DATA LAB

TRANSITION

10 Key Indicators for Monitoring the Circular Economy
2017 Edition

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Contents

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Foreword

Reducing the amount of raw materials we extract from the earth is a crucial challenge for our current economy and for future generations.

Some of these materials exist only in finite quantities, and while others are renewable, their capacity for renewal must be carefully preserved. The circular economy allows us to go from a linear pattern of production and consumption – "take, make, dispose" – to a circular model. As stated in the French law on Energy Transition for Green Growth (*loi relative à la transition énergétique pour une croissance verte*, or LTECV), this transition is based primarily on a moderate and responsible consumption of natural resources, especially raw materials.

The goal of this publication is to measure and monitor the circularity of the French economy using a selection of 10 indicators. Covering the seven pillars of the circular economy, each indicator information sheet provides details of a particular objective, current trends, analysis, points of international comparison and a bibliography.

— Sylvain Moreau
HEAD OF THE MONITORING AND STATISTICS DIRECTORATE

What is the circular economy?

— A concept that first appeared in the 1970s, the circular economy is an economic system based around the principle of exchange, espousing production methods that, at every stage of the product life cycle (goods and services), aim to increase the efficiency of resource usage and diminish environmental impact, while also improving the wellbeing of individual citizens (the Ademe definition).

>

There are **several existing definitions of the circular economy**.

Article 70 of the French law on Energy Transition for Green Growth states that: "the transition towards a circular economy aims to move away from the linear economic model, based on a system of "take, make, dispose", by calling for a more moderate and responsible consumption of natural resources and raw materials, as well as, in order of priority, the prevention of waste production (especially via the reuse of products), and, in accordance with an established hierarchy of waste treatment methods, the reutilisation, recycling, or, failing these, repurposing of waste materials. It also includes the promotion of industrial and territorial ecology, along with product eco-design, the use of materials issuing from natural renewable sources (sustainably managed and issuing from recycling operations), sustainable public procurement, extension of product lifespans, waste prevention, the prevention, reduction and monitoring of product disposal, leakage or emission of pollutants and toxic substances, as well as waste management via an established hierarchy of practices and cooperation between economic stakeholders at the relevant regional level while accounting for principles of proximity and the development of use value, exchange value, and information regarding the ecological, economic and social costs of contributing to this new prosperity."
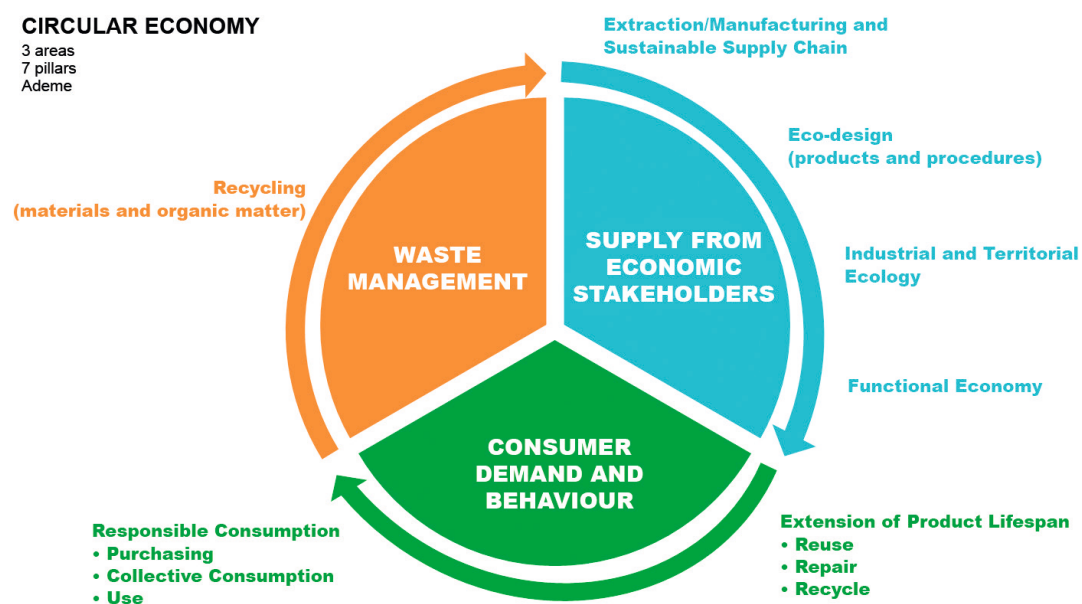
In France's national 2015–2020 Strategy for Ecological Transition and Sustainable Development (French: SNTEDD), it is stated that "this new model of a circular economy, with its moderate use of carbon and natural resources, can be defined as an economic system for production, exchange and consumption designed and organised so as to minimise net extraction of resources (fossil fuels, raw materials, water, land and environments) and polluting emissions, which are a source of negative effects on public health and the environment on both a local and global scale."

In a press release on 2nd December 2015 entitled "Closing the Loop", **the European Commission** adopted an ambitious set of new measures designed to serve the circular economy by strengthening competition, creating jobs and generating sustainable growth. The spirit of the circular economy as developed by the European Commission aims to "maintain the value of products, materials and resources for the longest possible time in order to develop a sustainable economy that is competitive, less carbon-intensive, and efficient in its use of resources."

Finally, **the 2016 edition of the Petit Larousse dictionary** defines the circular economy as "an economic system founded on frugality, limited consumption, and the recycling of materials and services."

The definition used for our indicators is that of the French Environment and Energy Management Agency (Ademe): The circular economy is defined as an "economic system based around of exchange and production methods that, at every stage of the product life cycle (goods and services), aim to increase the efficiency of resource usage and diminish environmental impact, while also improving the wellbeing of individual citizens." The circular economy is based around three areas of action and seven pillars:

CIRCULAR ECONOMY
3 areas
7 pillars
Ademe

Extraction/Manufacturing and Sustainable Supply Chain

Eco-design (products and procedures)

Industrial and Territorial Ecology

Functional Economy

Extension of Product Lifespan
• **Reuse**
• **Repair**
• **Recycle**

Recycling (materials and organic matter)

WASTE MANAGEMENT

SUPPLY FROM ECONOMIC STAKEHOLDERS

CONSUMER DEMAND AND BEHAVIOUR

Responsible Consumption
• **Purchasing**
• **Collective Consumption**
• **Use**

What indicators can be used to monitor the circular economy?

— In 2014, the SOeS worked alongside several partner organisations (including Ademe, Meem, associations and industrial groups) to define an initial list of indicators to monitor the circular economy, following a round-table discussion on the issue during the Environmental Conference held in 2013. In 2015, France gave legislative backing to the policy by passing a law on "Energy Transition for Green Growth", providing a definition and setting a number of objectives. At the end of 2015, the European Commission adopted a new set of measures for the circular economy. In 2016, the SOeS took into consideration the latest legislative measures and selected a deliberately limited number of indicators, each chosen as integrators and, in most cases, due to their comparability at European level. Performance monitoring takes place at every stage of the cycle described in Part 1 above; 4 indicators are applied to the early phases (extraction/use of resources and sustainable purchasing, eco-design, industrial and territorial ecology and the functional economy), followed by two indicators for the second Action Area (responsible consumption and extension of product lifespan), and two indicators for the end of the cycle (recycling). Finally, an indicator examining employment in the circular economy naturally addresses the cycle as a whole.

Domestic Material Consumption per capita

The demand for goods and services from economic players requires the extraction of raw materials from the environment, as well as the export and import of both raw materials and manufactured goods. These material flows constitute Domestic Material Consumption (DMC). This readout provides an account of the effective quantities of goods consumed in a given country. This indicator is among the targets set by the UN's sustainable development goals for 2030.

PILLAR

EXTRACTION/OPERATION AND SUSTAINABLE SUPPLY CHAINS

OBJECTIVE

France's objective is to reduce Domestic material consumption per capita. Article 74 of the law on Energy Transition for Green Growth also contains the objective of increasing resource productivity (*indicator featured on page 10*).

TRENDS

DMC fell by 16% between 2007 (14 tonnes per capita) and 2014 (11.7 t/capita). Following the 2008 recession, there was a drop in the consumption of materials used in construction; due to the large volumes involved, these materials contributed significantly to the overall decrease in DMC (representing 50% of the total figure).
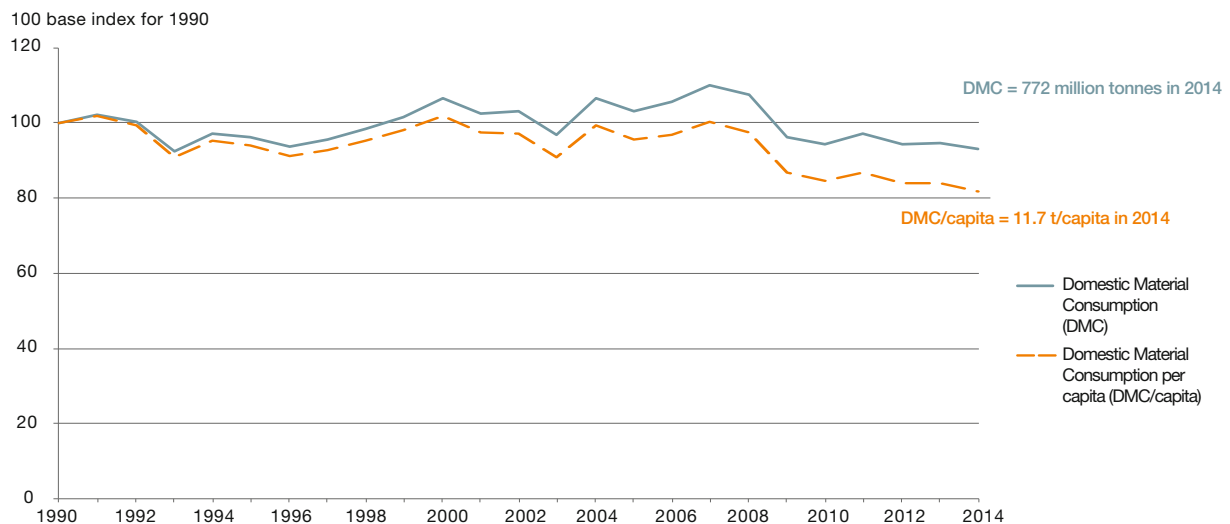
ANALYSIS

In relation to the national population or compared to gross domestic product (GDP), domestic material consumption provides a quantitative illustration of the pressure placed on the environment, and indicates a more resource-efficient economy.

