MINISTER
FOR THE ECOLOGICAL
TRANSITION

Liberté
Égalité
Fraternité

D A

TRANSITION

T A

L A B

Key indicators for monitoring the circular economy

2021 Edition

APRIL 2021

STATISTIQUE PUBLIQUE

contents

Key indicators for monitoring the circular economy
2021 Edition

Document edited by:
The data and statistical studies department (SDES)

Publication available in HTML on
www.statistiques.developpement-durable.gouv.fr

contributor

CS

Chrystel **Scribe**

chrystel.scribe@developpement-durable.gouv.fr

SDES writers
Philippe Calatayud
Mélanie Gauche*
Frédéric Nauroy

With thanks to:
Rachel Baudry, Jean-Louis Bergey, Cyrielle Borde, Claire Pinet (Ademe) ; Murielle Gauvain (Afnor) ; Vincent Coissard (DGPR) ; Clément Lacorne (Department of Customs) ; Benoît Duret (Mydiane) ; Nathalie Boyer, Stevan Vellet (Orée) ; Gertrud Maes (Repair Café International).

* working for the SDES at the time of writing

foreword

Reducing the amount of raw materials we extract from the earth is crucial for our current economy, as well as for future generations. Some materials are finite while others, although renewable, must sustain their ability to renew themselves.

The circular economy allows us to move from a linear mode of production and consumption – extract, make, consume and waste – to a circular model. This transition, as set out in the Law of 17 August 2015 on the energy transition for green growth (LTECV) and the Law of 10 February 2020 on the prevention of waste and the circular economy, is primarily based on the careful and responsible use of natural resources, particularly raw materials. Actions to be taken, with associated targets, have been defined at both French and European level to speed up the change in production and consumption patterns in order to reduce waste and preserve natural resources, biodiversity and the climate.

Based on a selection of indicators covering the seven pillars of the circular economy, the purpose of this publication is to report on the circularity of the French economy, updating the first publication of 2017 on this subject. International comparisons provide insight into France's position relative to its European neighbours.

— Béatrice Sédillot
HEAD OF THE DATA AND STATISTICAL STUDIES DEPARTMENT (SDES)

part 1

What is the circular economy concept?

—The idea first emerged in the 1970s. The circular economy is an economic trading and production system which, at all stages of the products lifecycle (goods and services), aims to increase the efficiency of resource use and reduce the impact on the environment, while benefiting society. In recent years, various legislative provisions with targets and action plans have sought to promote this type of economy.

Article L.110-1 of the Environment Code, created by Article 70 of the 2015 Energy Transition Law for Green Growth and amended by Article 2 of the Law on the prevention of waste and the circular economy of 10 February 2020, states that: "the transition to a circular economy aims to achieve a zero environmental footprint in the context of respecting planetary boundaries and to move beyond the linear economic model of extract, manufacture, consume and waste by calling for careful and responsible consumption of natural resources and primary raw materials and, in order of priority, the prevention of waste generation, in particular by reusing products, and, according to the hierarchy of waste treatment methods, re-utilisation, recycling or, failing that, the recovery of waste. The promotion of industrial symbiosis and the ecological design of products, the use of materials from sustainably managed renewable natural resources and from recycling, green public procurement, extension of product lifespans, waste prevention, the prevention, reduction or control of the discharge, release of pollutants and toxic substances, treatment of waste in accordance with the hierarchy of waste management, cooperation between economic stakeholders at the relevant regional level in compliance with the principle of proximity and the development of use and sharing values and information on their ecological, economic and social costs all contribute to this new prosperity".

The National Strategy for Ecological Transition to Sustainable Development (SNTEDD) 2015-2020 states that "this new circular economy model, low in carbon and natural resources, can be defined as an economic system of production, exchange and consumption designed and organised to minimise the net extraction of resources (fossil fuels, raw materials, water, land, environments) and polluting emissions, which are the source of negative environmental and health impacts, both locally and globally".

The roadmap for the circular economy (FREC), published in April 2018, sets out the operational details of the transition to be made from a linear economic model based on a system of "take, make, dispose", to a circular model that will integrate the entire life cycle of products, from their eco-design to waste management, including, of course, their consumption by limiting waste. It includes 50 measures to produce better, consume better, generate less waste and engage stakeholders.

The law on the prevention of waste and the circular economy of 10 February, 2020 aims to speed up the change in the production and consumption model so as to limit waste and preserve natural resources, biodiversity and the climate. It is structured around five main areas: getting rid of disposable plastic, better informing consumers, preventing waste and promoting cooperative re-use, tackling premature obsolescence and better manufacturing.

In the new Action Plan for the Circular Economy of 11 March 2020, the European Commission intends to make a decisive contribution to achieving climate neutrality by 2050 and decoupling economic growth from resource use, while ensuring the long-term competitiveness of the European Union. This involves working towards keeping our resource consumption within planetary boundaries, and therefore striving to reduce our consumption footprint and double our rate of circular use of materials over the next decade.

The circular economy is usually described in terms of three policy areas and seven pillars. The indicators selected in this report are intended to illustrate each of these areas and pillars.

The circular economy
3 areas
7 pillars

Source: *Ademe*

part 2

What indicators can be used to monitor the circular economy?

— Eleven indicators covering the seven pillars are used to report on the circularity of the French economy. These indicators mainly update those used in the first publication of 2017, *10 key indicators for monitoring the circular economy*.

In 2017, a first report, *10 key indicators for monitoring the circular economy,* identified a set of indicators covering different aspects of the circular economy, as defined by the law on energy transition for green growth of 2015. These indicators, which were deliberately restricted in number, were chosen because of their inclusive nature and, for the most part, their accessibility at European level. In 2021, it was decided to maintain these indicators as far as possible, to see how they developed over time.

Six indicators focus on the upstream part of the circular economy cycle, centred on the supply side of the economy (extraction/manufacturing and sustainable supply chain, eco-design, industrial symbiosis and the functional economy). Two indicators highlight consumer demand and behaviour (responsible consumption and extension of product lifespan) and two indicators focus on the downstream cycle, relating to waste management (recycling). Finally, a last indicator relates to jobs and covers two pillars: extending product lifespan and recycling.

Several improvements have been made compared to the 2017 report:

- the "extraction/manufacturing and sustainable supply chain" pillar is enhanced with a new indicator, the material footprint, which better reflects the environmental pressure actually exerted by material consumption;
- European Ecolabel licences are now fully accounted for, allowing for better European comparability;
- the pillar of the functional economy is illustrated by the number of companies and local authorities that have benefited from an Ademe support mechanism on the functional economy. This indicator covers a wider field than car-sharing frequency, which also could not be updated;
- the indicator on household spending on maintenance and repair no longer includes spending on private vehicles, as the amount of this spending, as well as its trend, is determined by multiple factors beyond the circular economy alone (e.g. fleet size and structure). An inset on "Repair Cafés" has been added, illustrating the development of a repair support offer to households;
- the indicator on the inclusion of recycled raw materials has been augmented by a section on the CO_2 emissions avoided thanks to recycling.

Two indicators could not be fully updated:

- food waste has been continued without updating the data. Only the legislative part has been updated;
- circular economy employment had to be restricted to the repair and recycling sectors, due to lack of available data.

Domestic material consumption per capita

The demand for goods and services by economic stakeholders in the national territory requires the extraction of raw materials from the country and the import of raw materials that cannot be produced locally. The sum of the materials extracted from the territory and imported, minus the materials exported, results in the domestic material consumption (DMC). It is the quantity of material directly consumed by the region's population for its own needs. This indicator is one of the 2030 Sustainable Development Goals set by the United Nations (UN).

PILLAR

Extraction / manufacturing and sustainable supply chain

OBJECTIVE

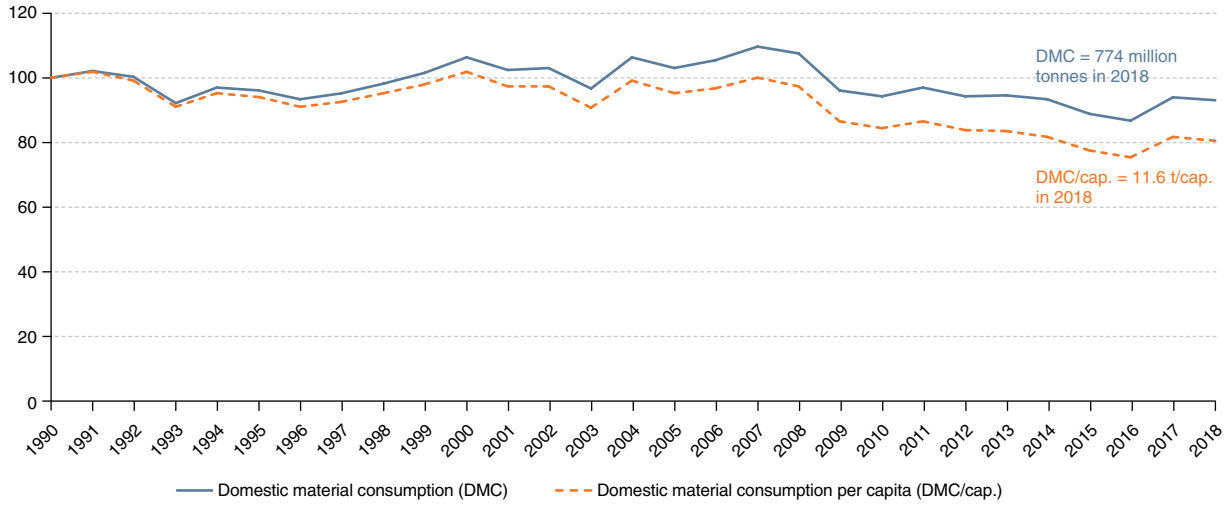
As stated in article 74 of the law of 17 August 2015 on the Energy Transition for Green Growth (LTECV), France's objective is to reduce its per capita DMC.

TREND

Between 2007 and 2018, domestic material consumption fell by 19%, from 14.3 tonnes per capita (t/cap) to 11.6t/cap. Construction materials, especially those related to public works infrastructure, have contributed significantly to this decrease: they account for almost half of the total materials consumed in France and have been consumed less following the economic crisis of 2008.

Trend in domestic material conumption per capita

Index base 100 in 1990



Sources: *Agreste/SSP; French customs department; Insee. Statistical processing: SDES, 2021*

ANALYSIS

Domestic material consumption quantitatively demonstrates one of the pressures on the environment and shows how resource-efficient behaviour is.

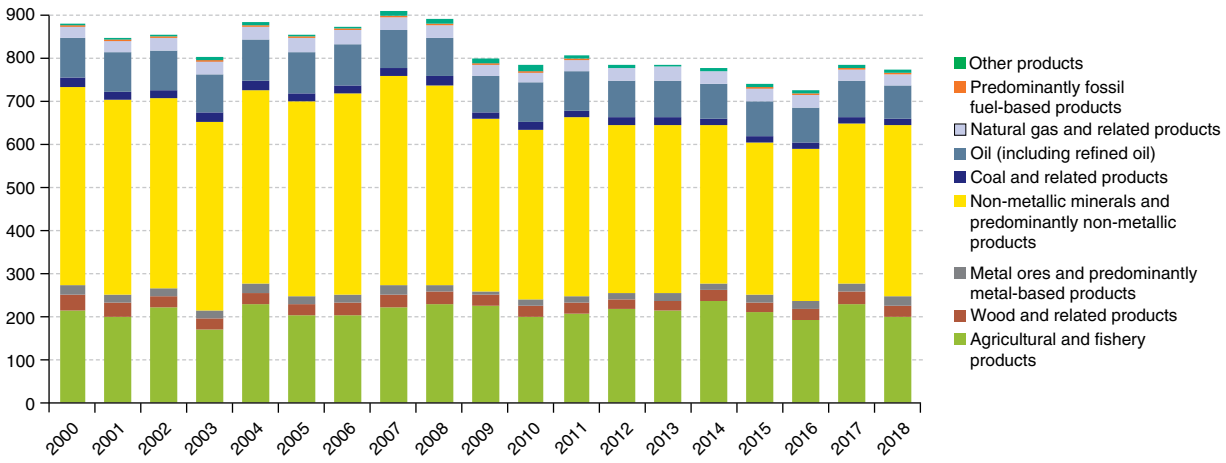
DMC was fairly stable during the 1990s and 2000s, at around 14 tonnes per capita (t/cap.), before falling significantly during the 2008 recession, stabilising at around 12t/cap. between 2009 and 2013. It went down again between 2013 and 2016, before rising in 2017 (11.7t/cap.) and settling at 11.6t/cap. in 2018.

Some of the materials consumed are renewable (biomass, i.e. mainly products from farming and fisheries, as well as wood). Others are not: minerals (ores, metallic and non-metallic) and fossil fuels (water is not included in this indicator). Minerals (398 million tonnes - Mt - in 2018) are mainly used in construction and make up half of the materials consumed in France (total of 774 Mt in 2018). Biomass (254 Mt in 2018) represents about a third. Fossil fuels, of which two-thirds are petroleum products, account for about 16% of the total. Europe's collective classification of the most critical non-ferrous metallic minerals does not currently enable flows of these substances to be monitored.

As well as changes in civil engineering activity, fluctuations in agricultural production have significantly contributed to changes in material consumption since 2013.

