Pôles de compétitivité" are major players in supporting R&D in France. Three pôles are of particular importance in the circular plastics sector today, presented in the table below.

¹³ In France, clusters generally represent a pool of companies in one same sector or geographical location. Pôles are state-approved centres that gather companies but also research centres and higher education establishments in one given sector to work on research and development.

Name	Description
Polymeris	Polymeris is the leading French cluster for rubber, plastics and composites. Created in 2005, it includes 380 active members, of which 280 businesses (mainly SMEs). Since its launch, over 300 collaborative R&D project were financed by the cluster, amounting to a total value of 600M euros. It has recently engaged in one project in particular with Dutch enterprise Bumaga, the CIRC-PACK project, and also engaged in cooperation activities with the Dutch Polymer Institute (DPI) and TNO.
Axelera	Axelera is the key competitiveness cluster for the chemical-environmental sector. Created in 2005, the cluster constitutes a network of 370 members including companies (start-ups, SMEs, ETIs, groups), research laboratories and training organisations in the chemical-environmental sector. The cluster works in particular on the development of green chemistry as part of their commitment to a circular economy.
Materialia	This is an association of players in the materials (including plastics) sector in the Grand Est region. Their mission is to help develop a sector through innovative and collaborative projects with a market focus. One of the key themes of the cluster in relation to the circular economy is clean and sustainable processes.

Other clusters of interest include the Bioeconomy cluster (Pôle de la bioéconomie), Team2 (circular economy cluster), and the Eco-design Pôle. Pexé-les éco-entreprises de France also brings together 35 networks of eco-companies.

Calls for publicly-funded R&D cluster projects are now managed directly by public bank Bpi France.

- Innovative French companies in circular plastics

[Appendix B](#) includes a condensed list of companies recently mentioned by interviewed stakeholders as part of the study as innovative or fast-growing within the chemical/ renewable/ recycling plastics sector, focusing on scale-up company size. The names provided here were those mentioned by interviewees as well as those having recently secured public R&D funding.

1.3.3 Public organisations

The French circular economy for plastics is supported by several French Ministries: the Ministry for the Environment, the Ministry of Economy and Finance, the Ministry of Higher Education, Scientific Research and Innovation, and the Ministry of Territorial Cohesion. A specific strategic committee to accelerate the transition to a circular economy in the context of a national recovery plan (Plan Relance) was created in 2020: the "Strategic sector committee (SSC) Waste processing and recovery".

The actual implementation of policies is mainly done by the French Agency for ecological transition (ADEME) which has a national headquarter and several regional offices.

2 The legislative framework in France for circular plastics

2.1 AGEC law (2020)

The most important French regulation concerning plastics is the 2020 Circular Economy Law (“loi Agec”). Its four key objectives are:

- Reducing plastic waste
- Informing consumers
- Preventing waste and promote re-use
- Preventing planned obsolescence and promoting sustainable production.

With the AGEC law, France has introduced a progressive ban on single-use plastic products up until 2040. By 2030, the objective is to reduce by 50% the number of single-use plastic bottles on the market. In addition, the bottles will have to be collected for recycling at a rate of 77% by 2050 and 90% by 2029. Another objective is to reach a proportion of 5% of re-used plastics by 2023, and to 10% in 2027 (Ministry for the Environment, 2020).

The objectives of reducing, recycling, and re-using will be fixed by decree in four 5-year period intervals (2020-2025; 2025-2030; 2030-2035; 2035-2040). By the 1st of January 2025, the objective is to reach a rate of 100% recycled plastic. Decrees have already been issued regarding a ban on the sale of plastic cups, plates, and cotton buds. The table below illustrates the progressive enactment of bans on different plastic products.