Remaining relatively stable until the economic recession of 2008, DMC began to fall thereafter (due in large part to the slowdown in the construction sector), before eventually stabilising in recent years at approximately 12 tonnes/capita.

Although some of the resources consumed are renewable (biomass, or products issuing from agriculture, fisheries and forestry), others are non-renewable: these include minerals (metallic or otherwise) and fossil fuels (water has not been accounted for). Minerals used mainly in construction constitute half of all materials consumed in France (totalling 772 million tonnes in 2014). Over a quarter is made up of biomass issuing from agriculture and fisheries. Fossil fuels (of which 2/3 are oil-based products) represent 17% of the total figure.

Domestic Material Consumption per capita

100 base index for 1990

Sources: Agreste/SSP; Unicem; French customs; Eurostat. Statistical processing: SOeS, 2016

At present, it is not possible to monitor the material flows of the most critical non-ferrous metallic minerals due to the conflation of nomenclature at European level.

Domestic material consumption does not adequately take into account the environmental pressure caused by consumer behaviour. In order to supplement this approach, a comparison will be carried out between the development of the material footprint, or MF (in raw material equivalent), and that of GDP; once available, these figures will provide a clearer picture than the DMC findings. In fact, the DMC only accounts for direct flows and excludes indirect flows – i.e. all the materials consumed abroad in order to manufacture imported goods, including those that never cross the border (e.g. fossil fuels burned to produce imported steel).
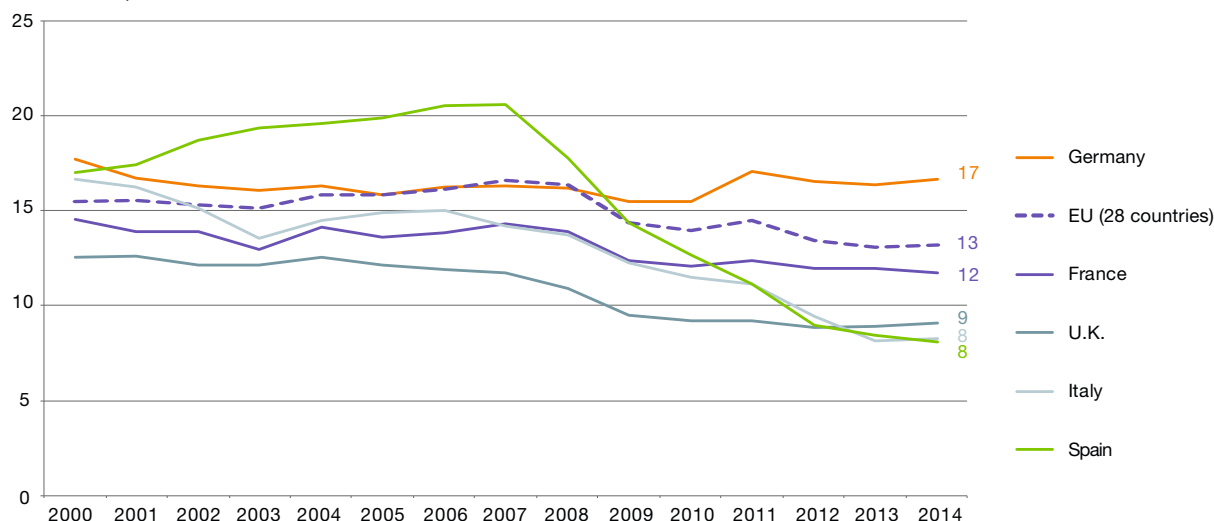
INTERNATIONAL COMPARISON

In 2014, the European average stood at 13 tonnes per capita. On a global scale, Australia weighs in at over 45 tonnes/capita, while the U.S. and China consume 28 and 24 tonnes/capita respectively, compared to 9 tonnes/capita in Japan. However, the DMC is not a significant indicator for countries that produce large amounts of primary raw materials.

The European countries with the highest level of material consumption per capita are Finland, Estonia and Norway, with almost 30 tonnes per capita; the lowest levels are posted by Italy, Spain and the U.K., each with between 8 and 9 tonnes per capita. The significant role of construction materials in Europe puts into perspective the trends observed in certain European countries since the 2008 financial crisis (indeed, Spain and Italy were responsible for almost half the reduction in DMC for the entire EU).

Material Consumption in Europe

In tonnes/capita

Sources: Eurostat. Statistical processing: SOeS, 2016

FOR MORE INFORMATION

• (In French) Essentiel sur > Environnement > Gestion et utilisation des ressources > La consommation intérieure de matières en France http://www.statistiques.developpement-durable.gouv.fr
• (In French) *Matières mobilisées par l'économie française : une baisse stabilisée depuis la crise de 2008, Chiffres & statistiques*, n° 761, May 2016 http://www.statistiques.developpement-durable.gouv.fr/publications/p/2542/1097/matieres-mobilisees-leconomie-francaise-baisse-stabilisee.html
• Eurostat http://ec.europa.eu/eurostat/documents/2995521/7546702/8-07072016-AP-EN.pdf/00e86912-73a0-4dc7-acaa-57c3b8db5e93
• OCDE, *Material resources, productivity and the environment, Green Growth Studies*, 2015 http://www.oecd-ilibrary.org/environment/material-resources-productivity-and-the-environment_9789264190504-en

Resource Productivity

Resource Productivity is the ratio that weighs gross domestic product (GDP) against domestic material consumption (DMC). This indicator allows to measure the transition towards an economic system that is more frugal in its use of resources. This indicator is among the targets set by the UN's sustainable development goals for 2030.

PILLAR

EXTRACTION/OPERATION AND SUSTAINABLE SUPPLY CHAINS

OBJECTIVE

France's objective is to progressively decouple economic growth from the consumption of raw materials. To this end, the Government has set an objective of posting a 30% rise in yield between national GDP and DMC (*indicator featured on page 8*) between 2010 and 2030. At the same time, the country is also aiming to reduce its Domestic Material Consumption per capita (in accordance with article 74 of the law on Energy Transition for Green Growth).

TRENDS

Resource productivity grew by 8% between 2010 (2.56 €/kg) and 2014 (2.77 €/kg). The 2030 target (+30%) is equivalent to 3.33 €/kg. In 2007, prior to the economic recession, productivity stood at 2.22 €/kg.
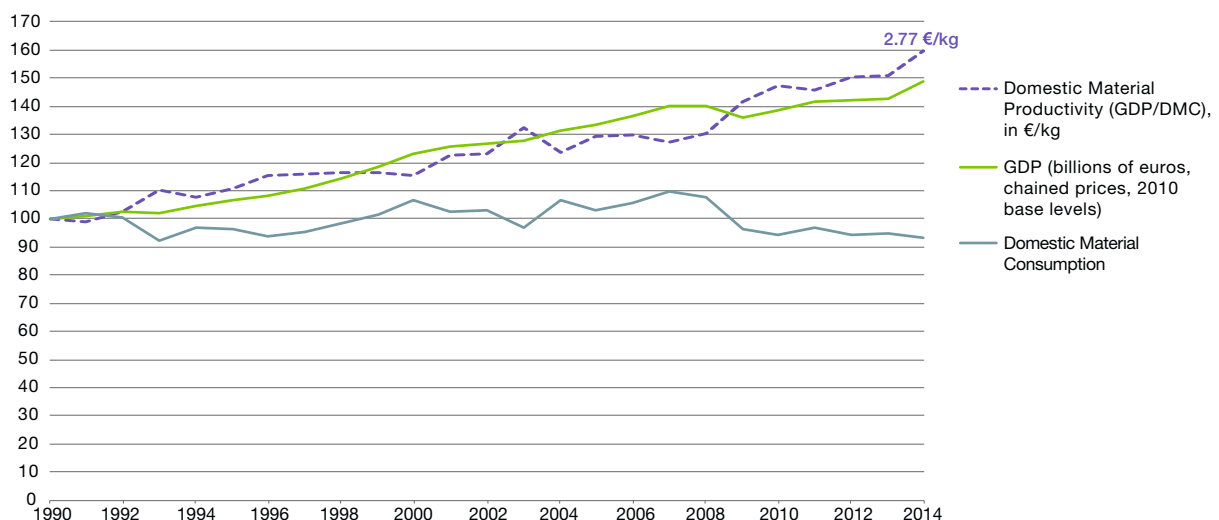
ANALYSIS

Following the 2008 recession, due notably to the slowdown in the construction sector, the fall in domestic material consumption (DMC) is largely explained by reduced demand for construction materials, which generally account for around half of DMC. As a result, the "resource productivity" ratio increased. The ratio reached 2.77 €/kg in 2014 (up from 2.56 €/kg in 2010, an 8% rise), which for the national economy means a lower amount of raw materials is required in order to produce the same amount of wealth (added value).