Changes in the composition of domestic material consumption

In millions of tonnes



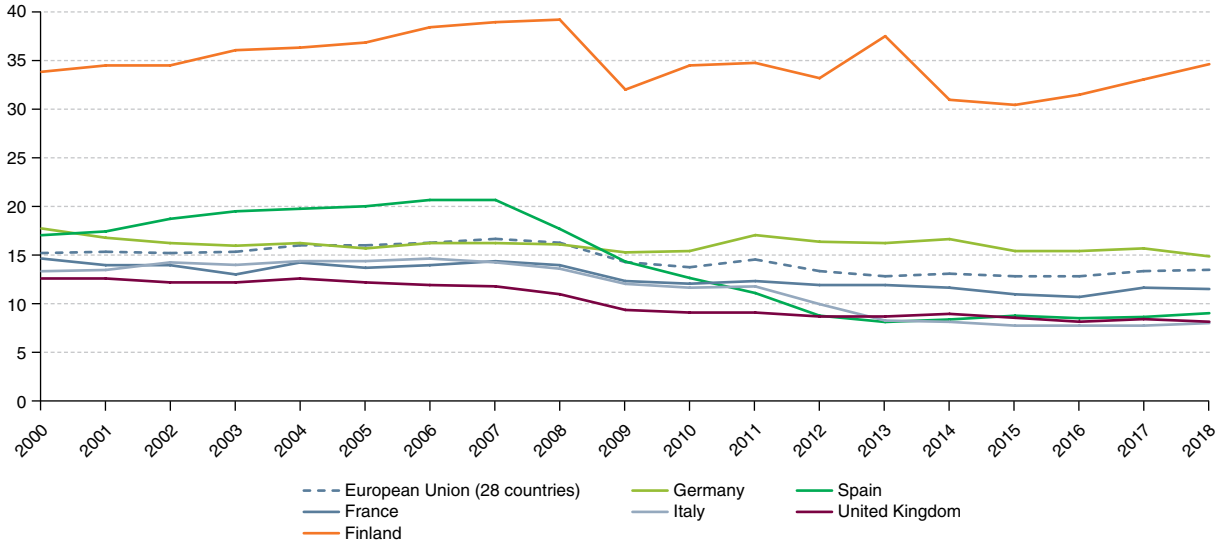
Note: DMC = domestic extraction used + imports - exports.
Sources: *Agreste/SSP; Unicem; French customs office; Eurostat. Statistical processing: SDES, 2021*

INTERNATIONAL COMPARISON

In 2018, the average European domestic material consumption stood at 13.5 t/cap. Globally, Australia exceeds 38t/cap., China and the US respectively 25 and 20t/cap., vs. 9 for Japan. The European countries with the highest material consumption per capita are Finland (35t/cap), then Norway and Estonia with about 30t/cap. The lowest levels are in Italy, Spain and the UK, at between 8 and 9t/cap. Countries with a higher level of material consumption per capita than the European average often have a low population density. These include Scandinavian countries and Australia, which have a high per-capita consumption of construction minerals, likely due to the need for materials to build infrastructure (road networks, etc.) to develop large, sparsely populated territories.

Material consumption trends in the European Union (EU28)

In tonnes/capita



Source: *Eurostat. Statistical processing: SDES, 2021*

FOR MORE INFORMATION

- Environmental information portal notre-environnement: évolution de la consommation intérieure de matières en France
- Eurostat: Energy, transports & environmental statistics (MFA, p.123-129) - 2019 Edition
- OECD: Material resources, productivity and the environment, *Green Growth Studies*, 2015
- UNEP: IRP, Global Material Flows Database

Resource productivity

Resource productivity is the ratio of gross domestic product (GDP) to domestic material consumption (DMC). This indicator measures the transition to a more resource-efficient economic system. It is one of the 2030 Sustainable Development Goals set by the UN.

PILLAR

Extraction / manufacturing and sustainable supply chain

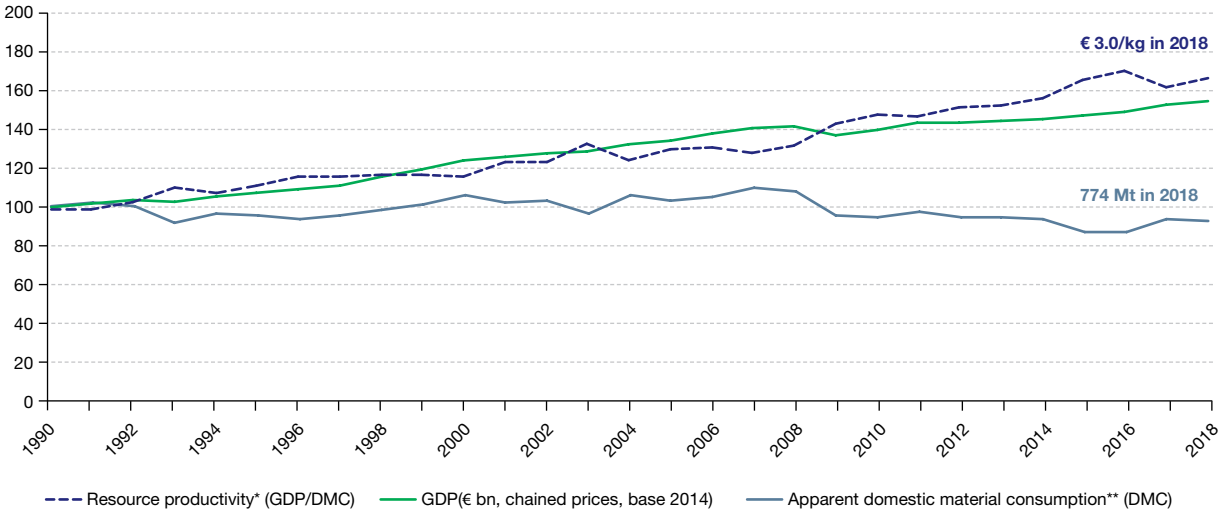
OBJECTIVE

France aims to gradually decouple growth from its consumption of raw materials. Accordingly, Article 74 of the Energy Transition Law for Green Growth of 17 August 2015 aims for an increase between 2010 and 2030 of 30% in the ratio between its GDP and its domestic material consumption, also known as resource productivity.

TREND

Resource productivity rose by 12% between 2010 (€ 2.63/kg) and 2018 (€ 2.96/kg), with the target for 2030 set at € 3.42/kg. In 2007, before the 2008 crisis, resource productivity was €2.28/kg.

Resource productivity trends
Index base 100 in 1990



** By volume, chained prices, base 2014.*
*** The apparent domestic material consumption combines, in tonnes, fossil fuels, mineral and agricultural products, extracted from the country (metropolitan France and overseas departments) or imported in the form of raw materials or finished products, minus exports.*
Sources : *Agreste; French customs office; Insee; SDES; Unicem. Statistical processing: SDES, 2021*

ANALYSIS

The decline in domestic material consumption (DMC) since 2008 is largely due to a reduction in the use of construction materials following the 2008 recession, which account for about half of DMC. As the civil engineering sector is more material-intensive than others, this has resulted in an increase in the resource productivity ratio, which stood at € 2.96/kg in 2018, vs. € 2.63/kg in 2010, i.e. growth of 12%.

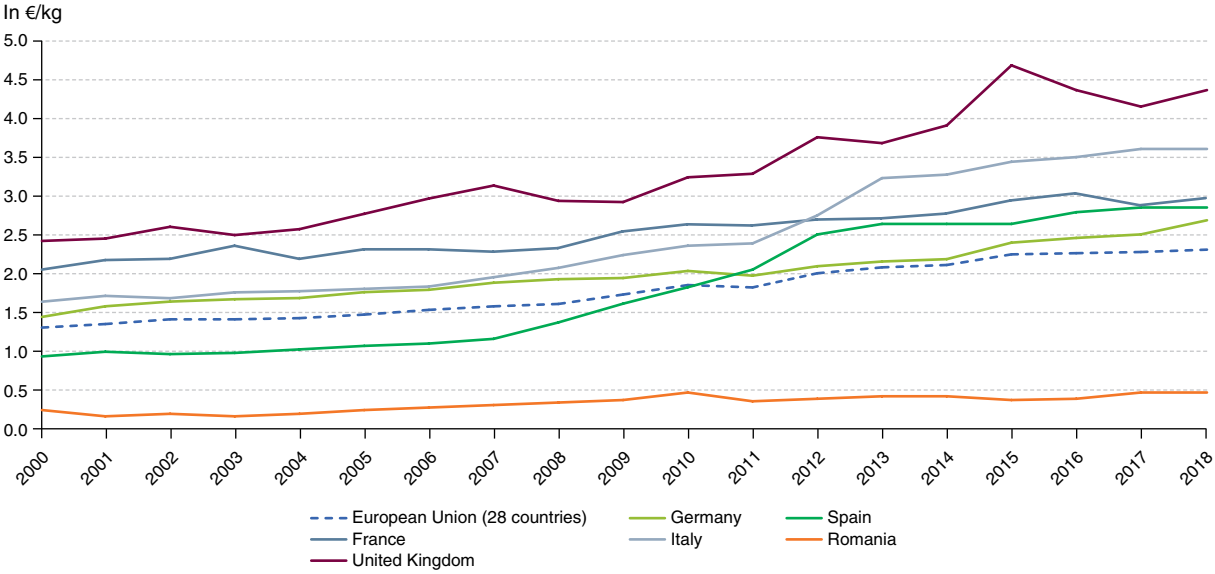
This trend can be explained by the fact that the national economy needs less resources to produce the same amount of wealth (value added). As such, generating € 1 (current) of additional wealth required 380 grammes of materials (1/2.63) in 2010, while in 2018, it only required 338 grammes.

This gradual decoupling of material consumption from economic growth must be put into perspective by the high proportion of construction materials, whose specific pattern determines the overall picture (the construction sector accounts for 6% of value added, but nearly 50% of material consumption).

INTERNATIONAL COMPARISON

In 2018, in Europe,average resource productivity was € 2.30/kg. The only European Union (EU) countries with a higher resource productivity than France are the Netherlands, the UK, Luxembourg, Italy and Belgium. Bulgaria, Estonia and Romania have the lowest resource productivity in the EU.

Resource productivity in the European Union



Source: *Eurostat. Statistical processing: SDES, 2021*

FOR MORE INFORMATION

- Environmental information portal notre-environnement: productivité matières et facteurs d'évolution du besoin de l'économie
- Eurostat: Energy, transports & environmental statistics (MFA, p.123-129) - 2019 Edition
- OECD: Material resources, productivity and the environment, *Green Growth Studies*, 2015
- UNEP: IRP, Global Material Flows Database
- Produire plus avec moins de matière, pourquoi ?, CGDD/Seeidd, *Théma Essentiel*, mars 2017

Material footprint

To measure the environmental pressure on materials actually exerted by a region, all the raw materials used to cater to a country's end consumption must be taken into account, i.e. the materials directly contained in the products consumed, as well as the materials needed to manufacture them, whether domestic or imported. This is the aim of the material footprint. Expressed as "raw material equivalents", this indicator is one of the 2030 Sustainable Development Goals set by the UN.

PILLAR

Extraction / manufacturing and sustainable supply chain

OBJECTIVE

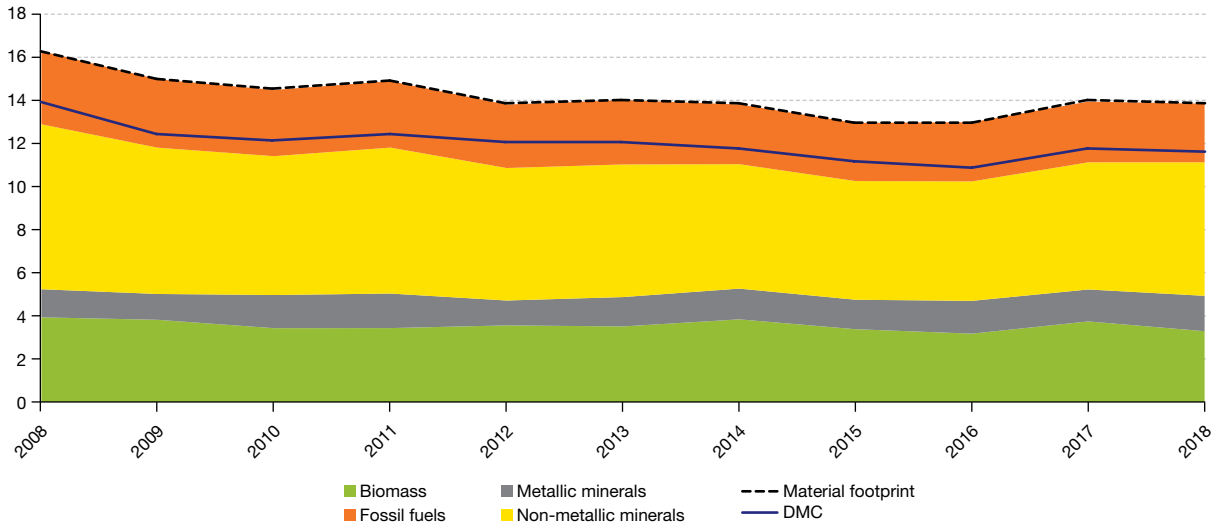
In a context of increased consumption of materials worldwide, the implementation and monitoring of circular economy policies require better knowledge of the flows generated by national economies. The material footprint takes into account all the raw materials used to cover a country's final consumption, both those extracted from the national territory and those used directly or indirectly abroad to produce and transport imported products.