Table 3 Progressive bans on different categories of products (2021-2050)

As of January 2021	Starting in January 2022	From January 2022 to 2050
<ul style="list-style-type: none"> • Sale bans are extended to straws, plasticware (forks/knives/spoons), confetti, coffee stirrers, and boxes in expanded polystyrene. • Companies and public establishments can no longer freely distribute plastic bottles. • During cultural, festive or sporting events, sponsors cannot impose the use of plastic bottles. • Sorting bins will have to be installed in supermarkets to collect plastic packaging. • The production and import of plastic bags are prohibited. 	<ul style="list-style-type: none"> • Plastic overpackaging on fresh fruits and vegetables of less than 1.5 kg will be prohibited. The fiscal tool used is a bonus-malus scheme. • Public establishments must be equipped with a water fountain. • Press releases and advertisements will be disseminated without plastic packaging. • Non-biodegradable plastic tea bags will be prohibited for sale. • Plastic toys included in children's menus will be prohibited. • Biodegradable labels only will be allowed on fruits and vegetables. 	<ul style="list-style-type: none"> • Disposable tableware in restaurants will be prohibited, notably in fast foods, for on-site consumption. Re-usable tableware will have to be used in this sector, as well as the delivery sector. • The sale of medical appliances containing microplastics will be prohibited. • Washing machines will have to incorporate a micro-plastics filter.

2.2 Extended Producer Responsibility (EPR) for plastics

In France, the principle of extended producer responsibility (EPR, or REP in French) exists since 1975. It binds certain producers, importers and distributors to contribute (financially in most cases) to the elimination of waste. The first targeted sector in the EPR scheme was household packaging waste in 1992. It is still the largest today. New EPR schemes were rolled out in the early 2000s, with an acceleration after 2010s.

EPR is generally organised with producer responsibility organisations (PRO), whereby producers can choose to set up collective structures or an individual system. In the former case, which is the most common, producers united to form a non-profit organization to which they pay an eco-contribution (financial). In order to promote the eco-design of products, contributions paid to the PRO are modulated in accordance with incentive environmental criteria.

The French EPR system is organized by product type and not material type. As such, the plastics sector, for example, is represented by several PROs. The most recognized EPR schemes are [Citeo](#) (oldest EPR scheme, responsible for household packaging waste), Commercial or industrial plastic waste are directly managed under a contract between the producer and the EPR.

France is one of the countries that makes the most use of the EPR schemes in the structuring of its waste management. There are currently about [fifteen EPR schemes](#) in the country.

The Loi Agec plans to create, between 2021 to 2025, a dozen [additional schemes](#). Some of these new schemes are mandated under EU law (e.g., tobacco, fishing gear, chewing gum) but are only minimum requirements. Indeed, for the case of single-use non-woven products, for example, the AGECE law has broadened the scope to include diapers and menstrual protection products which are also partly composed of plastics.

2.3 Green public procurement for circular plastics

In France, Green Public Procurement (GPP) falls under the mandate of the "Union des Groupements des Achats des Publics" (UGAP, Union of Public Purchasing groups). It is the central public body which buys products and services under the French "Code de la Commande Publique" (Public Procurement Code),

The inclusion of social and environmental considerations in procurement procedures was introduced in the EU Directive 2014/24 of 2014. It was transposed into national law by the ordinance No. 2015-899 in 2015 on public procurement.

The AGECE law and the National Action Plan for Sustainable Public Procurement (2015-2020) have set ambitious objectives for the inclusion of circular practices in public procurement. Indeed, as of January 1st 2021, a minimum share of material must be sourced from the reuse or recycling sectors e.g., local authorities shall source reused or incorporate recycled materials in proportions of 20% to 100% depending on the type of product as of January 1st 2021.

Examples of regional authorities that have employed circular plastics in public purchases include:

- The Auvergne-Rhône-Alpes region approved its Circular Economy Action Plan in July 2020, which includes a strong Green Public Procurement component. AURA, in partnership with Ademe, aims to increase the demand of products integrating recycled plastics. The region will favour products containing recycled plastics, providing support to hundreds of SMEs in the Plastics Valley area.
- Similarly, in the framework of its regional plan for the Prevention & Waste Management, the Grand Est region has decided **all products or services exceeding €25,000 falls within the region's mandate for Green Public Procurement (GPP)**. The city of Strasbourg, for example, banned plastic containers in its public schools.
- The city of Brest (in Brittany) renewed a public contract management for its five waste collection centres, in which it has introduced a performance clause affecting the supplier's remuneration in order to encourage it to improve sorting and increase plastic waste processing.

2.4 Support tools for company compliance

With the release of important legislative proposals backing a circular economy, technical assistance and financial support measures for businesses have been extended by national and regional authorities. The most important is the “[Plan de Relance](#)” (PDR), or French Recovery plan.