Generating €1 of additional wealth required 390 grams of materials in 2010, whereas in 2014 only 360 grams were required. This is a sign of the progressive decoupling of material consumption from economic growth, although it must be viewed within the context of the disproportionate significance of construction materials, whose individual economic performance influences the overall result.

Resource Productivity

100 base index for 1990

Sources: Agreste/SSP; Unicem; French customs authority; Insee. Statistical processing: SOeS, 2016
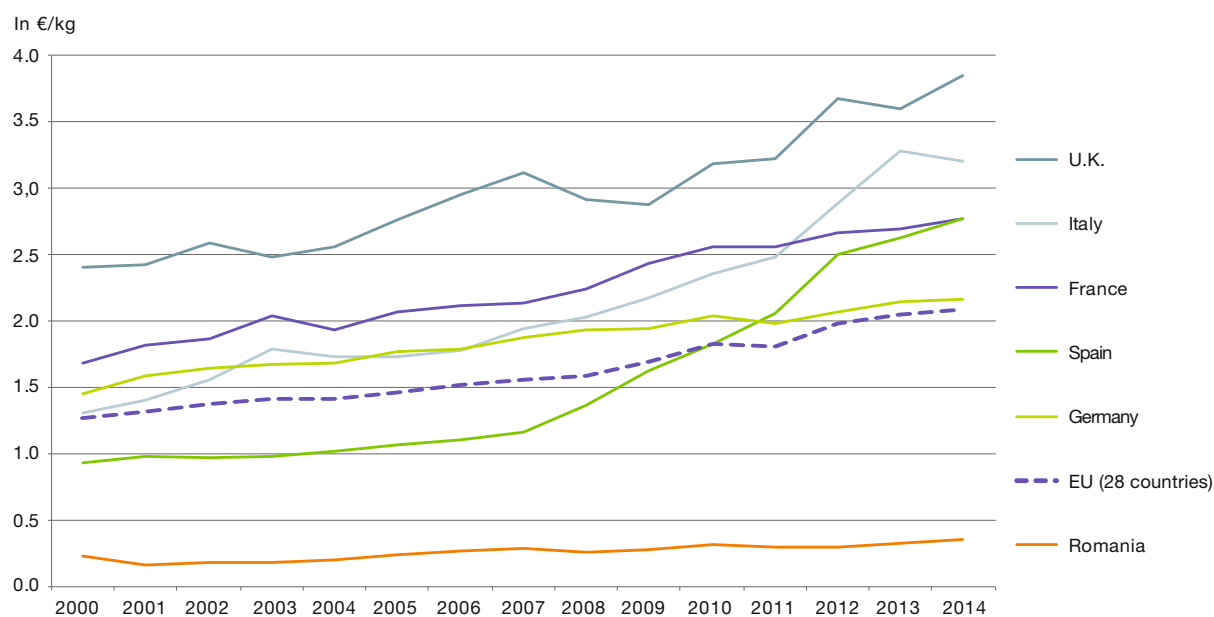
With consumption less vigorous than the GDP, the current trend is to pursue improvements in resource productivity, accompanied by a reduction in DMC per capita.

Domestic material consumption does not adequately take into account the environmental pressure caused by consumer behaviour. In order to supplement this approach, a comparison will be carried out between the development of the material footprint, or MF (in raw material equivalent), and that of the GDP; once available, these figures will provide a clearer picture than the DMC findings. In fact, the DMC only accounts for direct flows and excludes indirect flows – i.e., all the materials consumed abroad in order to manufacture imported goods, including those which never cross the border (e.g. fossil fuels burned to produce imported steel).

INTERNATIONAL COMPARISON

Average resource productivity in Europe stood at 2 €/kg in 2014. The only EU countries with higher resource productivity levels than France (in 2014) were the Netherlands, the UK, Luxembourg and Italy. The lowest European levels were those of Bulgaria, Romania and Estonia. Here too, the relative economic weight of construction materials in Europe puts into perspective the development observed in some countries: Spain and Italy are responsible for almost half the reduction in DMC across the EU, which then goes on to influence the rise in resource productivity.

Resource Productivity in Europe

In €/kg

Sources: *Eurostat. Statistical processing: SOeS, 2016*

FOR MORE INFORMATION

• (In French) Essentiel sur > Environnement > Gestion et utilisation des ressources > La consommation intérieure de matières en France http://www.statistiques.developpement-durable.gouv.fr
• *(In French) Matières mobilisées par l'économie française : une baisse stabilisée depuis la crise de 2008, Chiffres & statistiques*, n° 761, May 2016 http://www.statistiques.developpement-durable.gouv.fr/publications/p/2542/1097/matieres-mobilisees-leconomie-francaise-baisse-stabilisee.html
• Eurostat http://ec.europa.eu/eurostat/documents/2995521/7546702/8-07072016-AP-EN.pdf
• OCDE, *Material resources, productivity and the environment, Green Growth Studies*, 2015
http://www.oecd-ilibrary.org/environment/material-resources-productivity-and-the-environment_9789264190504-en

Ecolabel Holders

Two ecolabels are currently awarded in France: the French ecolabel (NF Environnement) and the European ecolabel (EU Ecolabel), recognised throughout the 28 EU Member States. These ecolabels are awarded based on voluntary measures and approaches. Products carrying an ecolabel have less environmental impact at each stage of their life cycle (manufacturing, use, transport and disposal) than non-certified products. A manufacturer may be awarded ecolabels for one or several products across different product categories.

PILLAR

ECO-DESIGN (products and processes)

OBJECTIVE

Strategic objective 7 of the SNTEDD 2015–2020 plan is to measure the consumption of eco-labelled products as reported by households.

Article 70 of the LTECV promotes eco-design, which aims to reduce waste quantities by extending the life cycle of products.

TRENDS

The number of ecolabel holders who meet the criteria to be considered "circular" rose by 7% between December 2012 and December 2015.
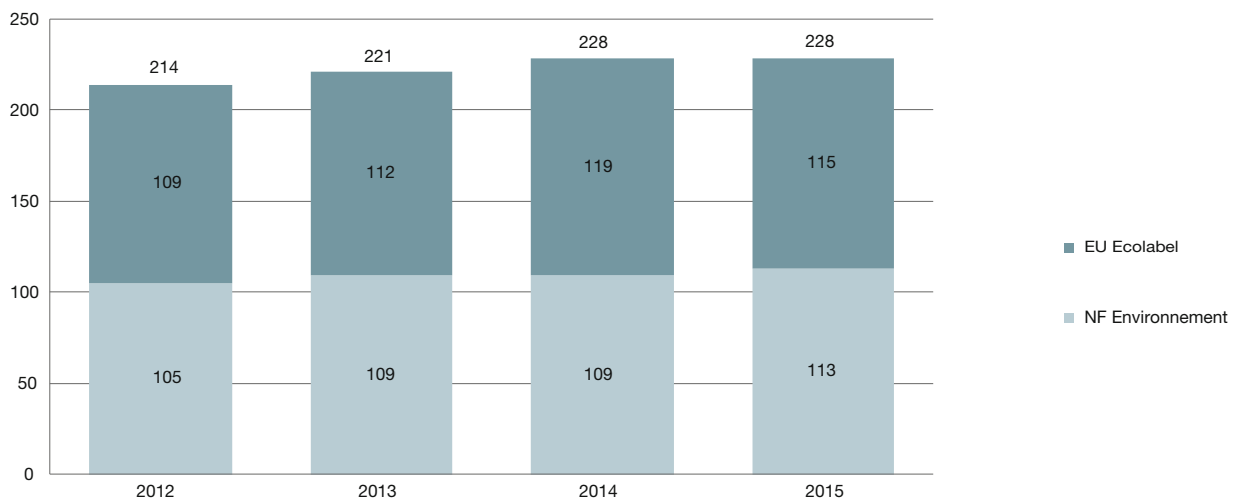
ANALYSIS

At the end of 2015, 54 industrial product categories carried an NF Environnement or EU ecolabel, 28 of which met criteria directly linked to the concept of the circular economy.

The ecolabels in question are based on a global approach, taking into account an analysis of the product's entire life cycle. However, in order to build this indicator, the SOeS has chosen to select only those ecolabels which, in their product specifications, present at least one criterion specific to the circular economy, as listed below:

– recyclability;
– low levels of resource consumption (raw materials, energy, water);
– sustainable resource management (derived from recycling, reutilisation and renewables);
– reduced levels of production waste;

French ecolabel holders meeting circularity criteria

Number of holders

Note: the label holders shown here are manufacturers of eco-labelled products, and so do not include tourism accommodation businesses, which can also be awarded with ecolabels.

Sources: Afnor (Data on 31 December each year). Statistical processing: SOeS, 2016

– reduced waste from packaging, or packaging made from recycled or recyclable materials;

– reparability and duration of availability of spare/replacement parts;

– optimised duration of use (lifespan);

– improved end-of-life management.

The criteria referred to here as "circular" extend beyond the product's quality and performance or the prevention of pollution – they also require the product to be eco-designed.

Furnishings and the production of maintenance products are the highest-contributing categories, representing 24% and 23% respectively of companies with eco-labels.