TREND

Estimated at 16 tonnes per capita (t/cap.) in 2008, the material footprint stabilised at around 14t/hab. between 2009 and 2014. It then fell before rising back to its former level (14t/cap. in 2017 and 13.9t/cap. in 2018).

Material footprint trend by main category

In tonnes per capita

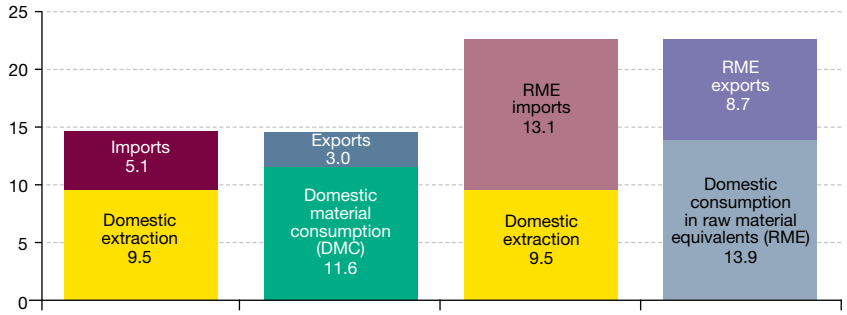


Sources: *SDES; French customs office; Eurostat. Statistical processing: SDES, 2021*

Definition of material footprint

A concept similar to carbon or water footprints, the material footprint (or RMC: *Raw Material Consumption*, domestic consumption in raw material equivalents) is a recent indicator, using the methodology recommended by Eurostat ("RME tool" for *Raw Material Equivalents*).

Material flows, nominal and in raw material equivalents (RME), in France, in 2018
In tonnes of materials per capita



Sources: *SDES ; French customs office; Eurostat. Statistical processing: SDES, 2021*

The material footprint records the quantity of raw materials used to cover a country's end-use consumption and therefore includes not only direct material flows (the material contained in the products consumed), but also indirect flows (the material not contained in the products but necessary for their manufacture, whether domestic or imported). Consumption expressed as RMC (*Raw Material Consumption*) better reflects the real impact of resource use than 'apparent' material consumption (DMC for *Domestic Material Consumption*). This is because the material footprint reallocates the weight of materials actually extracted to the countries that really consume them. Therefore, materials extracted in a country that are used to produce exported processed products are reallocated to exports, whereas they are included in the DMC when only apparent flows are taken into account. *Conversely,* raw materials extracted abroad to produce processed products imported by France are reallocated to French imports. Compared to the DMC, the material footprint therefore also includes the difference between the materials used for the production of imported processed products and those used for the production of exported processed products.
The existing calculation methods are currently being harmonised between international bodies (Organisation for Economic Co-operation and Development (OECD) and UNEP-IRP (*International Resource Panel* – United Nations Environment Programme). For closer detail for a given product, the material footprint can be calculated using the life cycle analysis method (production, use, disposal). As such, according to the Wuppertal Institut, the 120 grammes that our mobile phones weigh actually require 70kg of materials.

ANALYSIS

Fossil fuels and metal ores, which are hardly extracted from the national territory (0.2% of domestic extraction), are mainly imported, unlike biomass and non-metallic materials. When the quantities of these materials are expressed as raw material equivalents, i.e. indirect flows are taken into account (e.g.: fuels used to produce imported steel), total imports appear 2.6 times higher. This increases the material footprint, which is higher than the apparent domestic consumption by about 20%.

The 2008 crisis hit the construction sector particularly hard, leading to a decline in the use of non-metallic minerals (gravel and sand, aggregates).

However, the breakdown of the material footprint by major material category remains relatively stable over the period: construction materials are very prominent, accounting for almost half of the materials consumed, about a quarter of biomass, a fifth of fossil fuels and 10% of metal ores.

INTERNATIONAL COMPARISON

France's material footprint is greater than its apparent consumption, as is the case for countries that import more raw materials into imported processed products than they export (European Union, United States, etc.). Japan is heavily dependent on imports, with a material footprint reaching more than twice the level of its apparent consumption and nearly five times its domestic extraction. For other countries (Australia, Russia, China, Chile, etc.), the situation is reversed. For example, Chile, a country that produces materials, particularly copper, has a DMC that is 2.5 times larger than its material footprint .

In the EU, along with France, the figures are available for Germany (14.8t/cap. in 2016), Austria (23.9t/cap. in 2015), Lithuania (19.2t/cap. in 2017), Malta (7.6t/cap. in 2017), the Netherlands (7.4t/cap. in 2018) and Portugal (17.1t/cap. in 2017). The European average is 14.0 t/cap. The Swiss footprint was 18.1t/cap. in 2016.

In terms of trends, although industrialised countries, especially those with low extraction levels, tend to show a certain decoupling between growth and domestic material use, this is partly the result of a transfer of extractive and industrial activities to emerging and/or developing countries. These countries, little affected by the crisis in 2008, are continuing to grow and catch up with the standard of living in Western countries through their consumption and investment (fuelled by their demography) and are expanding their material footprints. Global extraction has tripled since 1970. According to the *International Resource Panel* (IRP), if past trends continue, 180 billion tonnes will be extracted in 2050, compared to 70 billion tonnes in 2010. The average global footprint would reach about 20t/cap., i.e. double its current level.

FOR MORE INFORMATION

- *L'empreinte matières, un indicateur révélant notre consommation réelle de matières premières*, CGDD/SDES, *Datalab Essentiel*, avril 2018, 4 p.
- *L'empreinte matières de l'économie française : une analyse par matière et catégorie de produits*, CGDD/Seeidd, *Théma Analyse*, novembre 2019, 66 p.
- *L'empreinte matières de l'économie française : une analyse par matière et catégorie de produits*, Insee, Document de travail, n° G2019/11, novembre 2019, 52 p.
- *Construction de matrices de flux de matières pour une prospective intégrée énergie-matière-économie*, Ademe, *Collection Expertises*, Revue de littérature et cadrage méthodologique pour le développement du modèle MatMat, septembre 2020, 78 p.
- Eurostat: MFA – RME flows
- UNEP: IRP, Global Material Flows Database

European ecolabel

The European Ecolabel reflects the environmental quality of products and services at all stages of their life cycle (manufacture, use, transport and disposal). Obtained voluntarily, it is the only label guaranteeing the ecological quality of products that is official and can be used in all the member countries of the European Union. A manufacturer may be entitled to one or more eco-labelled products, concerning one or more product categories.

PILLAR

Eco-design (products and processes)

OBJECTIVE

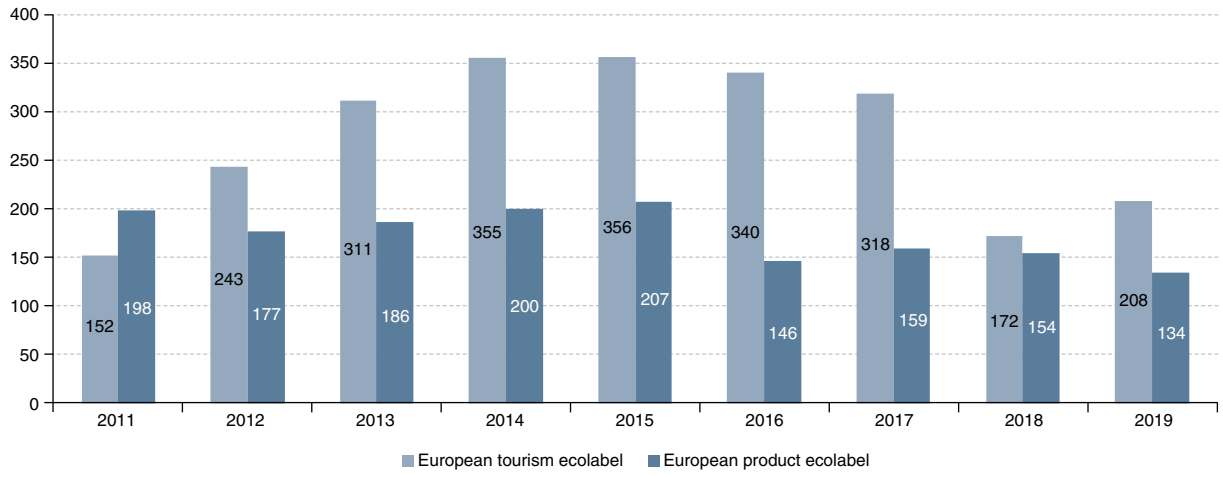
Article 70 of the law n° 2015-992 of 17 August 2015 relative to the Energy Transition for Green Growth (LTECV) has encouraged eco-design of products to reduce the amount of waste generated by extending the product lifespan. Objective 7 of the national strategy for ecological transition towards sustainable development (SNTEDD) 2015-2020 ("Educate, train and raise awareness for the ecological transition and sustainable development") includes the consumption of eco-labelled products declared by households in its indicators.

Article 1 of the law no 2020-105 of 10 February 2020 on the prevention of waste and the circular economy explicitly adds mention of eco-design in Article L. 110-1-2 of the Environmental Code, which aims to avoid the use of resources and to promote their careful and responsible consumption.

TREND

Between 2011 and 2015, the number of licences for eco-labelled products fluctuated between 170 and 210. At around 150 between 2016 and 2018, the figure fell to 134 in 2019. The number of licences related to tourist accommodation rose steadily between 2011 and 2015, from 152 to 356, before falling to 208 in 2019. Mergers between labelled product categories and the tightening of the labelling criteria makes it difficult to interpret these trends.

Number of European Ecolabel licences (including tourist accommodation)



Source: *Afnor - www.ecolabels.fr, data at 31 December of each year, April 2020. Statistical processing: SDES, 2020*

ANALYSIS

There are 24 product or service categories that can be eco-labelled (e.g. dishwasher detergents, cosmetic rinses, copying and graphic paper, paints and varnishes). A manufacturer is granted a licence for a product category. They may therefore hold several licences. In December 2019, 134 European ecolabel licences were held by French manufacturers for 7,677 products (goods and services) available on the market. Paints and varnishes are by far the most labelled products (68%), followed by toilet paper, kitchen rolls and other tissue products for domestic use (9%) and converted paper (8%).

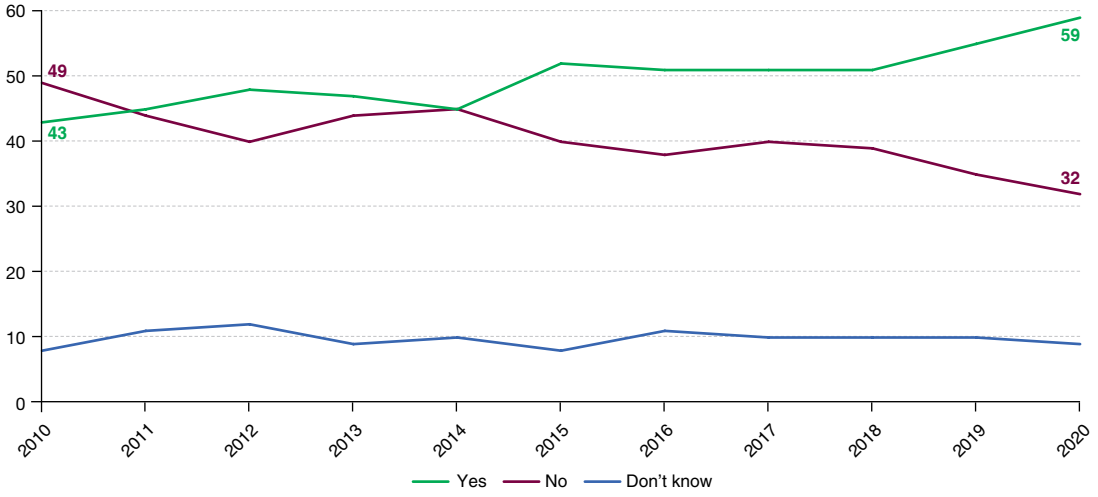
Tourist accommodation can also be granted a European eco-label. They undertake to comply with specifications comprising 67 criteria, including "limiting energy and water consumption" or "limiting waste production". In December 2019, 208 licences were held in France for tourist accommodation.

The fall in the number of licences from 2016 onwards is mainly due to mergers between product categories. For example, between 2015 and 2016, the categories 'indoor paints' (38 holders in 2015) and "outdoor paints and varnishes" (19 holders in 2015) were merged. As some manufacturers have licences for both categories, only 30 holders are now counted in 2016 for the "paints and varnishes" category. This decrease is also linked to the regular revision of the criteria by the European Commission to ensure the best environmental performance for consumers. Companies that want to continue to use the European Eco-label must prove their compliance with the new criteria and be audited again. After a transition period, the old certifications lose their validity. Licences still being assessed according to the new criteria at the end of the transition period are not included in the statistics.