Indeed, over 140 million euros have been earmarked by the PDR for the plastics sector to support French companies (and subsidiaries) in reuse and recycling. A [specific guide](#) tailored to the plastics sector was developed by ADEME, detailing the availability of the support. The tools combine both technical as well as financial assistance. The 5 most important tools financed by the Plan are summarised in the table below.

Table 4 Plan de Relance – support measures for the plastics industry in France (ADEME, 2021)

Name	Description	Target organisations
ADEME scheme - ORPLAST (supporting the incorporation of recycled materials by plastic manufacturers)	<ul style="list-style-type: none"> • Support for feasibility studies and tests • Support for investment in the incorporation of plastic RPMs (Recycled Plastic Material) • Support for end-user studies 	Companies in the plastics industry
Support for recyclers	<ul style="list-style-type: none"> • Support for feasibility studies and tests • Support for investments 	Plastics recycling companies (preparation/regeneration)
Support for the modernisation of sorting centres and the deployment of selective sorting in public areas	<ul style="list-style-type: none"> • Support for studies • Support for investments (taking into account innovation through a bonus) • Specific support for overseas collection (French overseas territories) 	Local public authorities
Support for the reuse and/or substitution of single-use plastic packaging	<ul style="list-style-type: none"> • Support for studies • Support for experimentation • Support for investment 	Companies and local authorities that use plastic packaging (including catering, catering activities, etc.)
Support for the plastics industry	<ul style="list-style-type: none"> • Strategic diagnoses • Assistance in setting up projects 	Start-ups and companies developing internationally

It should be mentioned that no specific measures for bioplastics are included in this plan. Bioplastic measures are held by the Ministry of Agriculture and its plan for a national bioeconomy.

Other support measures include:

- Bpi, the public investment bank, has launched the [Ecotechnologies](#) fund which invests in venture capital in circular economy projects.
- ADEME released its “[Tremplin pour la transition écologique des PME](#)” program to support SMEs in their ecological transition. It includes a diagnosis to reduce packaging or replace plastic packaging with other materials, assistance for eco-design initiatives and financial support to purchase mechanic waste compactors.
- The national “[Industry Decarbonisation Fund](#)” launched calls for projects on energy efficiency extended to process transformation for industry decarbonisation.

- Regional authorities have also launched programs to support businesses in transitioning. For instance, in the AURA region, the [Innov'R](#) tool was launched to support, facilitate and finance eco-innovative projects from SMEs and start-ups in the region.
- The Circular Economy Law (AGEC) introduced a bonus for the incorporation of recycled material as a regulatory lever for industries.
- PRO Citeo provides studies and equipment funding for its industrial members.

2.5 Other forms of policy support for circular plastics

The [Programme Investissement d'Avenir](#) (PIA) is a French government investment program for higher education and research initiated in 2010. The fourth investment program for the future (PIA) will mobilize €11 billion until 2022 to support innovation and in particular investment in future technologies. There will be a specific focus on helping to accelerate recycling methods.

Open innovation contests also provide a source of funding for projects in the circular economy. Most relevant open innovation contests in France today include:

- The [Cleantech Open 2020](#), partly financed by ADEME, offers French start-ups and SMEs opportunities for support, funding and collaboration with key players in the innovation ecosystem. It aims to be a stepping-stone for the development of these businesses on the European and American markets.
- Launched in 2016, the Ministry of Ecology launched the [Greentech programme](#). Calls for expressions of interest are regularly launched to support innovative projects ("GreenTech verte Amorçage" for start-ups and "GreenTech verte Accélération" for SMEs).
- Citeo's annual [Circular challenge](#) identifies innovative start-ups in the recycling sector. It is open to companies inside and outside of France. Subsidies and support services vary according to the prizes.
- The [Pollutec Innovation Award](#) is an international competition to support French and international eco-innovative companies.

Competitive public funding opportunities available for Dutch companies are mainly accessible through cluster cooperation calls, EPR competitions (such as Citeo's) or international fairs (Pollutec).