They are followed by domestic products (such as coffee filters, cat litter, etc.) which account for 13% of eco-labels, then paper products (11%) and gardening products (9%).

Products designed for professional use (such as alarms and security lighting) and hygiene and cosmetics products were ranked only 6th and 7th with 8% and 7% of eco-label holders meeting circular criteria respectively.

INTERNATIONAL COMPARISON

In March 2016, France topped the list of European countries by number of companies carrying the European eco-label (including ecolabels which do not meet the criteria for circularity, as well as tourism, and not including the NF Environnement label), with 26% of the total (or 486 label holders), finishing well ahead of Italy (18%, 337 label holders) and Germany (12%, 231 label holders). Following the example of France's NF Environnement label awarded by the AFNOR organisation, other countries have now founded their own national labels (such as the Blue Angel in Germany, Nordic Swan in Scandinavian country, and the Electronic Product Environmental Assessment Tool (EPEAT) in the U.S.). European ranking must therefore be interpreted with caution. Indeed, where the national ecolabel is strongly represented, the European ecolabel will naturally be less visible. In France's case, the NF Environnement certification applies to products not covered by the European ecolabel, and each one is counted as a half-value when totalling the overall number of French ecolabels based on circular economy criteria.

FOR MORE INFORMATION

• Ecolabels http://www.ecolabels.fr
• European Commission – the European Ecolabel http://ec.europa.eu/environment/ecolabel, section: facts and figures
• *Reported consumption of eco-labelled products (indicator used by the SNTEDD 2015-2020)*, CGDD/SOeS, http://www.statistiques.developpement-durable.gouv.fr/indicateurs-indices/f/2482/0/consommation-declaree-produits-ecolabellises.html

Number of industrial and territorial ecology projects

Industrial and Territorial Ecology (ITE), sometimes referred to as industrial symbiosis, is a form of inter-company organisation that focuses on resource exchange or pooling. The term refers to voluntary collective approaches implemented within a given region with a view to lessening the burden on resources (water, energy, waste) or improving productivity. ITE may involve the sharing of infrastructures or equipment (district heating, production tools or spaces, etc.), services (collective waste management, inter-company transport programmes, etc.) or materials (waste from one business becomes a resource for another). The approach was first introduced in France in the late 1990s.
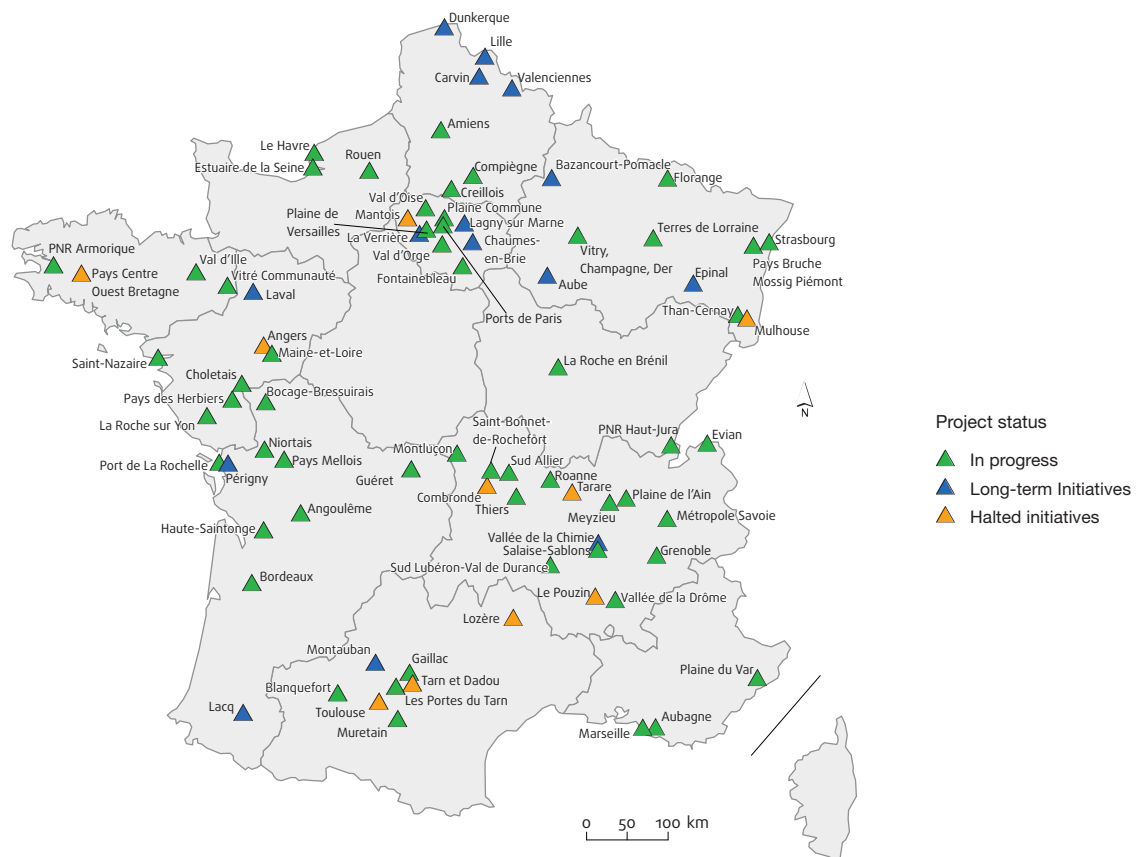
PILLAR

INDUSTRIAL AND TERRITORIAL ECOLOGY

OBJECTIVE

Article 70 of the LTECV promotes the development of industrial and territorial ecology. The approach constitutes one of the strategies that may be mobilised in order to optimise production modes, thereby reducing pressure on resources.

Industrial and Territorial Ecology Projects Index

Sources: *Orée (in French), Le recueil des démarches d'écologie industrielle et territoriale, March 2016. Statistical processing: SOeS, 2016*

TRENDS

At the end of 2015, Orée association reported 70 industrial ecology initiatives either under way or ongoing in France. In 2013, it listed 46. The number of such initiatives has doubled between 2010 and 2015.

ANALYSIS

The first ever industrial ecology initiatives listed in France occurred in the 1990s, and were concentrated in the northern half of the country. By the end of 2015, only 2 French regions (Centre-Val de Loire and Corsica) had not had any initiative of this type according to Orée's findings.

Currently, of the 80 initiatives having been launched, 10 are on hold. However, strong and continued growth has been observed in a number of active or long-term initiatives since 1989, including during the 2008–2010 financial crisis.

The highest numbers of new initiatives launched were registered in the last two years, with 10 projects in each 2014 and 2015.

INTERNATIONAL COMPARISON

According to a study by the European Commission, a majority of EU countries (71%) have implemented political and economic measures to support industrial ecology. In addition, Portugal and Finland have distinguished themselves via their heightened focus on industrial symbiosis. Finally, only 6 countries (22% of Member States) currently lack any public policy on the subject. In practice, the U.K., Austria, Denmark and the Republic of Ireland have experienced success with large-scale industrial symbiosis projects.

FOR MORE INFORMATION

• (in French) Meem, l'écologie industrielle et territoriale
http://www.developpement-durable.gouv.fr/lecologie-industrielle-et-territoriale
• *(in French) Recueil des démarches d'écologie industrielle et territoriale* par Orée, March 2016
http://www.oree.org/_script/ntsp-document-file_download.php?document_file_id=3956
• (in French) Ademe, l'écologie industrielle et territoriale http://www.ademe.fr/expertises/produire-autrement/production-industrielle-services/passer-a-laction/lecologie-industrielle-territoriale
• *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
http://ec.europa.eu/environment/enveco/resource_efficiency/pdf/business/RE_in_Business_M1_IndustrialSymbiosis.pdf

Car-sharing

Promoted in 2015 within article 52 of the French law on Energy Transition for Green Growth, car-sharing aims to reduce the environmental impact of households' road journeys. Irrespective of the distance travelled, the idea is for individuals making the same journey to share vehicles, thereby reducing rates of *solo driving*.

PILLAR

FUNCTIONAL ECONOMY
This indicator sits between the "functional economy" and "responsible consumption" pillars. Given the current state of knowledge and statistics available, there is no pertinent or available indicator for this pillar.