The proportion of French people who say they have bought one or more eco-labelled products in the last month has risen from 43% in 2010 to 59% in 2020. As shown by an SDES survey carried out in March 2016, French households are mainly concerned about the environmental impact of the goods they consume when purchasing hygiene and cleaning products.

Trend in households' reported recent purchases of eco-labelled products

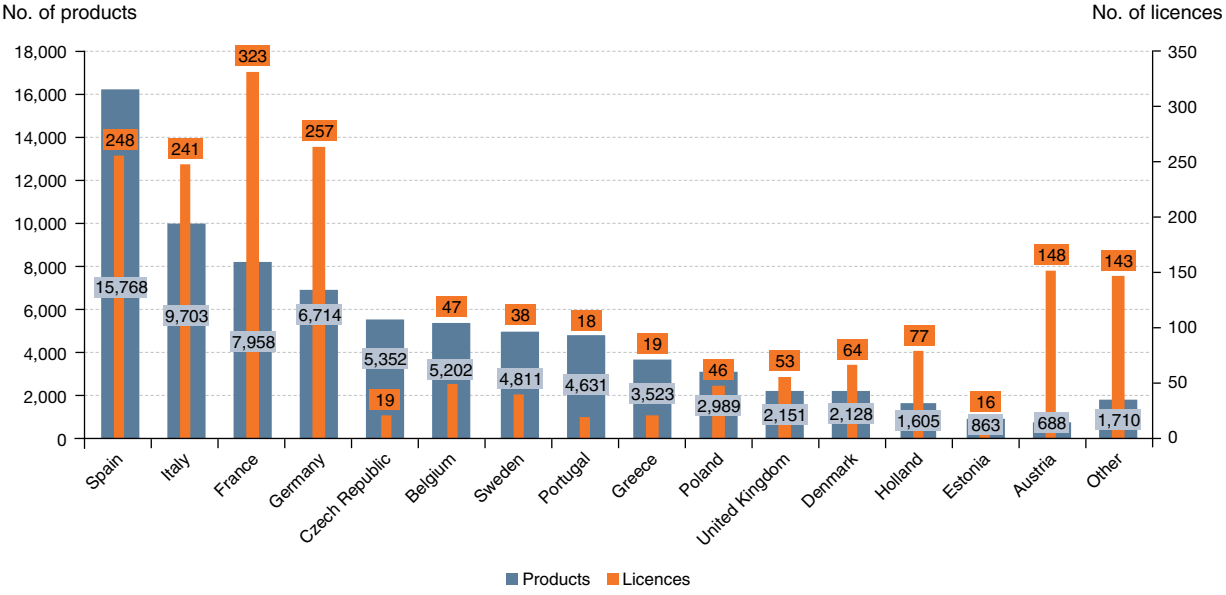
In %



Note: the question asked of participants is:"In the last month, did you or a member of your household buy one or more products with an eco-label (e.g. NF Environment label)?".
Source: *SDES, Insee household survey, Environment platform*

INTERNATIONAL COMPARISON

Number of EU Ecolabel licences and products (including tourist accommodation) by country in September 2020



Source: *European Commission - ec.europa.eu/environment/ecolabel/, data to 30 September 2020. Statistical processing: SDES, 2020*

In September 2020, France had the highest number of European Ecolabel licences (323 out of 1,757 in Europe, i.e. 18 % of licences). It was followed by Germany (15 % of licences), Spain (14 %) and Italy (14 %).

European companies sell a total of 75,796 product or service items with the European Eco-label in Europe. Spain is the country with the highest number of certified products or services (15,768, i.e. 21%), way ahead of Italy (13%) and France (10%).

The number of labelled products is expected to increase in the near future with the development of a new European eco-label for environmentally friendly financial products.

FOR MORE INFORMATION

- Website for ecolabels
- European Commission, section *facts and figures*
- Environmental information portal *notre-environnement*: Labelling initiatives
- European Ecolabel on the Ademe website

Number of industrial symbiosis initiatives

Industrial symbiosis is a form of inter-company organisation based on the exchange or substitution of resources or the pooling of resources and services. It refers to voluntary collective initiatives carried out on a region to save resources (water, energy, waste) or improve their productivity. This may involve sharing infrastructure, equipment (heating networks, production tools or spaces, etc.), services (collective waste management, inter-company mobility plans, etc.), materials (waste from one business becomes a resource for another) or jobs (pooling).

PILLAR

Industrial symbiosis

OBJECTIVE

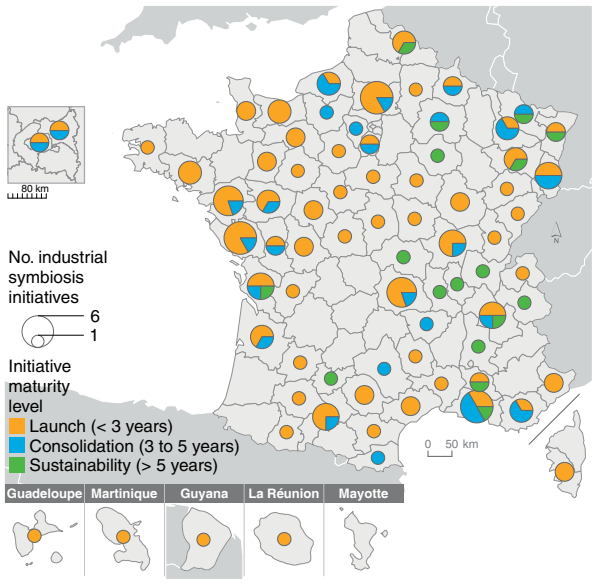
Article 70 of the Energy Transition Law for Green Growth (LTECV) of 17 August 2015 encourages the development of industrial symbiosis, one of the strategies that can be used to optimise production methods, thereby reducing the pressure on resources.

The Law no. 2020-105 of 10 February 2020 to prevent waste and for the circular economy, states in article 109 that the regional councils must define guidelines for the circular economy, including industrial symbiosis.

TREND

According to the national network of industrial symbiosis stakeholders (Synapse), 152 active industrial symbiosis initiatives were identified in August 2020, two-thirds of which were launched in the last three years .

Industrial symbiosis



Source: *Synapse, August 2020, based on data provided by the regional EIT coordinators, the regional Ademe and the regional councils. Statistical processing: SDES, 2020*

ANALYSIS

In August 2020, the Synapse network had 152 active industrial symbiosis initiatives. All regions now have at least one such initiative, with the Grand Est region being the most proactive with 19 active initiatives. The Oise *département* has the most initiatives (7), followed by Vendée and Bouches-du-Rhône (6). 24 departments do not yet have any initiatives, including 6 in Nouvelle-Aquitaine and 4 in Île-de-France.

Out of the 152 active initiatives, 17 were launched over 5 years ago (permanent initiatives), 34 were launched 3 to 5 years ago (initiatives in consolidation) and 101 less than 3 years ago (in launch phase).

Two types of synergies can be achieved :

- pooling synergies to streamline the use of resources :
  - equipment (sharing of assets between several companies to promote use over ownership) ;
  - services or transport (waste management, carpooling, security guard) ;
  - group purchasing ;
  - training.
- substitution synergies, with outflows from one company used as inputs for another :
  - hydraulic and thermal flows (reuse of waste water, heat recovery) ;
  - energy flows (reinjection of biogas, using local electricity) ;
  - waste streams (recovery of by-products, recovery of effluents).

INTERNATIONAL COMPARISON

According to a European Commission study from October 2015, the majority of European Union (EU) countries – (71 %) politically and economically support the industrial symbiosis. Portugal and Finland stand out for their greater support for the industrial symbiosis. Lastly, only six countries (22% of Member States) have no public policy on the subject.

The European Commission's roadmap for a resource-efficient Europe estimates that promoting the reuse of raw materials through greater industrial symbiosis could save EU companies €1.4 billion (a year and generate €1.6 billion in additional sales.

FOR MORE INFORMATION

- Réseau Synapse Network
- Orée
- Ademe, l'écologie industrielle et territoriale
- *État des lieux de l'écologie industrielle et territoriale en France : évaluation, maturité, pérennité*, Orée/Ademe, septembre 2020
- *A framework for Member States to support business in improving its resource efficiency.* An Analysis of support measures applied in the EU-28. Measure synthesis Support for industrial symbiosis, European Commission, October 2015
- *Industrial symbiosis: a key link in the circular economy*, Climate Analysis Center, June 2020

Number of companies and local authorities that have benefited from an Ademe support mechanism on the functional economy

The functional economy is a new business model aiming to replace the sale of a traditional material product or service by instead selling the use of the product and its useful effects (benefits to customers). It is no longer a matter of basing sales on the volume of goods sold but rather on how much they are used. For example, this could entail replacing the sale of tyres to road hauliers with a system of payment by the number of kilometres travelled, with a complete service (training of road hauliers in fuel-efficient driving, adjustment of tyre pressure, maintenance, etc.) leading to substantial gains in fuel consumption and longer tyre service. This model is saves resources and pollutes less by decoupling the production of goods from income and by optimising the use of material resources and goods.

PILLAR

Functional economy

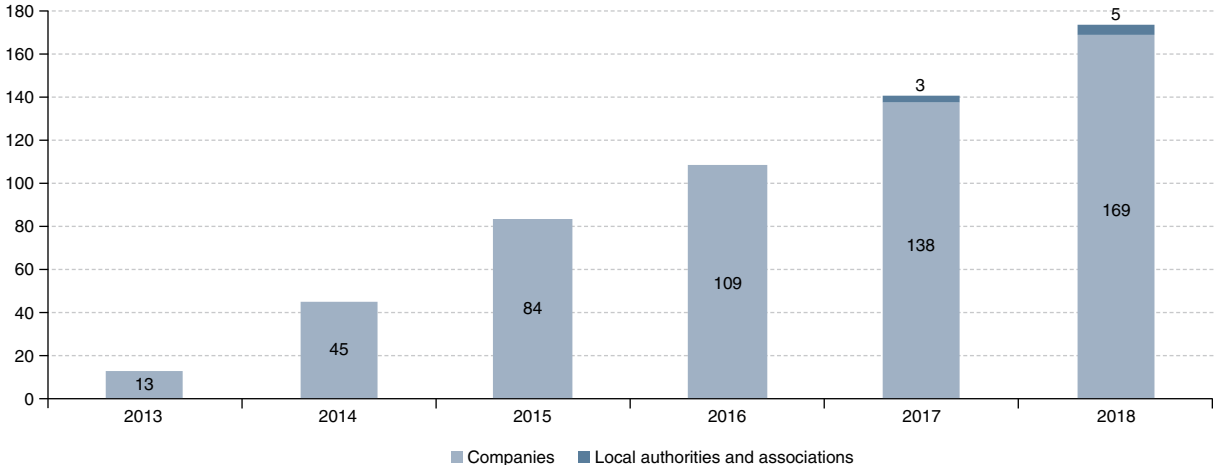
OBJECTIVE

The Functional Economy fits squarely into the transition to a green economy. It consists of replacing the concept of selling the product with that of selling the use of the product and useful effects (benefits to customers), which leads to the decoupling of value added from the consumption of energy and raw materials.

TREND

The functional economy is a new concept that has been supported by Ademe since 2013. The number of organisations supported by the agency is rising steadily: from 13 in 2013 to 174 in 2018, with around 30 joining the scheme each year.

Evolution of the cumulative number of companies, local authorities and associations supported



Field: All of France; only actions supported by Ademe, does not take into account actions carried out by other organisations in which the agency has not been involved.
Source: *Ademe, national overview and areas for action on the functional economy, February 2020*

part 2: Number of companies and local authorities that have benefited from an Ademe support mechanism on the functional economy

ANALYSIS

From 2013 to 2018, Ademe supported 40 actions (training, skilling up stakeholders, support, advice, regional events, financing, etc.) helping 174 organisations (169 companies, 4 regional authorities and 1 association).

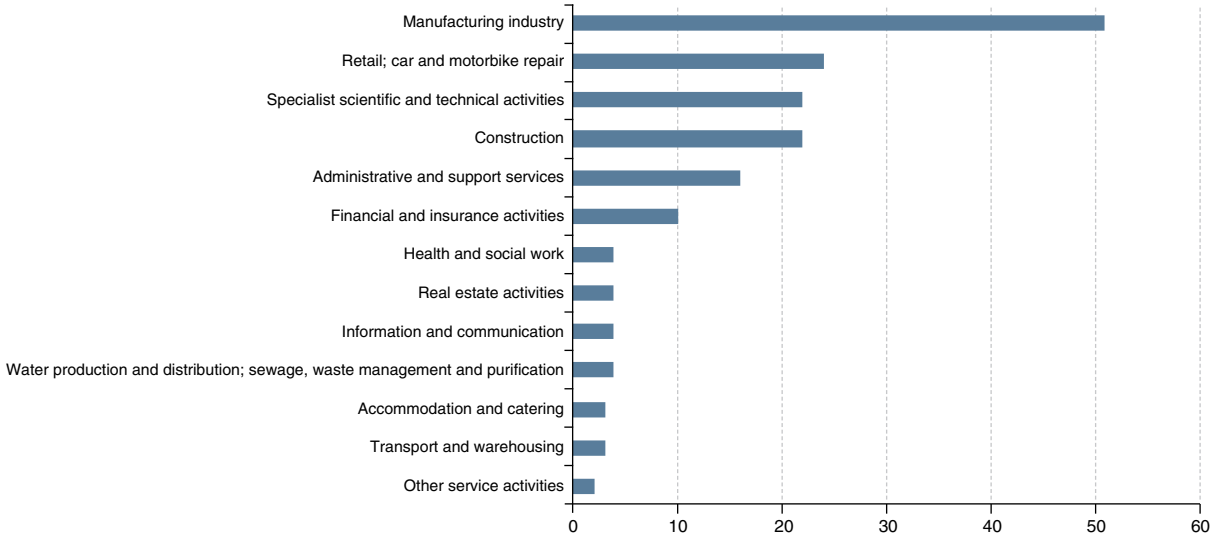
Among the companies supported, most are small and medium-sized (62%), followed by very small companies (34%), and then large companies (4%).