3 Business and cooperation opportunities for Dutch companies in France

3.1 Opportunities for Dutch companies in the French market

The Plan de Relance has earmarked 140 million euros for the plastics sector to help French plastic companies move towards circular solutions. The sector is in full transition, with some important strengths (expertise in terms of materials and processes, renowned chemical sector, mature ecosystem in place) and a number of opportunities (market demand for RPM, ambitious legislative targets for recycling, etc). The key question today is how successfully France can surpass some of its structural weaknesses and best address emerging threats. The table below summarises these main strengths, weaknesses, opportunities and threats.

Table 5 SWOT analysis of the French circular plastics sector

Strengths	Weaknesses
<ul style="list-style-type: none"> • Expertise in the plastics sector in terms of materials and processes • Thriving chemical sector • A mature and expert ecosystem in place • Growing demand for recycled plastic • Public measures available to help industry transition towards recycled materials 	<ul style="list-style-type: none"> • Volatility of raw material costs and sourcing difficulties • Low market trust in bio-alternatives (recycled, biobased, biodegradable) • Technical difficulties in integrating recycled plastics in some sectors (e.g., food packaging) • Insufficient quality and quantity of RPM
Opportunities	Threats
<ul style="list-style-type: none"> • Ambitious legislative targets for recycling and circular plastics • Untapped potential for growth in some sectors (packaging, automotive...) • Market willingness to integrate RPM and eco-design in their processes • Chemical recycling is still in its early stages, but has strong potential to act as an alternative to mechanical recycling 	<ul style="list-style-type: none"> • Difficulty in capturing certain plastic waste due to dispersive use • Competition from virgin material • Strong technical requirements regarding the quality of RPM • No sorting or recycled schemes for bioplastics exist today (except for PLA)

As underlined in section 2, the waste sector is complex from a regulatory perspective, which does not always make the transposition of practices from one country to another possible. Nevertheless, the plastics sector is international and many French plastics companies already work with customers or suppliers in Europe.

Current opportunities for Dutch companies in the French circular plastics sector today are mainly concentrated in the design phase of products as well as in the end-of-life phase. The Netherlands is perceived by French actors as a country with better collection rates and key expertise in chemical plastics recycling. As well as improving the design of products so that they retain their value for longer, it is essential to better capture plastic waste and to increase the quality and quantity of recycled plastics. The research suggests that there are opportunities for collaborative R&D and manufacturing for circular plastics (improved sorting technology, biomass recovery, upcycling). Some opportunities (not exhaustive) for Dutch players are presented in the table below.



Table 6 Opportunities for the design and manufacturing phase

Value chain scope	Missing solutions in France
Eco-design	<ul style="list-style-type: none"> The integration of RPM in industry is still very low (under 5% across all sectors). There is a growing need for locally sourced, good quantity and quality RPM for industry. The automotive sector is increasingly using new, less carbon-intensive materials and turning to reinforced plastics (bodywork, structural parts, windscreens). Other sectors are also turning to improved plastics (conductive or self-repairing plastics) to replace materials such as glass, metal and concrete. There is growing demand for such “improved” plastics.
Alternatives to plastic	<ul style="list-style-type: none"> With progressive single-use plastic bans, demand for plastic alternatives is growing in several product categories, namely disposable cutlery, alternatives to water bottles in cultural events, filling stations in supermarkets, etc. The packaging sector in France, notably for food, is undergoing a transition. There is a growing demand for virgin plastic alternatives, and notably biobased plastics (PLA, starch-based plastics, cellulose base plastics).