OBJECTIVE

The objective is to reduce consumption of fossil fuels (petrol and diesel) and materials (vehicle manufacturing) linked to private transport. Car-sharing favours use over possession, and this practice has been able to develop thanks to the establishment of dedicated platforms by economic players.
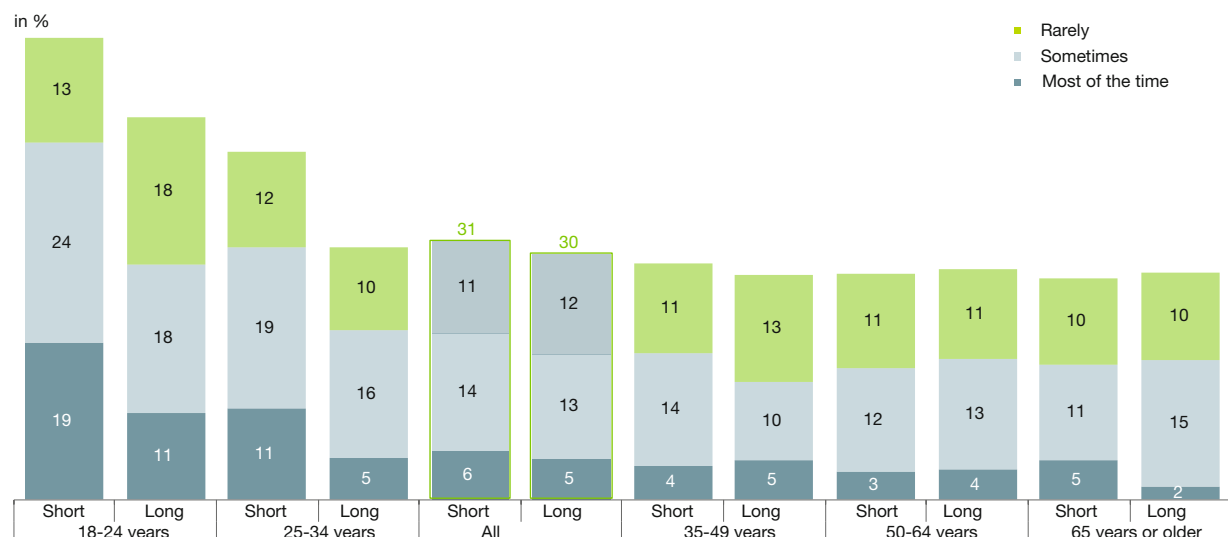
TRENDS

In recent years, the establishment of car-sharing sites by local authorities, the increase in company travel programs and the development of digital services to connect drivers with passengers have created favourable conditions for this form of collective transport to grow in popularity.

Frequency of car-sharing by journey type and age

Note: survey covering a representative sample of 4,258 people from across France, carried out in March 2016. Questions asked were: "Do you ever use car-sharing to journey to your place of work or study?" and "Do you ever use car-sharing (not including with family members) when you go on long journeys?" The possible answers were: "Yes, most of the time / Yes, sometimes / Yes, rarely / No, never."
Scope: All of France.

Sources: *(in French) CGDD/SOeS, enquête sur les pratiques environnementales des ménages, 2016*

ANALYSIS

30% of individuals surveyed said they had already travelled to their place of work or study via car-sharing. For longer journeys, an equivalent proportion was reported (31%). For both short and long distances, very few people surveyed said they use car-sharing "most of the time".

Over long distances, young people are by far the biggest users of this form of shared transport: 19% of 18–24 year-olds even said they travel by these means most of the time. Frequent users of car-sharing tend to live in larger cities (except Paris), and are well-educated but have a relatively low standard of living.

Concerning car-sharing to and from work or study, the main users are also young people, with university degrees and average standards of living. On the other hand, short-distance car-sharing seems to be most often practised outside large cities, in areas where public transport options are limited. This is the case for one in three people surveyed in towns with fewer than 100,000 inhabitants, compared to one in four in the Paris metropolitan region. In rural areas, people surveyed were four times more likely than those living in the Paris region to use car-sharing for their commute to work.

Car-sharing has a limited impact on households' decision to purchase a car, though it may allow the purchase to be delayed. According to recent studies carried out by Ademe, car-sharing over short distances would be more beneficial to the environment than long-distance car-sharing. The latter "would increase the number of vehicles on the road by inciting drivers to travel".

INTERNATIONAL COMPARISON

As part of a survey carried out in 2013, ten different measures for improving inner-city journeys were suggested to 27,680 citizens (in 28 EU countries). Ranking in 6th place, "incentives for carpooling or car-sharing" were considered by 25% of Europeans to be a potential solution to urban transport issues. Studies carried out in France showed that respondents there were much more receptive to the idea, with the highest number (49%) of respondents saying that car-sharing could improve travel within cities. To a lesser extent, the idea also solicited interest among 33% of Germans, 20% of Britons and 10% of Italians.

FOR MORE INFORMATION

• *National car-sharing studies (in French):* (1) *Enquêtes auprès des utilisateurs des aires de covoiturage* réalisée par Inddigo http://www.ademe.fr/etude-nationale-covoiturage-courte-distance ; (2) *Enquête auprès des utilisateurs du covoiturage longue distance* réalisée par le bureau de recherche 6T, Ademe, September 2015 http://www.ademe.fr/enquete-aupres-utilisateurs-covoiturage-longue-distance

• *Les Français et la mobilité durable : quelle place pour les déplacements alternatifs à la voiture individuelle en 2016 ?* CGDD/SOeS, *Datalab Essentiel*, n° 36, September 2016
http://www.statistiques.developpement-durable.gouv.fr/publications/p/2570/1228/francais-mobilite-durable-quelle-place-deplacements.html

• *Attitudes of Europeans towards Urban Mobility*, European Commission, *Special Eurobarometer*, n° 406, December 2013 http://ec.europa.eu/public_opinion/archives/ebs/ebs_406_en.pdf

• (in French) *Baromètre trimestriel de l'audience du e-commerce en France*, FEVAD, study carried out by *Mediametrie/NetRatings*, second quarter of 2016 http://admin.fevad.com/espace-presse/barometre-de-l-audience-du-e-commerce-en-france-au-2eme-trimestre-2016

Food Waste

France's "National Pact to Combat Food Waste" (pacte national de lutte contre le gaspillage alimentaire), published in May 2013, provides the following definition: any food item destined for human consumption which is lost, discarded or spoiled at any stage of the food cycle constitutes food waste. Food waste is a hallmark of the linear economy, causing direct and indirect wastage of resources (raw materials, water, energy). This indicator is among the targets set by the UN's sustainable development goals for 2030.

PILLAR

RESPONSIBLE CONSUMPTION

OBJECTIVE

Preventing food waste is a major priority for the European Commission. The Roadmap to a Resource-Efficient Europe has set the objective of reducing the amount of food sent to landfill by 50% by the year 2020.

In order to combat waste at all stages of the food chain, in 2013 France drew up the National Pact to Combat Food Waste, setting an objective to cut food waste by half by 2025. To achieve this goal, a new law (n° 2016-138) to combat food
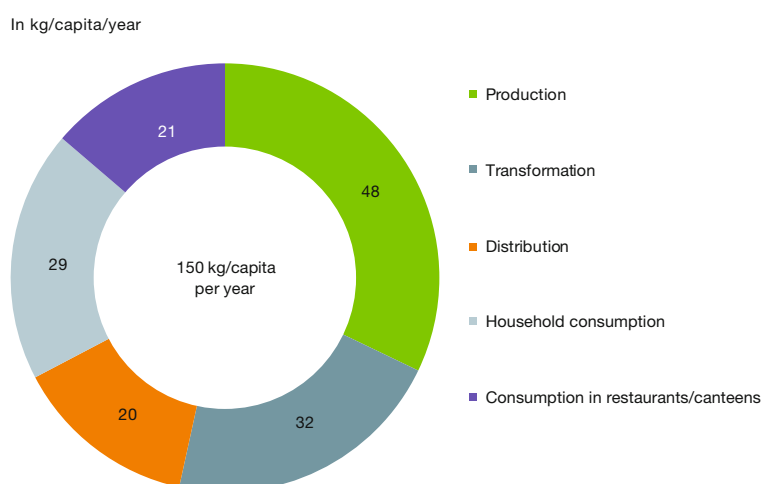
waste was passed, establishing a hierarchy of actions to be put in place by all operators in the food chain:

1) prevention of food waste;

2) ensuring unsold food that remains fit for human consumption is used, either via donation or transformation;

3) repurposing food for use in animal feed;

4) using food for agricultural composting or energy creation, particularly via anaerobic digestion.

TRENDS

Food waste levels have remained steady over the last ten years.

Breakdown of food waste throughout the food chain in France

In kg/capita/year

- Production
- Transformation
- Distribution
- Household consumption
- Consumption in restaurants/canteens

150 kg/capita per year — 48, 32, 20, 29, 21

Sources: *Ademe (in French) - (Pertes et gaspillages alimentaires : l'état des lieux et leur gestion par étapes de la chaîne alimentaire, 2016)*

ANALYSIS

According to a 2016 study, Ademe found that the total amount of food loss and wastage was 10 million tonnes, or 150kg per person per year. When all food products are accounted for, food loss and wastage stands at 18% of the total available amount. A portion is repurposed for animal feed (less than 2 million tonnes, or less than 20% of overall waste).

If these products were repurposed for human consumption, their estimated theoretical value would be €16bn. All stages in the food chain (production, processing, distribution and consumption) are affected by loss and wastage. Production losses represent 32% of overall food loss, while 21% is lost in processing and 13% in distribution, and finally 33% in home consumption and in institutional and commercial catering. In the consumption phase, food waste is four times greater in the food service sector (restaurants and canteens) than in household consumption.

The carbon emissions linked to food loss and waste are estimated to be equivalent to approximately 15.3 million tonnes of CO_2 or 3% of national emissions.

INTERNATIONAL COMPARISON

For the moment, there are no available fields of international comparison on this emerging topic. The Fusions study (table below) is a global assessment of food waste across Europe.

A study carried out by the *Waste and Resources Action Programme* (WRAP) on food waste in the UK estimated that British households wasted as much as 100kg per person in 2012 (compared to 29kg in France in 2016).