Manufacturing is the top category (30% of companies), followed by retail (14%), specialised scientific and technical activities (13%) and construction (13%).

Among the companies that received support towards the functional economy between 2013 and 2018, 10% have commercialized and contracted the solution. This suggests that a considerable adaptation time will be needed before this new business model can be implemented.

Breakdown of supported companies by sector

No. of companies



Source: *Ademe, national overview and areas for action on the functional economy, February 2020*

FOR MORE INFORMATION

- *Panorama national et pistes d'action sur l'économie de la fonctionnalité*, Ademe, février 2020, 89 p.

Food waste

The National Pact against Food Waste of May 2013 defines food waste as "any food intended for human consumption which, at any stage of the food chain, is lost, discarded or spoiled". Food waste is a sign of a linear economy and represents a loss of direct and indirect resources (raw materials, water, energy). It is one of the 2030 Sustainable Development Goals set by the UN.

PILLAR

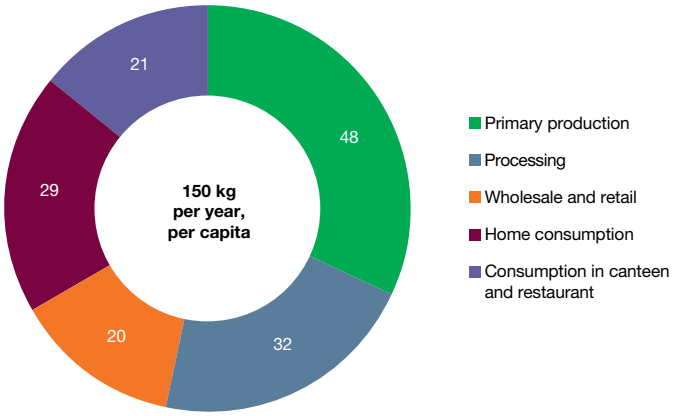
Responsible consumption

OBJECTIVE

To reduce these losses throughout the food chain, France adopted its first national pact against food waste in 2013 and set itself the goal of halving food waste by 2025. This first pact was renewed for the 2017-2020 period. Preventing food waste has also been included as one of the four main priorities of the new national food programme and as one of the 13 strategic directions of the national waste prevention programme 2014-2020. Lastly, law no.2020-105 of 10 February 2020 related to the prevention of waste and the circular economy has set a target of reducing food waste by 50% vs its 2015 level in the areas of food retail and collective catering by 2025 and in the fields of consumption, production, transformation and commercial catering by 2030. It is also creating an "anti-food waste" label to promote virtuous initiatives and help towards the targets set. A decree dated 24 December 2020 provides a framework for this scheme.

Breakdown of food loss and waste in France along the food chain

kg/yr per capita



Source: *Ademe, Food loss and waste: the current situation and its management at different stages of the food chain, 2016*

ANALYSIS

A 2016 report by Ademe estimates that there are 10 million tonnes (Mt) of food loss and waste in France, i.e. 150kg per capita per year. This represents 18% of all food products. Some is converted to animal feed (less than 2Mt, so less than 20% of loss and waste).

The theoretical value of food loss and waste, if it were recovered for human consumption, is estimated at € 16 billion. All stages of the food chain (production, processing, distribution and consumption) are affected by loss and waste. Production losses represent 32% of the total, transformation 21%, distribution 13% and lastly consumption at home and collective and commercial catering at 33%. At this last stage, waste is four times greater in collective or commercial catering (restaurants and canteens) than at home (136g vs 34g per meal).

Food waste has very significant impacts on the environment because it is accompanied by a waste of resources, in addition to the pollution linked to the production of food that ends up in the bin without even reaching a plate. To produce this food, land is farmed unnecessarily, plus a lot of water, fuel, fertilisers and pesticides used, not to mention all the energy needed to transport, process and distribute it. According to Ademe, the annual carbon impact of food waste is estimated at 15.3million tonnes equivalent CO_2, i.e. 3% of all national emissions.

Many schemes underway

France has pledged to halve food waste by 2025. Although the monitoring system for tracking food waste on a national scale has yet to be set up, a large number of schemes are already in place and yielding positive results, for example:

- **Operation "santé témoin": an experiment with 17 health and medico-social establishments that reduced food waste by 90 tonnes/yr, of which 2.5 tonnes of bread;**
- **" Maison gourmande et responsable" has supported 500 retirement homes throughout France for 2 years on the main catering challenges;**
- **The Ministry of Ecology's call for projects "1,000 schools and colleges combat food waste": in Nouvelle-Aquitaine, this project reduced food waste by an average of 20% for the 33 schools signed up and 23% on average for the 52 establishments supported in Grenoble-Alpes Métropole.**

INTERNATIONAL COMPARISON

The fight against food waste is also a major policy challenge at European level, in particular in the context of the European Commission's Circular Economy Action Plan, published on 5 December 2015 and the "farm to fork" strategy which aims to establish legally binding targets to reduce food waste across the European Union by 2023. International commitment can also be seen in the resolution adopted by the UN General Assembly on 19 December 2019 proclaiming the 29 September to be the *International Day of awareness of food loss and waste*.

In 2016, a study estimated food losses in the European Union in 2012 at 173kg per capita. The origin of these losses was very different from that estimated by Ademe: a smaller share of primary production (10% vs 32%) and a much greater weighting for households (53% vs 19% in the Ademe study), due in particular to differences in scope and methodology (not taking into account losses at harvest and diversions of products for animal consumption; taking into account non-consumable scraps such as bones, etc.).

Estimated food losses in the European Union in 2012

	Millions of tonnes	Kg/capita
Primary production	9.1	18
Processing	16.9	33
Wholesale and retail	4.6	9
Food service	10.5	21
Households	46.5	92
Total	**87.6**	**173**

Source: *Estimates of European food waste levels (Fusions study), 2016*

By 2030, target 12.3 of the Sustainable Development Goals (SDGs) calls for the global volume of food waste per capita to be halved at the distribution and consumption levels and for food losses to be reduced throughout the production and supply chains, including post harvest losses.

A 2011 estimate of waste for the UN Food and Agriculture Organization (FAO) in 2011, estimated that about one-third of the world's edible food is lost or wasted each year.

According to the FAO report published in 2013, the annual carbon footprint from food waste is estimated at 3.3 billion tonnes CO_2 equivalent, i.e. 8% of global greenhouse gas emissions. Uneaten food production would take up 1.4bn hectares of land, i.e. 30% of global farmland and 250km^3 of water is used on wasted food.

The FAO and the United Nations Environment Programme (UNEP) measure progress towards SDG target 12.3 through two separate indices: the Food Loss Index (post-harvest and pre-retail losses), managed by the FAO, and the Food Waste Index (retail and consumption), managed by UNEP. FAO's first estimates for food losses in 2019 indicate that about 14% of the world's food is lost between the production and pre-retail stages. Estimates for the food waste index are under development by UNEP.

FOR MORE INFORMATION

- Environmental information portal *notre-environnement* : le gaspillage alimentaire
- *Pertes et gaspillages alimentaires, l'état des lieux et leur gestion par étapes de la chaîne alimentaire*, Ademe, mai 2016, 165 p.
- *Campagne nationale de caractérisation des déchets ménagers et assimilés en France*, Ademe, mars 2019, 8 p.
- *Estimates of European food waste levels*, mars 2016 (estimation du gaspillage alimentaire au niveau européen)
- *Pertes et gaspillages alimentaires dans le monde - Ampleur, causes et prévention*, FAO, 2012, 41 p.
- *Food wastage footprint : impacts on natural resources*, FAO, 2013, 63 p.

Household spending on product maintenance and repair (excluding vehicle maintenance)

French household spending is increasingly driven by the consumption of goods that consume resources and generate CO_2 emissions in their manufacture, transport and distribution. Extending the product lifespan is a means of reducing the environmental impact of consumption by optimising product use. Favouring repair over renewal makes it possible to extend their lifespan and thus limit their replacement, which consumes resources. Monitoring per capita consumption expenditure on the maintenance and repair of household goods is a way of analysing changes in household practices in this area.

PILLAR

Extension of product lifespan

OBJECTIVE

Law no. 2020-105 of 10 February 2020 on preventing waste and on the circular economy requires producers to provide consumers with more information on the environmental characteristics of their products, based on a large number of criteria (durability, reparability, reusability, recyclability, etc.). In particular, this includes the obligation to display simple information on the repairability of electrical and electronic equipment, in the form of a "repairability index" from 2021. From 2024, this repairability index will be supplemented or replaced by a "durability index" including new criteria, such as product reliability and robustness. According to an Ademe study, 36% of French people repair their products or have them repaired when they break down. The Government aims to increase this rate to 60% by 2025.

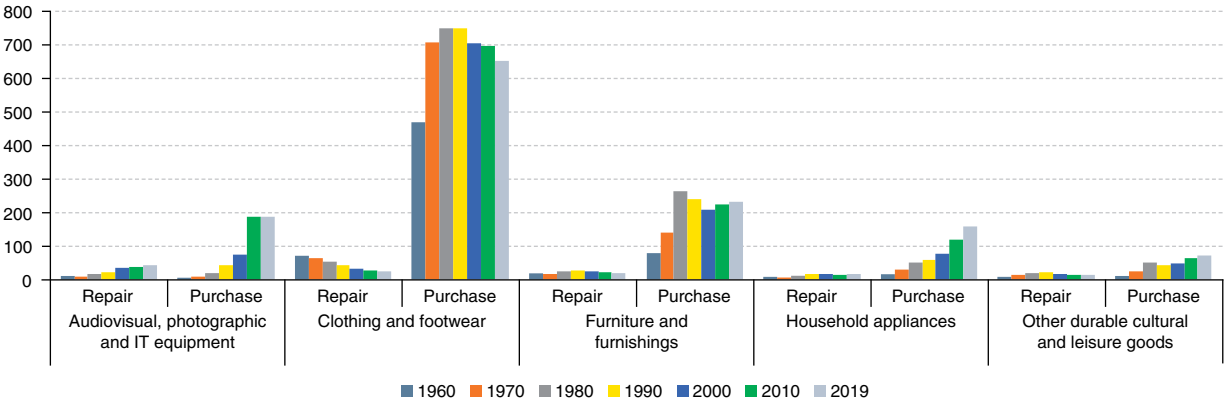
TREND

Since 1960, household spending per capita on household goods (excluding vehicle maintenance and repair) has increased. Growth was higher in the acquisition of new goods (+ 130%) than for maintenance and repair spending (+14%).

Over the 1990-2019 period, the share of expenditure on maintenance and repair fell by 2 points, but it has remained stable since 2010.

Trends in consumer spending per capita on consumption and repair of household goods, 1960-2019

In euros per capita



Note: actual household consumption by function, in volume, at previous year's prices chained to 2014 euros.
Source: *Insee, national accounts base 2014. Statistical processing: SDES, 2020*

ANALYSIS

In 2019, households spent € 107 per capita on the repair and maintenance of their household goods, excluding private vehicles (expenditure on the maintenance and repair of private vehicles amounted to € 529 /cap.). This is a twelfth of the amount spent on buying new goods in the same category (1 296 €/cap. in 2019).

Around 40% of this maintenance and repair spending - excluding vehicles - is on audiovisual, photographic and IT) equipment (€42 /cap.). This figure doubled between 1990 and 2019. This is the only product category for which repair expenditure is increasing, mainly due to the development of IT and communications technologies between 1990 and 2000. However, this spending remains low compared to the household budget for the purchase of new goods in this category (€186/cap. in 2019, i.e. four times the amount spent on repairs).

Over the 1990-2019 period, the share of expenditure on maintenance and repair (excluding vehicles) fell by 2 points (from 10% to 8%). This share has fallen for all product categories (from - 17 points for "Other cultural and recreational durables" to - 2 points for clothing, food and furniture).

However, since 2010, the share of spending on maintenance and repair has remained; it has even increased by 2 points for audiovisual, photographic and IT equipment, rising from 16% to 18%.

According to an Ademe study conducted in May 2019, 81% of French people have a good image of repair (+7 points vs 2014). 91% find it reduces waste and for 87%, it is a way to save money during a crisis. The main obstacles to repair mentioned by households are cost (68%), premature obsolescence (51%), fears over professionalism (42%) complexity/time-consuming nature of repair (40%).

Repair Cafés

Repair Cafés are open to all. The idea is to repair together, with the help of volunteer experts and the tools and resources available. Furniture, electrical appliances, clothing, bicycles, crockery, toys and more can be repaired.