Table 7 Opportunities for the end-of-life phase

Value chain scope	Missing solutions in France
Sorting/recycling	<ul style="list-style-type: none"> The extension of sorting instructions for plastics in France will make the final disposal more complex and modify the work of recycling companies. Improved technological solutions for sorting, by exploring innovations such as infrared or triboelectricity are needed. There is a growing demand for chemical recycling as a complimentary solution to mechanical recycling. The Netherlands is considered among the leading countries in chemical recycling with a high proportion of young companies specializing in this area (depolymerisation, gasification, pyrolysis).
Bioplastic recovery	<ul style="list-style-type: none"> Recycling abilities of bioplastics are largely ambiguous today. R&D cooperation is necessary to develop appropriate end-of-life management. A common reflection by Franco-Dutch players could be conducted on tracers to better identify and recycle bio plastics (e.g., labels). It is also necessary to develop material recovery schemes and green chemistry for such plastics.
Plastic pollution and recovery	<ul style="list-style-type: none"> The recovery of plastics in the sea and rivers is a major challenge in France today. Solutions are required for the collection and detection of micro- and nano-plastics in the ocean. Existing Dutch solutions could solve this challenge (e.g., Ocean Cleanup).
Biomass recovery	<ul style="list-style-type: none"> France is a major agricultural power with an emerging biomass market. The Netherlands has a strong expertise in plant-to-plastics technology, converting biomass to plastics (e.g., Avantium). There are opportunities for Dutch renewable chemical technologies to tap into the French market.
Upcycling	<ul style="list-style-type: none"> There are largely untapped collaborative R&D opportunities to optimise the composition of plastics for upcycling rather than recycling. Players in the chemical industry sector could be strong partners. Opportunities should be considered with Axelera for instance.

3.2 Opportunities for cooperation in research and innovation

Several opportunities for R&D cooperation were presented in the tables above. The two following subsections aim to present the scene for public and private R&I/D in France.

- Public R&D

A broad and diverse number of research organisations are involved in the plastics industry in France. The competitiveness cluster POLYMERIS alone has over 50 members active in research and innovation.

Public institutes specialised in chemistry are particularly active in R&I for plastics. Among the key players are:

- National Centres for Scientific Research (CNRS) (especially in Strasbourg)
- National Institutes for Applied sciences (INSAs)
- Higher education institutions: Higher School of Chemistry, Physics and Electronics of Lyon¹⁴, National Chemistry School of Lille¹⁵, “Écoles Centrales”, Écoles Nationales Supérieures d’Arts et Métiers (ENSA)).

A concentration of stakeholders is observed around Lyon and in the Grand Est region (University of Upper-Alsace, University of Lorraine and its PFT PLASTINNOV laboratory, ITheMM-URCA, Crittmdts). The Institut Énergies nouvelles (IFPEN), previously the French Institute of Petroleum (IFPEN) is also a key player, specialised in the chemical recycling of plastics.

- Private R&D

The recycling sector is largely driven by SMEs (plastics manufacturers and regenerators). Most of the large groups outsource their recycling but internalise their eco-design processes. Research proposals are often submitted by large groups, but as prime contractors.



Table 8 Private R&D collaborations

Research sector	Examples of ongoing initiatives
Recycling	<ul style="list-style-type: none"> • Carbios is a reputed start-up in France. It hosts an industrial application of enzymes making plastic waste compostable. • Suez and Loop Industries are partners in the creation of the first infinite Loop facility producing 100% recycled and infinitely recyclable plastics in Europe. Suez also created a specific laboratory for circular plastics in 2014. • RUSTINE is a collaborative research and development project involving 4 companies (GALLOO PLASTICS, WIPAK, NUTRIPACK and PSA) and 2 academic laboratories (UMET and ARMINES) whose objective is the development of a decontamination process for plastic waste from different sectors.
Bioplastics	<ul style="list-style-type: none"> • Michelin, IFPEN and Axens have announced the construction of the first industrial demonstrator in France for the production of butadiene from bio-sourced ethanol.

3.3 Recommendations for approaching the market

A variety of support tools for doing business in France are available for Dutch companies interested in doing business in France. A wealth of information is already available online, such as the [Do's and Don'ts](#) to doing business in France by RVO, as well as an [e-learning MOOC](#).

¹⁴ Name in French : Ecole Supérieure de Chimie Physique Électronique de Lyon

¹⁵ Name in French : Ecole Nationale de Chimie de Lille

A brief description of French public organizations that can assist Dutch ones in approaching the market is available in the table below.