Table: EU-wide food waste estimates for 2012

	Millions of tonnes	**Kg/capita**
Production	9.1	18
Processing	16.9	33
Distribution	4.6	9
Food service industry	10.5	21
Households	46.5	92
Total	**87.6**	**173**

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

FOR MORE INFORMATION

• (in French) *Pertes et gaspillages alimentaires, l'état des lieux et leur gestion par étapes de la chaine alimentaire*, Ademe, May 2016
http://www.ademe.fr/sites/default/files/assets/documents/pertes-et-gaspillages-alimentaires-201605-rapport.pdf
• (in French) Le gaspillage alimentaire, CGDD/SOeS, *Essentiel* sur
http://www.statistiques.developpement-durable.gouv.fr/lessentiel/ar/340/0/gaspillage-alimentaire.html
• *Estimates of European food waste levels,* Fusion, March 2016 https://www.eu-fusions.org
• (in French) *Campagne nationale de caractérisation des ordures ménagères: Results from year 2007*, Ademe, 2009
http://www.ademe.fr/campagne-nationale-caracterisation-ordures-menageres-resultats-annee-2007
• *Household food and drink waste in the UK*, WRAP, 2012 http://www.wrap.org.uk/content/household-food-and-drink-waste-uk-2012

Household spending on product repair and maintenance

The extension of product life cycles is a key factor in lessening the environmental impact of consumerism by optimising product use. Favouring repair over renewal means extending product lifespans, thereby limiting the need for replacement, which represents a further drain on resources. Monitoring the amount each inhabitant spends on product repair and maintenance enables us to analyse the development of household practices in this regard.
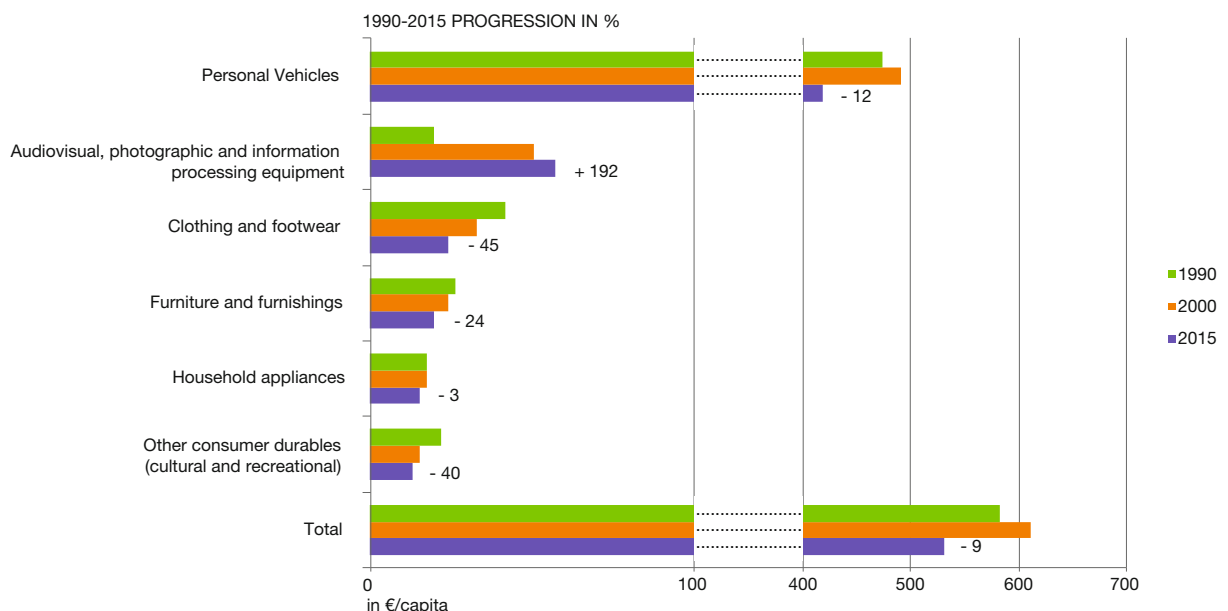
PILLAR

RESPONSIBLE CONSUMPTION

OBJECTIVE

Extend product lifespans via increased use of repair services

TRENDS

Household spending per capita on maintenance and repair fell by 9% between 1990 (€583/capita/year) and 2015 (€530/capita/year).

Consumer spending per capita on maintenance and repair

1990-2015 PROGRESSION IN %

Note: Final consumption spending of households by consumption purpose, in chain-linked prices (2010) in millions of Euro. The "clothing & shoes" category also includes cleaning and rental costs. Property (housing) repair and maintenance not included.
Scope: All of France.

Sources: *Insee (National accounts from 2010), Insee (population estimates from 1990, 2000, 2015). Statistical processing: SOeS, 2016*

ANALYSIS

In 2015, households spent €35.2 bn on maintenance and repair of their possessions, or €530 per capita (a decrease of 9% since 1990). Having increased in the 1990s (by 5% between 1990 and 2000), spending per capita began to decrease since the 2000s (falling by 13% between 2000 and 2015).

Spending of this type is largely directed towards the repair and maintenance of personal vehicles – a category that still represents almost 80% of recorded spending in 2015 (€419 per capita), despite indicating a downward trend of around 12% over the period in question. Maintenance and repair of audiovisual equipment comes in second on the list (€50 per capita, or around 10% of overall spending), and is the only category in which this type of spending has continued to increase since the beginning of the 1990s. Here, the amount spent per capita has tripled, due largely to the surge in popularity of IT and personal communications devices between 1990 and 2000.

Spending in other product categories is falling. The most significant reduction in spending was seen in the maintenance and repair of clothes and shoes (€20 per capita in 2015, or a drop of 45% between 1990 and 2015). Spending on repair of household appliances (€14 per capita in 2015) is also falling, albeit at a slower pace (down 3% over the period in question). The lower cost of certain items, combined with higher repair costs, the lack of availability of spare parts and even planned obsolescence due to the "fashionable" aspect of certain personal electronic devices, have led to households favouring replacement over repair.

According to a survey of household environmental practices (EPEM 2016) carried out by the SOeS in March 2016, based on a representative sample of 4,258 French citizens aged 18 and over, the main reason cited by respondents for not repairing their items was that they are not repairable: 37% for mobile phones, 41% for computers and televisions and 45% for washing machines. Repair services are considered to be too expensive for a third of computers and washing machines (as well as 25% and 26% for televisions and telephones respectively). Users did not attempt to repair telephones in 37% of cases, compared to 34% for defective or broken televisions, 28% for computers and 23% for washing machines.

INTERNATIONAL COMPARISON

As part of a survey carried out in 2013 by the European Commission, (Eurobarometer – European Attitudes to Waste Management and Resource Efficiency), a sample of 26,595 European citizens (of which 1,004 were French) were asked to rank the five reasons why Europeans do not make more effort to reduce the amount of waste they produce. The difficulty and cost of repairing items ranked second on the list, considered by 39% of Europeans to be an obstacle to waste reduction. Studies carried out in France gave a slightly higher result (42%) than the European average. The same difficulty was cited by 41% of Germans, 50% of Britons and 24% of Italians.

FOR MORE INFORMATION

• (in French) *Perceptions et pratiques des Français en matière de réparation des produits,* Ademe, 2014 edition
• (in French) *Évolutions du comportement des Français face au développement de l'économie circulaire,* Ademe, June 2014
• (in French) Insee (France's national institution for economic studies and statistics) Thème > Conditions de vie, société > Consommation et équipement des ménages www.insee.fr
• *Attitudes of Europeans towards Waste management and resource efficiency*, European Commission*, Flash Eurobarometer* n° 388, December 2013 http://ec.europa.eu/public_opinion/flash/fl_388_en.pdf

Quantities of waste sent to landfill

According to the hierarchy of waste processing methods set out in European Commission Directive 2008/98/EC, the use of landfill sites is the least desirable method of waste disposal, along with incineration without energy recovery. Landfilling constitutes a waste of resources that might otherwise have been recycled, and impedes the development of a circular economy.

PILLAR

RECYCLING (material and organic matter)

OBJECTIVE

The French law on Energy Transition for Green Growth (LTECV) aims to reduce the amount of non-dangerous, non-inert waste that ends up in landfill by 30% by 2020 (compared to 2010 levels), and by 50% by 2025.
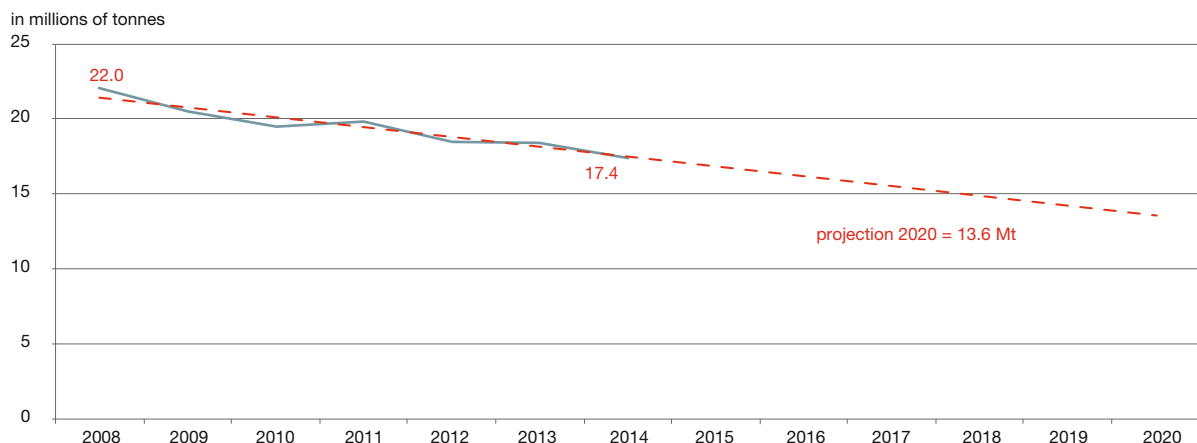
TRENDS

Between 2008 and 2014, landfill disposal of non-dangerous and non-inert waste fell from 22 million to 17.4 million tonnes (-21%).