The first Repair Café opened in 2009 in Amsterdam. This movement is now global and the number of Repair Cafés is growing constantly. The 2,000th café opened at the end of 2019 with a further 80 opening by June 2020.

Repair Cafés are mainly in four countries: Germany (24%), Holland (23%), France (16%) and Belgium (16%).

In France, the movement began in Spring 2013. By early 2020, there were 334 Repair Cafés in France. The best equipped département is Nord with 27 Repair Cafés, followed by Maine-et-Loire, Isère and Ille-et-Vilaine with 18 each.

Trend in the number of Repair Cafés worldwide

Year	Number
2012	63
2013	200
2014	657
2015	943
2016	1,190
2017	1,426
2018	1,653
2019	2,000

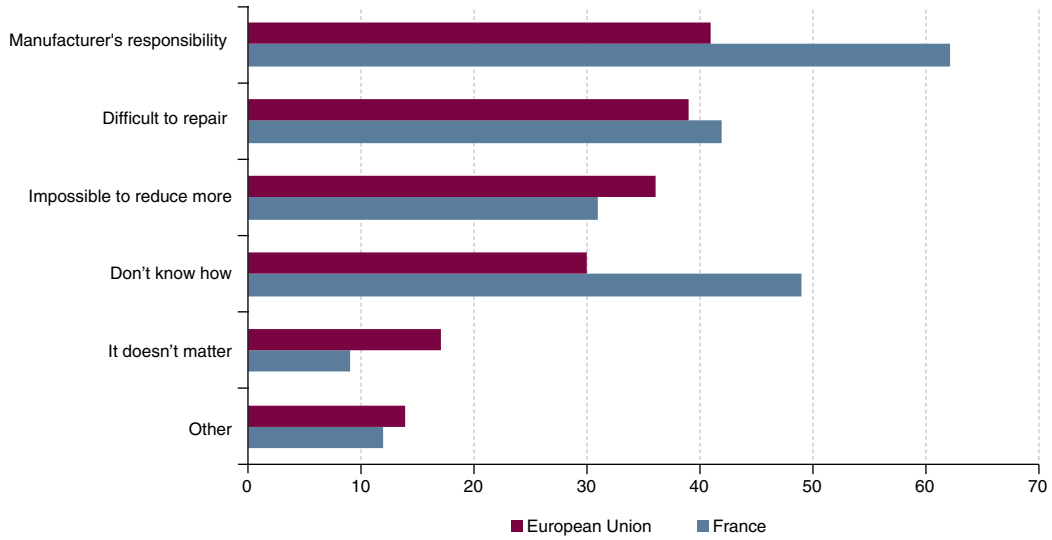
Source: *Repaircafe.org, February 2020*

INTERNATIONAL COMPARISON

According to the Eurobarometer on Europeans' attitudes towards waste management and resource efficiency, in 2013, 41% of those who said they did not make an effort to reduce their household waste (i.e 7% of respondents) felt that it was the manufacturer's responsibility to reduce waste, not theirs. In second place was the difficulty and cost of getting a product repaired (39%). French respondents were slightly above the European average (42%) in this respect. This difficulty was mentioned by 41% of Germans asked, 50% of British and 24% of Italians.

Main reasons for not trying to reduce household waste

In %



Source: *Flash Eurobarometer 388, Attitudes of Europeans towards Waste Management and Resource Efficiency. Statistical processing: SDES, 2020*

FOR MORE INFORMATION

- *Ménages & Environnement - les chiffres clés - édition 2017*, CGDD/SDES, Datalab, octobre 2017, 68 p.
- *Perceptions et pratiques des Français en matière d'autoréparation*, Ademe, novembre 2017
- *Évolutions du comportement des Français face au développement de l'économie circulaire*, Ademe, juin 2014
- Institut national de la statistique et des études économiques (Insee) : Thème > Conditions de vie, société > Consommation et équipement des ménages
- *Attitudes of europeans towards Waste management and resource efficiency*, Commission européenne, *Flash Eurobaromètre*, n° 388, décembre 2013
- Repair Cafés website
- *Panorama de l'offre de réparation en France - actualisation 2018*, Ademe, novembre 2018
- *Les Français et la réparation - Faits et chiffres*, infographie Ademe, juin 2020

Landfill tonnage trend

In the waste treatment ranking, referred to in the European Directive (EU) 2018/851 of 30 May 2018, disposal processes, such as landfill or incineration without energy recovery, are the least environmentally friendly. They are a waste of resources that evade recycling and hamper the development of a circular economy.

PILLAR

Recycling (material and organic)

OBJECTIVE

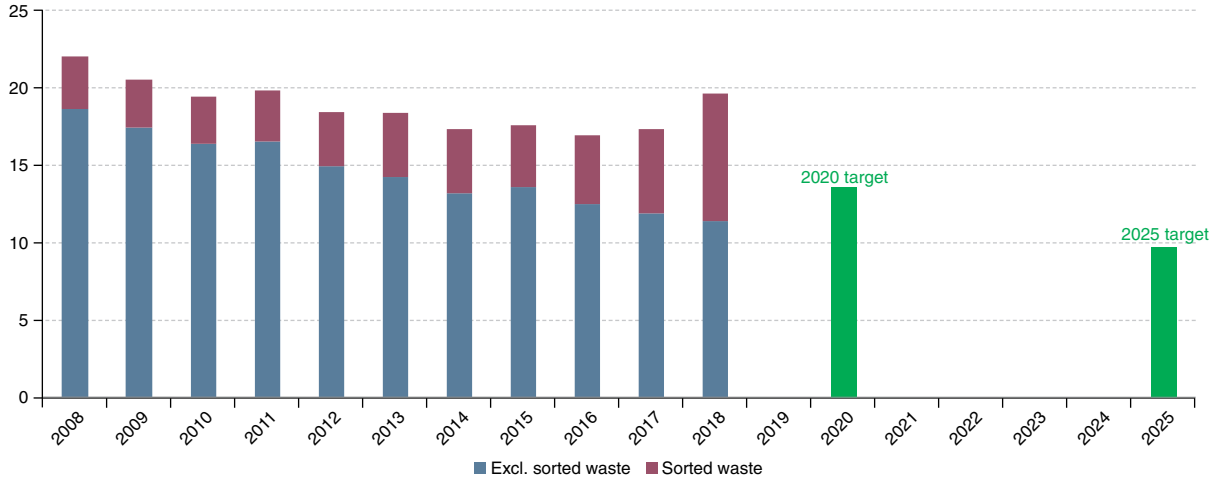
The law no. 2015/992 of 17 August 2015 on the energy transition for green growth (LTECV) provides for a 30% reduction in the quantities of non-hazardous non-inert waste admitted to landfill by 2020 compared to 2010 and a 50% reduction by 2025.

TREND

After trending down between 2008 and 2017, from 22 to 17 million tonnes (Mt), non-hazardous non-inert waste storage increased significantly in 2018 back up to 19.6 Mt, following a sharp rise in sorting residues for treatment.

Quantities of non mineral non hazardous waste send to landfill as monitored by the TGAP

In millions of tonnes



Note : TGAP = general tax on polluting activities.
Sources: *French customs office, TGAP dossier ; BDREP. Statistical processing: SDES, 2020*

ANALYSIS

For 2020, the LTECV has set a target of reducing waste going to landfill by 30% vs 2010. This target requires a reduction from 19.5 Mt stored in 2010 to 13.6 Mt in 2020, i.e. a reduction of 3.5% per year. The trend from 2010 to 2016 (-13%) suggested that this target could be achieved. However, the quantities stored rose sharply in 2018, after a slight increase in 2017 (+16% between 2016 and 2018). This rise was largely due to the increase in the quantities of sorting residues to be treated, more than 80% of which went to landfill. These quantities increased by about 65% between 2016 and 2018, from 5.6 Mt to 9.2 Mt.

Several factors are behind the increase in sorting residues in 2018. The biggest is probably the closure of Chinese borders since September 2017, which has led to previously exported waste being kept in the country (-16% of plastic secondary raw material exports and -12% of paper and cardboard in 2018 compared to 2016). To a lesser extent, more requirements in terms of waste sorting quality, incentive-based pricing (when in doubt, people prefer not to fill up their grey bins) and the extension of sorting instructions may also have contributed to these developments.

To improve sorting residues management, law no. 2020-105 of 10 February 2020 on the prevention of waste and the circular economy adds, in Article 110, a target aiming to "ensure the energy recovery of at least 70% of waste that cannot be recycled by 2025". This target is intended to boost the development of the solid recovered fuel sector.

In addition, Article 10 supplements the Environmental Code with a provision stating that "the landfilling of recoverable non-hazardous waste is to be gradually prohibited". Lastly, article 116 states that "the unloading of non-hazardous non-inert waste in a landfill or incineration facility shall be subject to a video monitoring system[…]".

The significant reduction in the general tax on polluting activities planned for sorting residues from high-performance sorting facilities recovered in incinerators with an energy recovery rate of over 70% should also help to reverse the trend. Indeed, from 2021, the nominal rate will fall from € 20/tonne to € 4/tonne.

To comply with the 2025 target (-50% vs 2010), prevention measures and additional investments will be required: construction of new sorting centres, adapting industrial processes to include the additional secondary raw materials, development of the plastics recycling sector, etc.

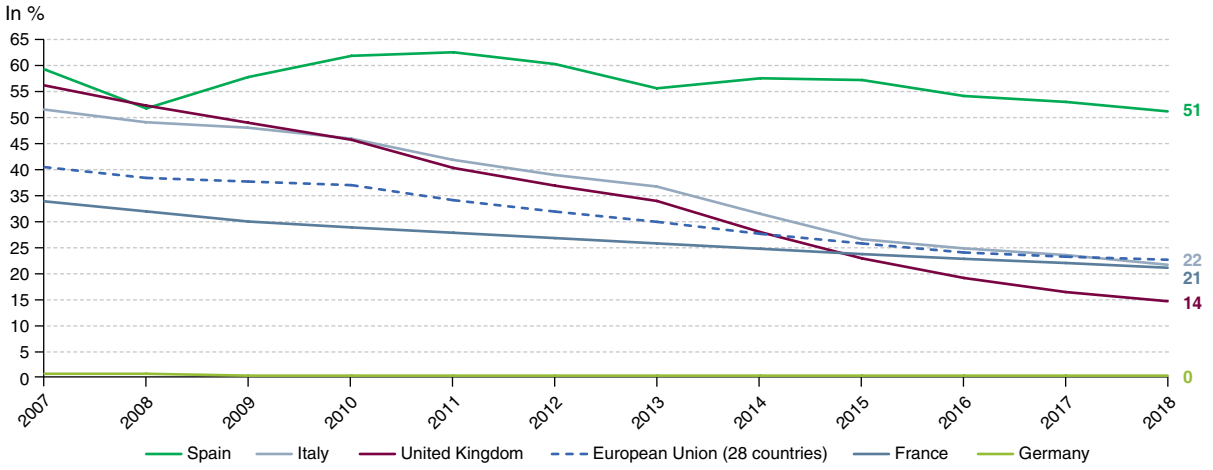
INTERNATIONAL COMPARISON

In keeping with the European target, Law no. 2020-105 of 10 February 2020 on the prevention of waste and the circular economy requires that the quantities of household and similar waste allowed into landfill be reduced to 10% of quantities manufactured by 2035.

In 2018, France was around the European average in terms of landfilling municipal waste (21%, European Union average, 22%).

In north-western Europe (Belgium, the Netherlands, Denmark, Sweden, Germany, Austria, Finland), the practice is almost non-existent and incineration with energy recovery and recycling are preferred. However, this type of treatment is still widely used in Eastern and Southern European countries.

Trends in the share of municipal waste going to landfill in the European Union (EU28)



Note: ratio of municipal waste going to landfill to total municipal waste treated by the country.The methodology used by EU countries to calculate the tonnages of waste going to landfill may vary from one country to another, depending in particular on whether or not refuse for sorting residues is taken into account.
Source: *Eurostat, 2020*

FOR MORE INFORMATION

- *Bilan 2016 de la production de déchets en France*, CGDD/SDES, *Datalab Essentiel*, décembre 2019, 4 p.
- *Pourquoi faut-il améliorer la taxe sur l'élimination des déchets ?*, CGDD/SOeS, *Le point sur* n° 228, mai 2016, 4 p.
- Eurostat waste database

Use of secondary raw materials in production processes

Secondary raw materials are waste materials which, after a material recycling process, can be reintroduced into production systems as a total or partial replacement for virgin raw materials. They therefore save natural resources. The circular material use rate measures the share of waste recovered as material in the overall material use.

PILLAR

Recycling (material and organic)

OBJECTIVE

The law no. 2020-105 of 10 February 2020 on the prevention of waste and the circular economy stipulates that certain products and materials will have to include a minimum level of recycled material, with the exception of those made from renewable raw materials and provided that the environmental impact of this process is positive. The product categories and their rate of inclusion in the production process, as well as their multiannual trajectory, will be set by law. The law also provides for the eco-taxes paid by producers to be tailored to the environmental performance of their products, and in particular the inclusion of recycled material. In addition, the percentage of secondary material actually contained in the product must be made known to the consumer.