Table 9 Key support organisations for Dutch companies in France

Name	Description
Dutch economic network in France (Embassy, RVO, NBSO)	The Dutch Economic Network in France provides business support to Dutch entrepreneurs, companies and research institutes. It is composed of the Embassy in Paris and two Netherlands Business Support Offices, in Lyon and Nantes. In collaboration with the Netherlands Enterprise Agency (RVO), they work as one team to facilitate Franco-Dutch collaboration and assist Dutch companies to set up their business in France
Business France (BF)	BF is a public organization that connects French and foreign companies. BF identifies the circular economy as a potential market for French companies: waste sorting technology, chemical recycling, software companies with eco-design solutions, bioplastic companies, etc. The organization provides support, services and advice to foreign companies. Foreign companies can approach BF to find land, manage administrative elements of relocation, partner searches, etc. Its branch "Choose France/Invest in France" helps attract FDI and refers companies to regional partners (CNER) for a better understanding of their needs.
Economic development agencies (CNER)	Regionally, BF works with a support network CNER. In Lyon, the agency is called Aderly - Invest in Lyon. Large industrial projects received by BF are usually delegated to these regional agencies. Regional agencies help French and foreign companies find a site to set up their businesses, put them in touch with the ecosystem, clusters, R&D centres, start-ups, find financing, and accompany the transfer of employees.

If your company is looking to set up collaborations in France, our main suggestions are:

1. Start by contacting the economic section of the Dutch Economic Network, the key Dutch organisations facilitating trade relations between both countries. VNO-NCW have also recently opened the Netherlands Business Council France in Paris to help Dutch companies in France¹⁶.
2. Get in touch with clusters/"pôles de compétitivité" mentioned in section 1.3. They are the key entry point for contact with local businesses (large and small), as well as research players. They regularly work with international organisations and companies to set up collaborative projects in a European context. Matchmaking and collaboration opportunities are directly listed either on the websites of such clusters or through the [European Cluster Collaboration Platform](#). Build your network by attending some of the trade fairs mentioned in [Appendix A](#). This is essential to get to know the market better and approach companies.
3. If you are looking to set up a subsidiary and work in France, Business France has released a [Doing Business Guide](#) (in English), providing key information for investors on a wide range of regulatory, tax and employment law topics. Business France and their regional development agencies (CNER) are the most trusted organisations to set up a subsidiary.

We hope that this report has given you a good overview of the circular plastics sector in France today and in particular of the opportunities available for Dutch companies. We truly believe that it is an exciting time to work in France and to take part in the industrial transition at work. Don't hesitate to contact the Dutch Economic Network in France for any requests or questions.



List of acronyms

ADEME : Agence de la transition écologique

ADERLY – Invest in Lyon: ADERLY

AURA: Auvergne-Rhône-Alpes

B2B: Business-to-Business

B2C: Business-to-Consumer

Bpi : Banque Publique d'Investissement

BF : Business France

CNRS : Centre national de la recherche scientifique

CNER : Fédération des agences de développement économique

EPR: Extended Producer Responsibility

FDI: Foreign Direct Investment

GPP : Green Public Procurement

INSA : Institut National des sciences appliquées

NBSO: Netherlands Business Support Offices

PDR: Plan de Relance

PRO: Producer responsibility organisations

PIA: The Programme Investissement d'Avenir

R&D&I: Research, Development and Innovation

RPM: Recycled Plastic Material

RVO: Rijksdienst voor Ondernemend Nederland

SME: Small and Medium size enterprise

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Appendix A Trade fairs and events – Full list

Name	Description	Location	Upcoming dates	Relevant sectors
Trade fairs for businesses				
Pollutec	Created in 1978, Pollutec is now recognised as the benchmark event for environmental professionals, a showcase for environmental solutions for industry, cities and territories, and a springboard for market innovations and international development.	Lyon	12-15 October 2021	Waste management; Water Management; Energy & Energy Efficiency; Polluted sites and soils; Sustainable cities and buildings; Air Quality, Odours, Noise; Instrumentation, Metrology, Analysis; Risk management and prevention; Biodiversity & Natural Environments
FIP	Biggest fair for the plastics sector in France. Objective to promote the performance of a high-tech, competitive and responsible plastics industry with over 10,000 visitors and 800 exhibitors.	Lyon	5 - 8 April 2022	Plastic Transformers; Injection moulding ; Thermoforming ; Materials ; Extrusion welding. There are three main exhibitions : <ul style="list-style-type: none"> • FIP, for technologies, materials and services in the sector. • FIP Valorize, the circular economy solutions area for the plastics industry. • FIP Transform, the transformers' area, which facilitates meetings with the contractors.
Global Industrie	Important fair for material players in France, not solely focused on plastics. The vent brings together 45 861 visitors and more than 2500 exhibitors.	Lyon	6 – 9 September 2021	Waste Management; Water; Mobility; R&D; Lighting ; Carbon ; Electronics ; Industrial fixing & Assembly ; Monitoring ; Environmental solutions ; Smart Tech ; 3D ; Manufacturing.
JEC World - le salon de l'industrie des composites	Leading international exhibition dedicated to composite materials and their applications. Overview of the plastics' the value chain, from raw materials to producers to processors, & processors to users. 1 300 exhibitors for 45 000 visitors.	Villepinte	08 March 2022 to 10 March 2022	Composite Materials Industry Features hundreds of product launches, award ceremonies, competitions, conferences, live demonstrations and networking opportunities.
Paris Motion Festival	Formerly the Paris Automobile Fair, the Paris Motion Festival features three events including : Movin'On (eco-friendly mobility), Paris Motor Show (automobile innovation), and Special Events (arts and culture in mobility).	Paris	26 - 28 October 2021	Mobility (pedestrian, cyclist, motorized vehicles etc.), automobile industry, alternative energies, urbanism.