ANALYSIS

Despite a hike in France's "General Tax on Polluting Activities" (TGAP), which went from €15/tonne in 2009 to €20/tonne in 2012, the objective of reducing landfill tonnages by 15% over the same period was not met. In the event, the quantity of non-dangerous, non-inert waste sent to landfill fell by 10% (from 20.5 to 18.5 million tonnes over the same period). Meanwhile, the number of recycling centres for household waste grew from 347 to 390, with a focus on large-scale units. Recycling of materials and organic waste has grown to over 2 million tonnes.

For 2020, the LTECV has set the ambitious objective of reducing the level of waste being sent to landfill by 30% compared to 2010 levels, backed by a fresh increase in the TGAP.

Non-dangerous waste sent to landfill over time

in millions of tonnes

projection 2020 = 13.6 Mt

Sources: Customs, TGAP tax report. Statistical processing: SOeS, 2016

Reaching this target would mean going from 19.5 million tonnes sent to landfill in 2010 to 13.6 million in 2020 – an annual reduction of 3.5%. If the upward trend observed since 2008 perseveres, this objective may be achieved. However, significant investments will be necessary, including constructing new recycling centres, adapting industrial processes in order to absorb any surfeits of raw materials, developing the plastic recycling sector and improving awareness of waste sorting.

INTERNATIONAL COMPARISON

In France, the amount of municipal waste sent to landfill in 2014 was roughly on a par with the European average (26%, compared to an EU average of 28%). France occupies a middle ground between northern European countries (Austria, Germany, the Netherlands), which send less than 10% of their waste to landfill, and southern countries (Spain, Portugal, Greece) which rely heavily upon this option (50% or more).

Proportion of municipal waste sent to landfill

Note: the ratio used is the amount of municipal waste sent to landfill to the total amount of municipal waste per country. The method used by EU countries to calculate waste tonnage going to landfill may vary from one country to another, especially due to the fact that non-recyclable materials may or may not be taken into account.

Sources: *Eurostat, 2016*

FOR MORE INFORMATION

- (in French) *Gestion des déchets bilan 2009-2012 de la TGAP et des soutiens de l'Ademe*, CGDD, May 2013
- (in French) *Pourquoi faut-il améliorer la taxe sur l'élimination des déchets ?* CGDD, *Le point sur*, n° 228, May 2016
- *Each person in the EU generated 475kg of municipal waste in 2014*, Eurostat, *Press Release* 56/2016
  http://ec.europa.eu/eurostat/documents/2995521/7214320/8-22032016-AP-EN.pdf
- Eurostat database http://ec.europa.eu/eurostat/fr/data/database

Use of recycled raw materials in production processes

Recycled raw materials, also known as secondary raw materials, are waste products that, having been sorted and processed, remain of sufficient quality to be reintroduced into the production process. They can be substituted for raw materials, thereby economising on resources. The "cyclical material use rate" shows the proportion of waste that has been recovered weighed against the material demands of the economy as a whole.

PILLAR

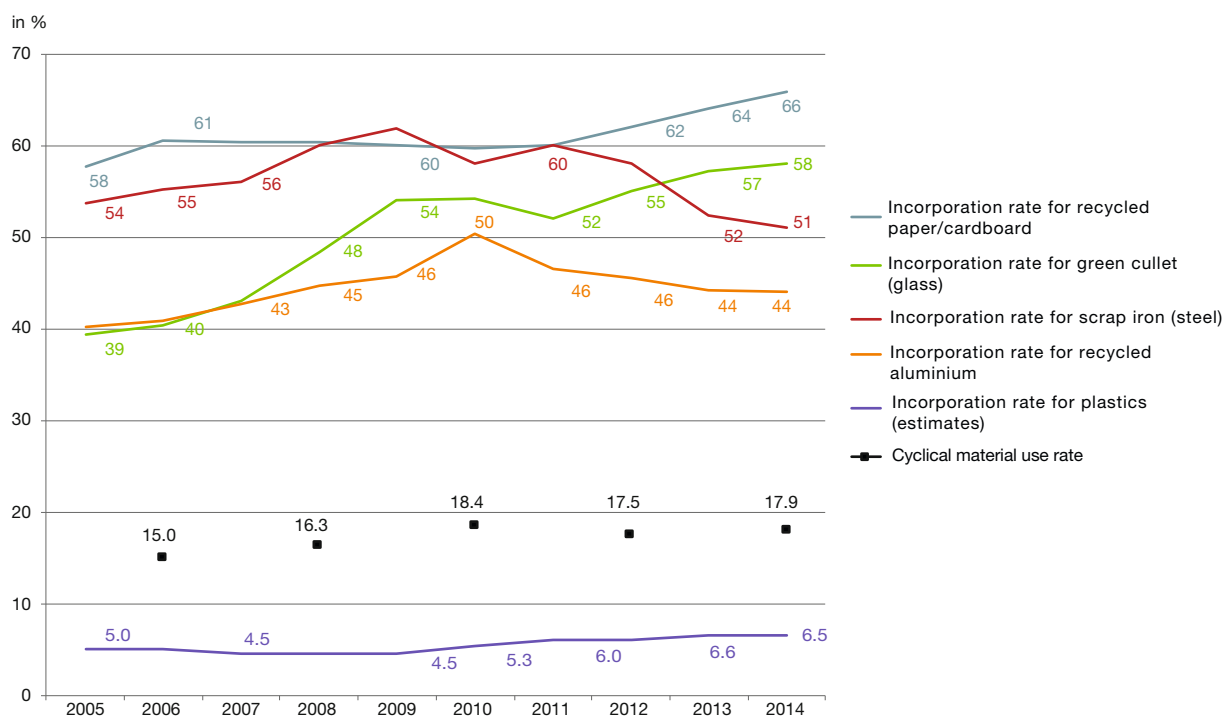**RECYCLING (materials and organic matter)**

OBJECTIVE

Article 70 of the LTECV sets an objective to increase the proportion of waste being processed into materials, especially organic matter, by directing 55% (by 2020) and subsequently 65% (by 2025) of non-dangerous, non-inert waste towards the recycling/waste transformation sector.

TRENDS

The cyclic use of materials has risen by 3 points between 2006 and 2014; however, this also includes a significant proportion of aggregate, which makes up 46% of total materials consumption.

The incorporation rate of paper/cardboard increased by 6 points between 2010 and 2014, while the incorporation rate for plastics has held steady.

Evolution of incorporation rates for green cullet, recycled paper and cardboard (RPC), aluminium, scrap iron and plastic

in %

Note: Cyclic use of material indicator = waste recycled into materials vs economic demand for materials.

Sources: SOeS (cyclical use indicator), 2016 Bilan national du recyclage 2005–2014 (incorporation rates for various materials)

ANALYSIS

In 2014, national production of ferrous and non-ferrous metals, along with paper/cardboard, plastics and glass stood at 35.3 million tonnes (Mt), remaining stable in comparison with 2012 figures while showing a downward trend over the last ten years. Of these 5 secondary raw materials examined, collection for recycling totalled 24.4 Mt in 2014, up 3% from 2005.

In 2014, 12.7 Mt of scrap iron were collected, down 7% from 2012. Collection of recyclable paper and cardboard remained at 7.3 Mt – the same figure as reported in 2012. 2.4 Mt of used glass was collected, of which 1.9 Mt was glass packaging from households. Non-ferrous scrap metal such as copper and aluminium accounted for just 0.9 Mt.

Of the 24.4 Mt collected for recycling, 17.5 Mt of secondary raw materials were used or incorporated in French production activities (the term "incorporation rate" is used for each production sector). A portion of the secondary raw materials collected in France is exported; conversely, some of the secondary raw materials used in French production cycles are imported.

The steel sector has the greatest influence, accounting for over 50% of the 17.5 Mt used in 2014. As such, the incorporation rate of scrap iron stands at 51% of raw steel produced in 2014 (including internal recycling). The second largest quantities are of paper and cardboard, which had a high incorporation rate of 66% in 2014, having been on the rise since 2011. The incorporation rate of cullet used in the glass industry reached 58%, rising steadily. With an incorporation rate of 7% in 2014, plastics are a long way behind. Although less expensive, recycled plastics often have a higher cost of incorporation than equivalent raw materials due to the higher level of technical constraints they place on industrial operators. Finally, there are numerous types of plastic (PET, HDPE, PVC, etc.), which makes them difficult to sort and process.

The cyclic use of materials indicator has had relatively weak results. In 2014, 18% of economic material requirements were met using recycled materials. The European average is 14%. Aggregate represents 50% of materials consumed in France, or 444 million tonnes per year in 2014, while the proportion of recycled waste issuing from deconstruction stands at only 4% of mineral requirements, which explains the low numbers for this synthetic indicator.

INTERNATIONAL COMPARISON

According to PlasticsEurope, the rate of plastic recycling in Europe (EU 27 along with Norway and Switzerland) rose to 11%, namely double the estimated rate in France.

Incorporation rates for recycled paper/cardboard and scrap iron by country, 2012

In %	Recycled Paper/Cardboard	Scrap iron
UK	87	38
Spain	82	84
Germany	71	45
France	62	53
Italy	54	77
Austria	48	34
UE-27	**51**	**56**

Note: for recycled paper/cardboard, the EU value is based on data from CEPI member states (18 countries).