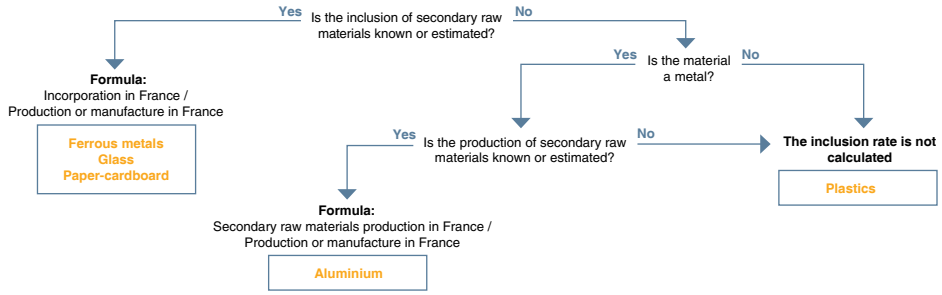
TREND

The circular material use rate increased by 1 point between 2010 and 2017, from 17.5% to 18.6%.

Between 2005 and 2017, the inclusion rate of paper and cardboard increased by 9 points. Glass has seen the strongest increase (+ 17 points) while scrap metal has decreased (- 5 points).

The circular use rate is defined as the ratio of circular use of materials to overall use of materials. Overall material use is measured as the sum of domestic material consumption (DMC) and circular use of materials. Circular use of materials is estimated by the amount of waste recycled in domestic recovery facilities, minus waste imported for recovery, plus waste exported abroad.

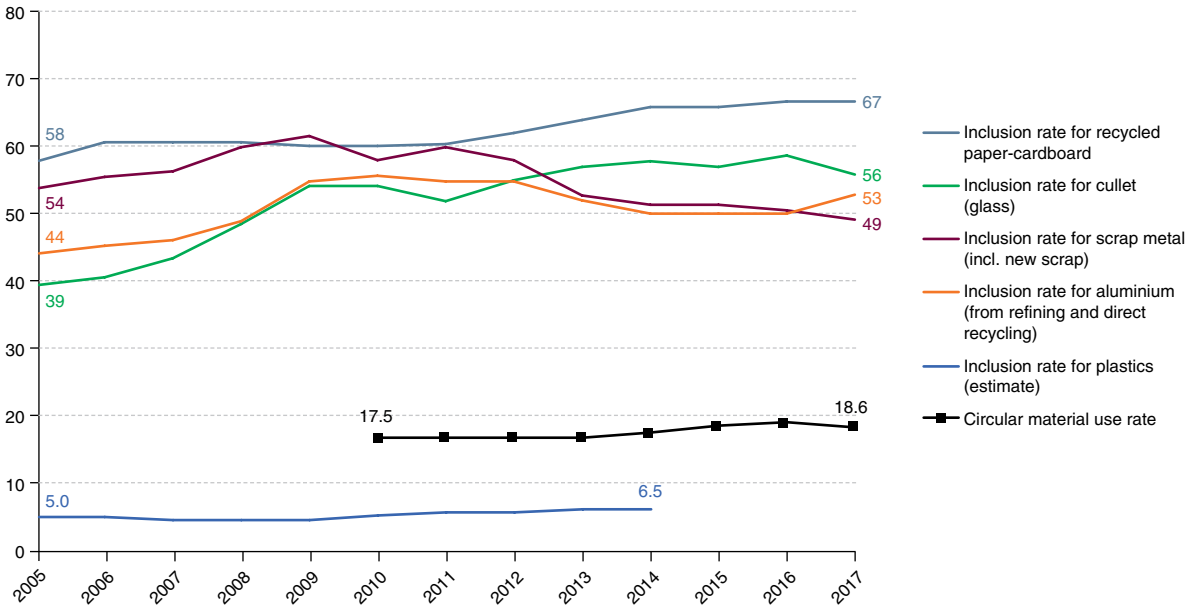
The inclusion rate reflects the share of secondary raw materials included in production or manufacturing in France. The formula for each rate depends on the availability of data (*see figure below*), but also on certain sector-specific features. This is a national average over a full year.



Source: *Ademe, National recycling report 2008-2017*

Changes in the inclusion rates of cullet (glass), recycled paper and cardboard, aluminium, scrap metal and plastics

In %



Sources: *Eurostat for the circular use rate; Ademe, National recycling report 2008-2017 for the inclusion rates of various materials*

ANALYSIS

In 2017, national production of crude steel and cast iron, paper and cardboard, plastics, aluminium and glass amounted to 35.1 million tonnes (Mt). Having declined for the 12 previous years (42.6Mt in 2005), it is stable vs 2014. Collection of the five secondary raw materials used came to 24.1Mt in 2017. 16.9Mt of secondary raw materials were included in French production (this is called the inclusion rate). Some of the secondary raw materials collected in France is exported and some of the secondary raw materials recycled in production comes from imports.

In 2017, the inclusion rate of scrap metal was 49% in the crude steel produced (including internal cuttings). The consumption of scrap metal has dwindled over the last decade, mainly due to the decline in the electrical sector (the main consumer of scrap metal) and the fall in the price of raw materials, which has greatly reduced the recycling of scrap metal. The paper industry is still one of the leading recycling industries in France, with a high collection and inclusion of recycled cardboard and paper (RCP) Since 2005, the inclusion rate of RCPs has continued to rise, up to 67% in 2017. The inclusion rate of cullet (glass) increased from 39% in 2005 to 56% in 2017. The drop in 2017 (59% in 2016) was due to the strong recovery in flat glass activity and the significantly lower inclusion rate for flat glass than for hollow glass.

With a rate of less than 7%, plastics are way behind. Commitments made by the sector's manufacturers and the targets set by the authorities are intended to increase their inclusion rate.

Environmental impact of recycling

At the same time as the national recycling report (BNR), Ademe studied the environmental impact of recycling using a life cycle analysis approach. According to the report, in 2017, the paper, glass, steel, aluminium and plastics recycling industries avoided the emission of approximately 18.1 million tonnes CO_2 equivalent (Mt CO_2 eq).

Note that in the case of combustible materials (paper and plastics), a mix of incineration and landfill is used to calculate the final disposal scenario avoided, following the rates observed for residual household waste (69% of volumes destined for incineration and 31% destined for landfill).

CO_2 emissions avoided thanks to recycling
In Mt CO_2 eq

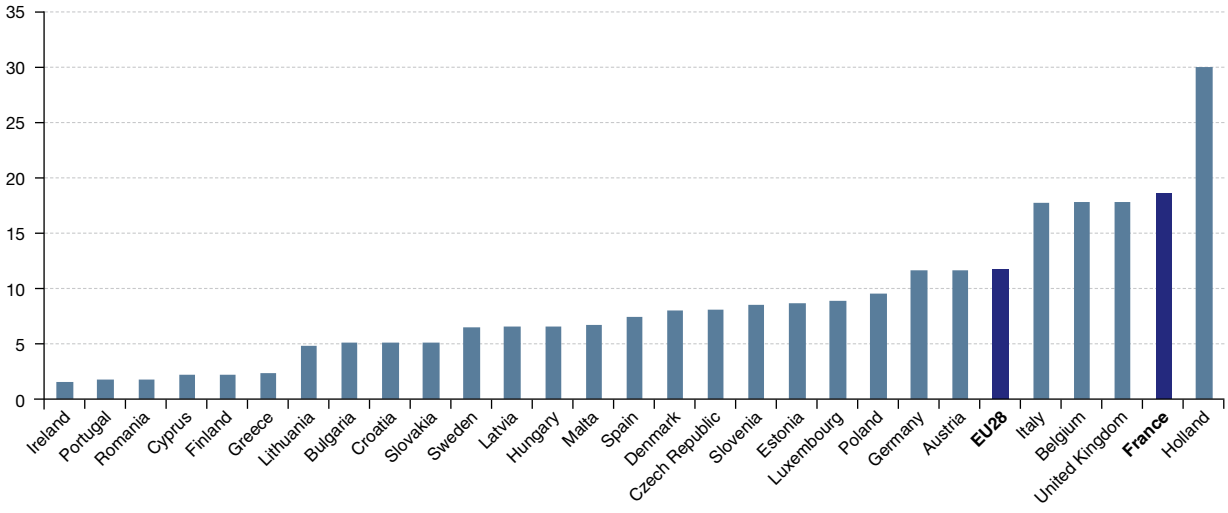
Ferrous metals	- 13.8
Aluminium	- 3.0
Paper-cardboard	1.5
Glass	- 1.3
Plastics	- 1,5
Total	**- 18.1**

Source : *Ademe, Life cycle assessment of recycled waste streams in France, December 2019*

INTERNATIONAL COMPARISON

Recycled materials contributed to 11.7% of EU materials demand in 2017, vs 8.3% in 2004. Member States range from 1.6% (Ireland) to 29.9% (Netherlands). Those with very high rates have either high levels of waste recycling, low levels of domestic material consumption or both (e.g. the Netherlands and France).

Circular material use rate in the European Union (EU28) in 2017
As % of total materials utilisation



Source: *Eurostat*

FOR MORE INFORMATION

- *Bilan national du recyclage (BNR) 2008-2017 et ACV des flux de déchets recyclés*, Ademe, décembre 2019, 142 p.
- Eurostat: circular material use rate

Jobs in the repair of goods and recycling of materials

This indicator aims to quantify the number of jobs associated with economic activities in the circular economy. It thereby helps to measure the transition to a more resource-efficient economic system. Only activities related to 'extending the product lifespan' and 'recycling' are considered here, i.e. re-use of goods, repair, waste collection and material recovery. These activities require more jobs per unit produced than for the economy as a whole. With a low risk of relocation, they contribute to the development of the production base and employment at the local level

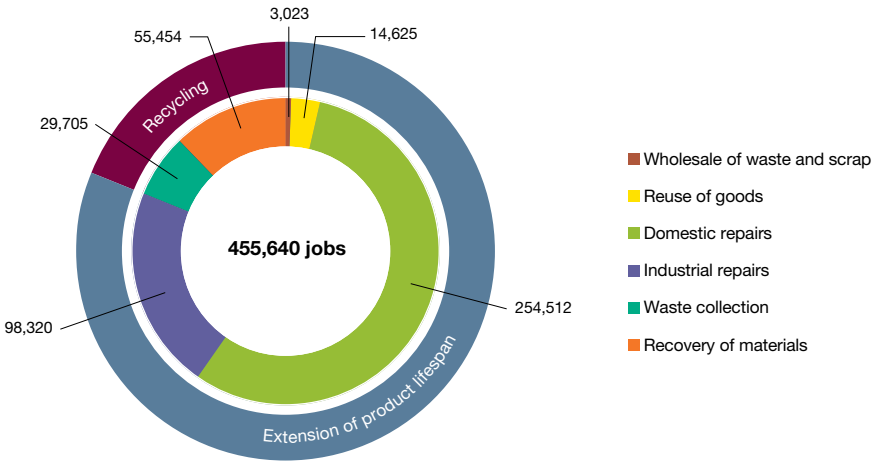
PILLAR

Extension of product lifespan and recycling (material and organic)

OBJECTIVE

Beyond the preservation of natural resources, the circular economy also attaches importance to economic and social issues, and in particular to employment. Use of new models favouring the circularity of the economy can foster job creation, particularly for activities with a low risk of relocation. The development of the circular economy can also help socially excluded people back to work. As such, the law no. 2020-105 of 10 February 2020 on the prevention of waste and the circular economy, in article 62, specifies that when eco-organisations award contracts for waste prevention or management, these contracts must include criteria relating to the employment of people eligible for the integration through economic activity scheme.

Breakdown of employment by pillar and sector in 2017
As no. of people employed



Note: the sectors of car and computer repair have been classified as domestic repair, even though they also concern professional activities.
Source: *Eurostat. Statistical processing: SDES, 2020*

ANALYSIS

In 2017, recycling and repair provided 455,600 jobs (number of people employed regardless of working hours). This represents 1.6 % of total employment in France.

With 370,500 jobs, the “extension of product lifespan” accounts for four fifths of the total and “recycling” 85,000 jobs.

Among the sectors contributing to the extension of product lifespan, the car maintenance and repair sector is by far the one that accounts for the most jobs, with 168,000 people, i.e. 45% of the total. The machinery repair sector provides 40,500 jobs and computer repair 30,500. Further downstream, the second-hand goods retail sector accounts for 14,600 jobs, i.e. 1.6% of employment in non-food specialised retail trade (also excluding fuel and pharmaceutical products).