ALL4PACK Emballage Paris	<p>Packaging fair, oriented towards sustainable development by supporting user industries in their search for solutions that combine sustainability, performance and profitability.</p> <p>The business salon takes into account the Agec law and new sustainable practices.</p> <p>1350 exhibitors and 7 900 visitors.</p>	<p>Paris- Nord Villepinte Exhibition Center</p>	<p>2022</p>	<p>Plastics; Paper & Cardboard; Glass; Metals; Wood; Alternative Materials Packaging; Processing; Printing; Logistics.</p>
Batimat - Le salon professionnel de la construction	<p>Fair for the construction sector.</p> <p>5 Mega trends will structure the salon : User & Residents' expectations ; Productivity & Efficiency ; Environment & Resource Management ; Profession & Skills ; Climate & Resilience</p>	<p>Paris Porte de Versailles</p>	<p>3 - 6 october 2022</p>	<p>Building, Construction, and Architecture.</p>
Industrie du futur, BS 4.0 Mulhouse	<p>Situated between the French, Swiss, and German industry sectors.</p> <p>5 tri-national sessions, Franco-German feedback and perspectives led by Franco-German journalists, and translated simultaneously into French and English.</p> <p>Numerous meet-ups (conferences, masterclasses, workshops...) to discover expertise, products, and experience.</p> <p>Pitching by start-ups.</p> <p>4,114 visitors for 273 exhibitors.</p>	<p>Mulhouse</p>	<p>November 30th 2021 December 1st 2021</p>	<p>Main actors of the salon are universities, institutional actors, clusters, companies, start-ups.</p> <p>The objective is to create a pathway towards Industry 4.0, which includes the following sectors :</p> <p>IOT & Connectivity; Energy & Sustainable Production ; Artificial Intelligence & Cyber; Supply Chain; Innovation Management; Financing; Digital; Customer Relations; Advanced Production Technologies.</p>
Salon Fédérec	<p>Fair organised by the leading trade organisation for recycling in France, FEDEREC.</p> <p>Represents 1,200 companies (multinationals, SMEs, ETIs) spread throughout France and whose activity consists in the collection, sorting, material recovery of industrial and household waste or the trading/brokerage of Raw Materials from Recycling (RPM).</p>	<p>Le Bourget</p>	<p>Every two years</p>	<p>Recycling.</p> <p>There are 12 sectors in detail : WEEE (Waste from Electric and Electronic Equipment); Construction; Automobile Deconstruction; Wood; Non-Ferrous Metals; Metals; Plastics;</p> <p>Paper & Cardboard; Petro-Chemical Solvents; Textiles; Glass; Solid Recycled Fuel.</p>
<p>Public events not solely focused on business</p>				
Ecotech plastics and packaging meeting - Second edition	<p>Ecodesign event for businesses organised by the Ministry of Ecological Transition</p>	<p>La Défense & online</p>	<p>1st-2nd July 2021</p>	<p>All sectors</p>