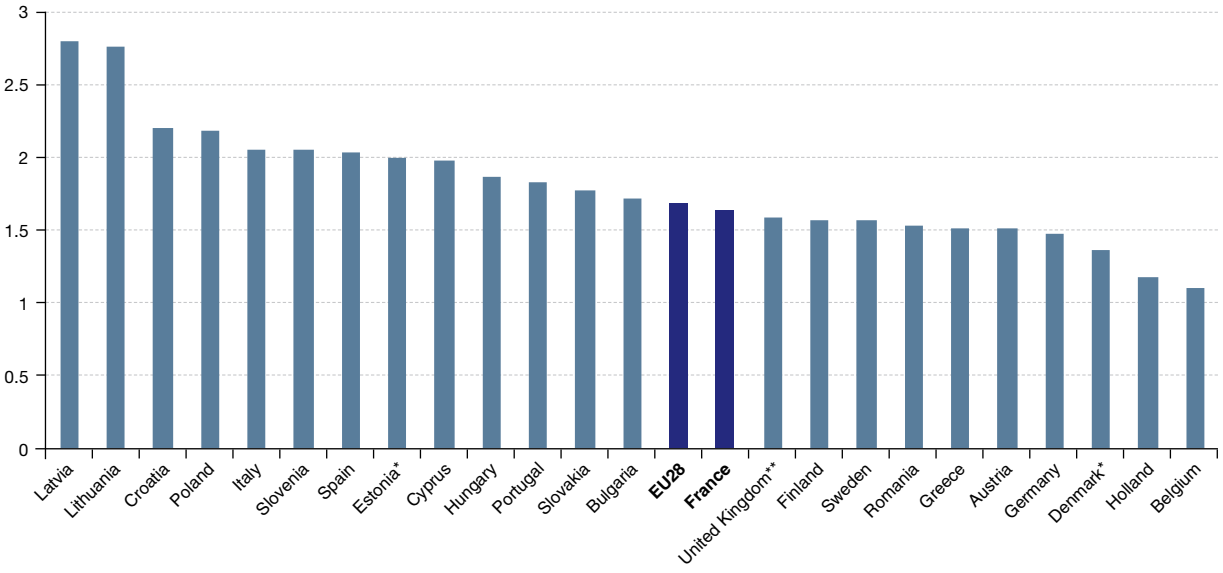
With regard to "recycling", the recovery of sorted materials provides just over 53,000 jobs, the remainder being provided by waste collection activities (almost 30,000 jobs) and the dismantling of wrecks (2,000 jobs).

INTERNATIONAL COMPARISON

In 2017, France was slightly below the EU average for the share of jobs in repair and recycling: 1.6% vs. 1.7%. Latvia and Lithuania clearly stand out from the EU average with a share of 2.8%. In contrast, the Netherlands and Belgium, with 1.2% and 1.1% respectively, are well below the European average.

Share of circular economy in total employment in European Union (EU28) countries in 2017

In %



** 2016 data.*
** 2015 data.*
Source: *Eurostat. Statistical processing: SDES, 2020*

METHODOLOGY

The data analysed comes from the Eurostat database which provides tables on private investment, employment and gross value added related to the circular economy sectors. The method is based on a selection of codes from the statistical classification of economic activities (NACE) that are most relevant to the features of the circular economy. The data on these NACE codes were extracted from the structural business statistics. Employment is expressed as the number of persons employed, defined as the total number of persons working in the business (including owners, partners working regularly in the business and unpaid family workers), as well as persons working outside the business, e.g. sales representatives, delivery staff, repair and maintenance teams. The recent shift to a new definition of the company (in economic rather than legal form) in structural business statistics in France has led to reallocations between sectors and possible breaks in series in French statistics. This context does not allow for time-based analyses nor does it allow for an assessment of the employment trend in the circular economy over the last few years.

The methodology used differs from that used in the March 2017 edition of this publication, which included more pillars and took full-time equivalent employment as the unit of observation. Indeed, INSEE's Connaissance locale de l'appareil productif (Clap) source, on which the employment estimate in the previous edition was based, has not been updated because a new system, Flores (localized file of remunerations and salaried employment), is to replace it. The employment estimate was therefore based solely on data published by Eurostat. Compared to the 2017 edition, employment could not be estimated for the pillars of "extraction/ manufacturing and sustainable supply chain" (organic farming) and "responsible consumption" (collaborative consumption, renting). With respect to the "recycling" pillar, employment in waste treatment is not counted as in the previous edition. Indeed, Eurostat only includes waste collection and recovery activities. As in 2017, due to a lack of available data, employment figures were not provided for the " eco design, "industrial symbiosis" and "functional economy"pillars.

FOR MORE INFORMATION

- *Quel potentiel d'emplois pour une économie circulaire ?*, Institut de l'économie circulaire, *Literature review*, 2015, 68 p.
- Eurostat database : tables on EU policies/competitiveness and innovation/private investment, employment and gross value added related to circular economy sectors (cei_cie010)
- List of NAF codes used by Eurostat to calculate circular economy indicators

part 3

What are the trends across the indicators?

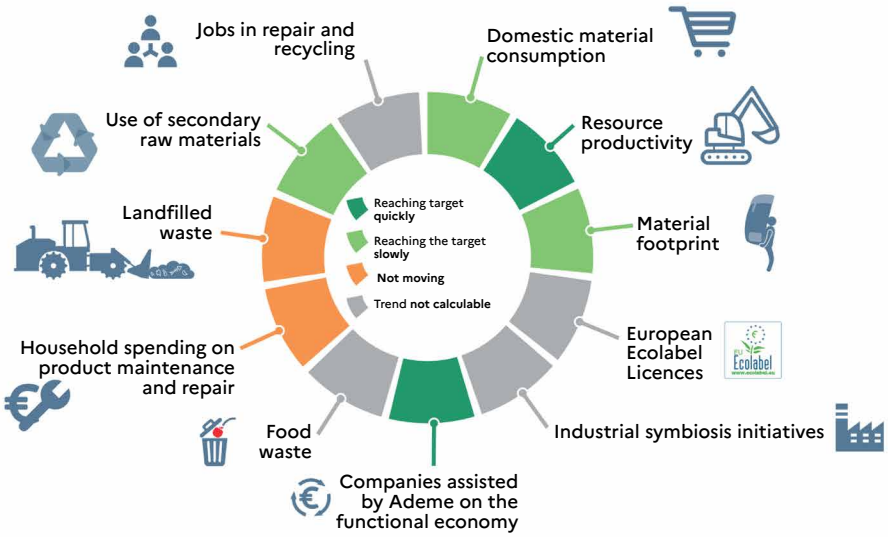
— Overall, the transition to a circular economy seems to be underway. However, certain improvements appear to be vulnerable and need to be strengthened: the indicators linked to our consumption of materials are improving over the long term, but they remain highly dependent on the economy.
The international context also has a major impact, as shown by the closure of China's borders influencing the amount of waste going to landfill. Household spending on repairs (appliances and equipment) is growing slower than spending on new goods, although more frequent repairs seem to be emerging. If this proves to be the case, it will be a source of jobs, most of which cannot be relocated.
The inclusion of secondary raw materials in production processes is generally increasing, but the positive developments do not apply to all materials and the circular material use rate remains low. Plastic and demolition waste are sources of materials that need to be better recovered.

Pillar of the circular economy	Indicator	Trends* (average annual growth rate)	Year	France figure	EU28 figure
Extraction / manufacturing and sustainable supply chain	① Domestic material consumption per capita	- 4.7% between 2010 and 2018 (- 0.6%)	2018	11.6 t/capita	13.5 t/capita
	② Resource productivity	+ 12.3% between 2010 and 2018 (+ 1.5%)	2018	€ 2.96 /kg	€ 2.30 /kg
	③ Material footprint	- 4.4% between 2010 and 2018 (- 0.56%)	2018	13.9 t/capita	14.0 t/capita
Eco-design (products and processes)	④ European ecolabel	non calculable	2019	342 licences (of which 208 tourist sites)	1,623 licences (of which 357 tourist sites)
Industrial symbiosis	⑤ Number of industrial symbiosis initiatives	non calculable	2020	152 initiatives	No EU data
Functional economy	⑥ number of companies and local authorities that have been supported by Ademe for the functional economy.	+ 161 companies between 2013 and 2018 (+ 68%)	2018	174 companies and local authorities supported since 2013	No EU data
Responsible consumption	⑦ Food waste	non calculable	2016	150 kg/year/capita	173 kg/year/capita
Extension of product lifespan	⑧ Household spending on product maintenance and repair (excluding vehicles)	+ 3% between 2010 and 2019 (+ 0.35%)	2019	€107/capita	No EU data
Recycling (material and organic)	⑨ Landfill tonnage trend	+ 1% between 2010 and 2018 (+ 0.10%)	2018	26 % of non-hazardous non-mineral waste goes to landfill (20 Mt, 300 kg/capita)	23% of non-hazard-ous non-mineral waste goes to landfill (162 Mt, 316 kg/capita)
	⑩ Use of secondary raw materials	+ 1 point increase in the circular material use rate between 2010 and 2017 (+ 0.87%)	2017	18.6% of the economy's material requirement is covered by recovered materials	11.7% of the economy's material requirement is covered by recovered materials
Extension of product lifespan and recycling	⑪ Jobs in repair and recycling	not calculable	2017	455,600 jobs 1.6 % of total employment	4 million jobs 1.7% of total employment

** Trends:*
Quickly reaching the target
Slowly reaching the target
Not moving
Trend not calculable

Key figures

Key indicator trends



Development over time

2010 2018		
2010 2018		
2010 2018		
2019	342 licences	
2020	152 initiatives	
2013 2018		
2016	150 kg/year/cap.	
2010 2019		
2010 2018		
2010 2017		
2017	455,600 jobs	

European comparisons

2018	11.6 t/cap.	13.5 t/cap.
2018	€ 2.96/kg	€ 2.30/kg
2018	13.9 t/cap.	14.0 t/cap.
2019	342 licences for 1/7th of European GDP	1,623 licences
2020	152 initiatives	No EU data
2018	174 companies	No EU data
2016	150 kg/year/cap.	173 kg/year/cap.
2019	€ 107/cap.	No EU data
2018	300 kg/year/cap.	316 kg/year/cap.
2017	18.6%	11.7%
2017	1.6% of total employment	1.7% of total employment

Glossary

Chained prices: volumes calculated in chained prices provide a more accurate description of economic developments because the basic volumes are aggregated using the most recent price structure (that of the previous year) and not the outdated one of the base year.

Decoupling: this term refers to the breaking of the link between an environmental variable and an economic variable. According to the Organisation for Economic Co-operation and Development (OECD) definition, decoupling occurs when the rate of growth of an environmental pressure is lower than the rate of growth of its economic driving force (e.g. GDP) over a given period of time. Decoupling is absolute when the environmental variable remains stable or decreases, while the economic variable increases. Decoupling is relative when the environmental variable varies, but to a lesser extent than the economic variable.

Domestic material consumption: this is equal to the sum of materials extracted from the territory and those imported, minus exported materials. This refers to the quantity of a material consumed by the population of a given country for its own internal needs.

Eco-design: systematic integration of environmental aspects starting from the design and development of products (goods and services, systems) with the aim of reducing negative environmental impacts throughout their life cycle for equivalent or better service.

Extension of product lifespan: encourages users to repair broken items, sell or donate second-hand goods, or purchase second-hand goods for reuse.

Extraction/manufacturing and sustainable supply chain: refers to the ways in which resources are extracted and used, and the aim to improve efficiency of use by limiting waste and environmental impact, especially regarding the exploitation of energy sources and minerals (mines and quarries) and agricultural and forestry operations, as well as other renewable and non-renewable sources of energy/materials.

Functional economy: this economy favours use over possession and tends to sell services linked to products rather than the products themselves.

Industrial symbiosis: this is a way of organising companies by exchanging flows or pooling needs.

Premature obsolescence: defined as the set of techniques by which a manufacturer aims to deliberately reduce the product lifespan to increase its replacement rate.

***Raw Material Consumption,* (RMC):** an indicator of the total raw materials used to satisfy the needs of a country's population. This footprint takes into account the materials extracted from the national territory but also those indirectly involved outside our borders in the production and transport of imported goods. This materials consumption is expressed as "equivalent raw materials".

Recycling and recovery of waste: any recovery operation whereby waste, including organic waste, is reprocessed into substances, materials or products for its original function or for other purposes. Waste-to-energy operations, waste-to-fuel operations and landfill operations do not qualify as recycling operations

Responsible consumption: It must prompt the buyer, whether an economic agent (private or public) or a citizen-consumer, to make a choice by taking into account the environmental impacts at all stages of the life cycle of the product or service

Reuse: any operation whereby substances, materials or products that are not waste are reused for the same purpose for which they were conceived.

Re-utilisation: any operation by which substances, materials or products that have become waste are used again.

Legal filing: April 2021
ISSN: 2555-7580 (printed)
2557-8138 (online)
Printing: integrated printing of the MTE, printed on European ecolabel certified paper - www.ecolabel.com

Head of publication: Béatrice Sédillot
Editorial coordination: Céline Blivet
Mapping: Antea
Infographics: Bertrand Gaillet (CGDD)
Design and production: Agence Efil, Tours

MINISTER
FOR THE ECOLOGICAL
TRANSITION

Liberté
Égalité
Fraternité

General Commission
for sustainable
development

Is the transition from a linear to a more circular economy happening ? This publication, made up of 11 indicator sheets and a dashboard, provides national monitoring of the circular economy. The selected indicators cover all seven pillars of the circular economy. International comparisons provide insight into France's position relative to its European neighbours.

Key indicators for monitoring the circular economy

2021 Edition

Data and Statistical Studies Department
Subdirectorate for Environmental Information
Tour Séquoia - 92055 La Défense cedex
Email: diffusion.sdes.cgdd@developpement-durable.gouv.fr

www.statistiques.developpement-durable.gouv.fr

STATISTIQUE
PUBLIQUE