Appendix B List of organisations interviewed






- ADEME - National office (public stakeholder)
- ADEME Grand Est (public stakeholder)
- ADEME Hauts-de-France (public stakeholder)
- Métropole de Lyon, Vallée de la Chimie (public stakeholder)
- Métropole de Lyon, Département cleantech (public stakeholder)
- Business France (public stakeholder)
- Citeo (eco organism)
- Polymeris (cluster)
- Comité stratégique de la filière (CSF) Transformation et valorisation des déchets (public stakeholder)
- Materialia (cluster)
- FEDEREC (trade organisation)
- ADERLY (regional development organisation)
- VNO-NCW (federation)
- Polyloop(start-up)
- PAPREC (large company)



Appendix C Long list of innovative French companies

This Appendix includes the full list of companies recently mentioned as innovative or fast-growing within the Chemical/Renewable/Recycling plastics sector, focusing on scale-up company size. A majority of these companies, excluding a few*, do not yet have international partners.

Name	Size	Region	Description
Companies active in recycling			
Paprec* 	Large	Ile-de-France	<p>Historically a major French recycling company focusing on paper and plastics, now also looking into energy transformation from waste. 60% of their turnover is generated with professionals, not consumers.</p> <p>Paprec works with the GUILLIN Group to reinforce the eco-design of their products and the integration of recycled plastic inside their food packaging.</p> <p>Paprec works with Dutch companies today but has no ongoing joint-venture.</p>
Michelin* 	Large	Clermont-Ferrand	<p>French multinational tyre manufacturing company. The company has become invested in the circular economy topic for a number of years.</p> <p>The company is involved in several R&D projects related to the CE, including the Black Cycle project, financed by H2020, which aims to enable a massive circular economy of tyres.</p> <p>It is also involved with Canadian company Pyrowave to industrialise an innovative plastic waste recycling technology which will help to recycle difficult plastic products (e.g., polystyrene).</p> <p>In addition, Michelin recently became a majority shareholder in Carbios, a start-up specialised in chemical recycling (Carbios is also presented in this table).</p>
Veka 	Medium	Grand Est	<p>Fully automated PVC waste reprocessing plant. Specialised in the integration of recycled PVC aggregates. The sale of virgin-based PVC windows and doors is under close scrutiny by French legislators today.</p>
Hainaut Plast Industry (HPI) 	Medium	Hauts-de-France	<p>Company specialised in the regeneration and recovery of polyvinyl Butyral (PVB). The company aims to invent a recovery solution for PolyVinyl Butyral (PVB), a thermoplastic polymer used to assemble glass and manufacture laminated glass. It has already received significant support from the public sector.</p>
Skytech 	Medium	Ile-de-France	<p>SKYTECH is a spin-off of APR2, a company specialised in the collection, dismantling and recycling of waste electrical and electronic equipment (WEEE).</p> <p>SKYTECH produces premium regenerated plastics in pellet form from 100% recycled waste from end-of-life vehicles (ELV) and electrical and electronic equipment (WEEE). All SKYTECH plastics are available at competitive prices compared to virgin resins.</p>

<p><u>Carbios*</u></p> 	Small	Auvergne-Rhône-Alpes	Carbios are a successful green chemistry startup that has attracted a lot of attention in France. It is a pioneer business in the design and development of enzymatic processes to rethink the end-of-life of plastics and textiles.
<p><u>Cycl-Add</u></p> 	Start-up	Auvergne-Rhône-Alpes	Company specialised in the transformation of waste into recycled plastics.
Companies active in alternative plastics			
<p><u>Lactips</u></p> 	SME	Auvergne-Rhône-Alpes	Company specialised in the design and development of bio plastics (natural polymer biodegradable in aquatic settings). Lactips recently raised 13Meuros.
<p><u>Embellium</u></p> 	Small	Occitanie	Company specialised in the production of biobased substitutes to polystyrene.
<p><u>Furamat</u></p> 	Small	Centre-Val-de-Loire	Company active in the development bioplastics both fully and partially biobased with diverse properties and applications. Actively looking for international markets.
<p><u>Roquette Frères</u></p> 	Large	Hauts-de-France	Company which produces more than 650 by-products from the starch extracted from corn, wheat, potatoes and peas. In 2015, the company announced it would stop producing bioplastics, arguing that the European context is unfavourable to the production of bioplastics.

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