Source: *Confederation of European Paper Industries (CEPI) and World-steel (as cited in "Bilan national du recyclage 2003–2012 – rapport final")*

FOR MORE INFORMATION

• (in French) Bilan national du recyclage de l'Ademe 2005–2014 forthcoming

Employment in the Circular Economy

This indicator aims to quantify the number of full-time or equivalent (FTE) jobs held in economic activities that form part of the circular economy. This indicator allows us to measure the transition towards an economic system that is more frugal in its use of resources. Employment in the circular economy is estimated across two levels: The 1st level examines the core activities of the circular economy via the 7 pillars defined by Ademe. The 2nd level is an "8th pillar", and includes what are known as "adjacent" activities – those whose primary objective is not the circularity of production processes or the reduction of resources used, but which will nonetheless contribute to these goals in a more or less permanent fashion.

PILLAR

7 pillars + 1 adjacent pillar

OBJECTIVE

The law on Energy Transition for Green Growth aims to create sustainable economic growth and the creation of long-term jobs that cannot be outsourced. The size and scope of the resource economy should act as a major source of new jobs and activities.
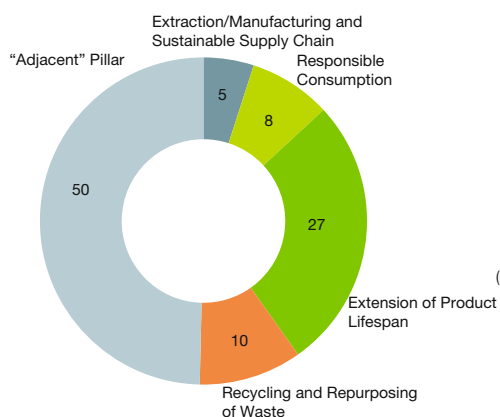
TRENDS

Employment in core circular economy activities gained over 55,000 full-time or equivalent posts (FTE) between 2008 and 2013 (an increase of 11%). Circular economy-related activities have also seen an upturn in job creation since 2008 (+58,000 FTEs, a 12% rise).
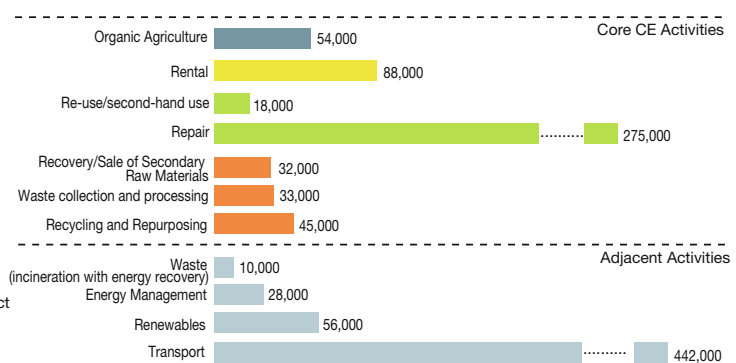
ANALYSIS

In 2013, the "core activities" of the circular economy recruited 545,000 full-time or equivalent employees (FTE). Repair and maintenance activities created the most jobs (275,000); half of these were in the "vehicle maintenance and repair" sector (including both light and heavy vehicles). The second-hand sector, meanwhile, created 18,000 FTEs, almost all of which were in services aimed at individual consumers.

Breakdown of employment by pillar in 2013

in %

Number of jobs per occupation (FTE) in 2013

Note: employment numbers are rounded to the nearest thousand. Activities linked to eco-design, industrial ecology and the functional economy cannot be reliably quantified as there is no way to identify these individual roles within current statistical nomenclature. Regarding collective consumption (from the Responsible Consumption pillar) and the social and solidarity economy (SSE) (from the Extension of Product Lifespan pillar), jobs in these fields have not been integrated into the overall figures as the method applied does not allow for yearly estimations. Furthermore, regarding the SSE, employment figures are muddled by the difficulty in obtaining data from stakeholders involved, as well as the fact that the scope of the SSE is wider than that of the pillar itself. Moreover, the various yearly statistics available are not comparable year-on-year. In 2013, employment in collective platforms rose to 1,000 FTE (source: DGE, Insee (Clap), SOeS). For the same year, Ademe estimated SSE-related employment in the field of re-use and re-purposing to be around 16,000 FTE. (http://www.ademe.fr/panorama-deuxieme-vie-produits-france-actualisation-2014).

***Sources:** Insee (EAP, Esane, Clap, unemployment database), Ademe, SOeS (employment in the green economy). Statistical processing: SOeS, 2016*

Recycling and waste repurposing emerges as the 2nd most common role in terms of employment, accounting for 110,000 FTEs, followed by rental services (88,000 FTE). Activities linked to organic agriculture, a central aspect of the extraction/operation and sustainable supply chain pillar, accounted for 54,000 FTEs in 2013.

On the fringes of these activities, over 536,000 FTEs are registered within the "adjacent" pillar. 82% of these jobs are linked to transport: operation of and investment in infrastructures (railways, tramways, cycle lanes), manufacturing of related products (including low-emissions vehicles, electric bikes, bicycles, etc.) The rest relate to renewable energy and energy management.
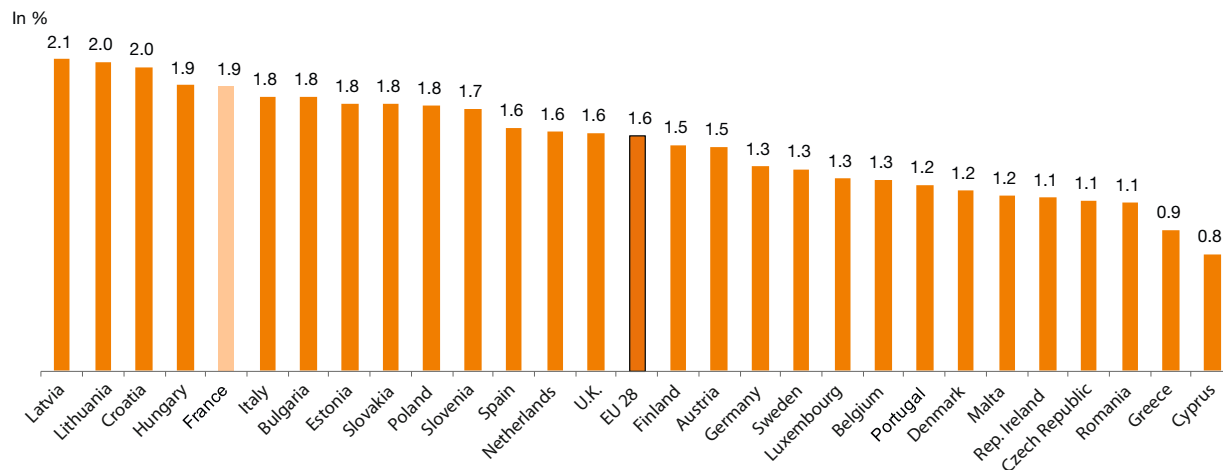
Between 2008 and 2013, employment in the core activities of the circular economy rose by 11% (compared to a drop of -0.9% for the economy as a whole); these figures were notably boosted by employment in organic agriculture (+30,000 FTEs)

and repair services (+18,000 FTEs). Elsewhere, developments were less significant; certain sectors even lost jobs, including around 2,000 FTEs in the re-use/second-hand and recycling sectors. Employment in the "adjacent" pillar followed the same trends as core activities in the circular economy: numbers rose by 12% over 5 years. Transport-related activities were the driving force behind this rise (+50,000 FTE).

INTERNATIONAL COMPARISON

According to a study by the *Waste and Resources Action Programme*, in 2012 the circular economy represented 3.4m jobs at European level (or 1.6% of total employment). France ranked in joint 4th place alongside Hungary, with 1.9% of domestic employment occurring within the circular economy.

Circular economy employment as a proportion of total employment by country in 2012

In %

Scope: sectors included are repair services, reuse, waste management, recycling and rental services.
Sources: *Waste and Resources Action Programme (WRAP), 2015. Economic Growth Potential of More Circular Economies 45 p. See www.wrap.org.uk/cegrowth et Insee, 2014. French Economic Data Tables*

FOR MORE INFORMATION

• (in French) *Méthodologie de quantification de l'emploi dans l'économie circulaire*, National Observatory of jobs and vocations in the green economy, 2017, 54 p http://www.statistiques.developpement-durable.gouv.fr/publications/p/2724/1328/methodologie-quantification-lemploi-leconomie-circulaire.html
• *Economic Growth Potential of More Circular Economies*, Waste and Resources Action Programme (WRAP), 2015, 45 p http://www.wrap.org.uk/cegrowth

What trends can be observed across the indicators examined?

— All in all, the transition towards a circular economy appears to be taking effect. Of the 10 indicators considered, two show signs that circularity is not yet occurring. Food waste, a hallmark of the linear economy, has not decreased. Spending on household repair services (devices and equipment) is not rising, leading to the need to replace these items with new products. A reduction in food waste and greater use of repair services are both potential sources of employment. Finally, the incorporation of recycled plastic into production processes along with the cyclical material use rate remain relatively weak on an economic scale and demonstrate that plastic waste and deconstruction constitute rich sources of materials that must be put to greater use.

The temporal assessment of the materials footprint (MF), an indicator that is currently being calculated, should provide us an alternative method of confirming the global trends observed across these 10 circular economy indicators.
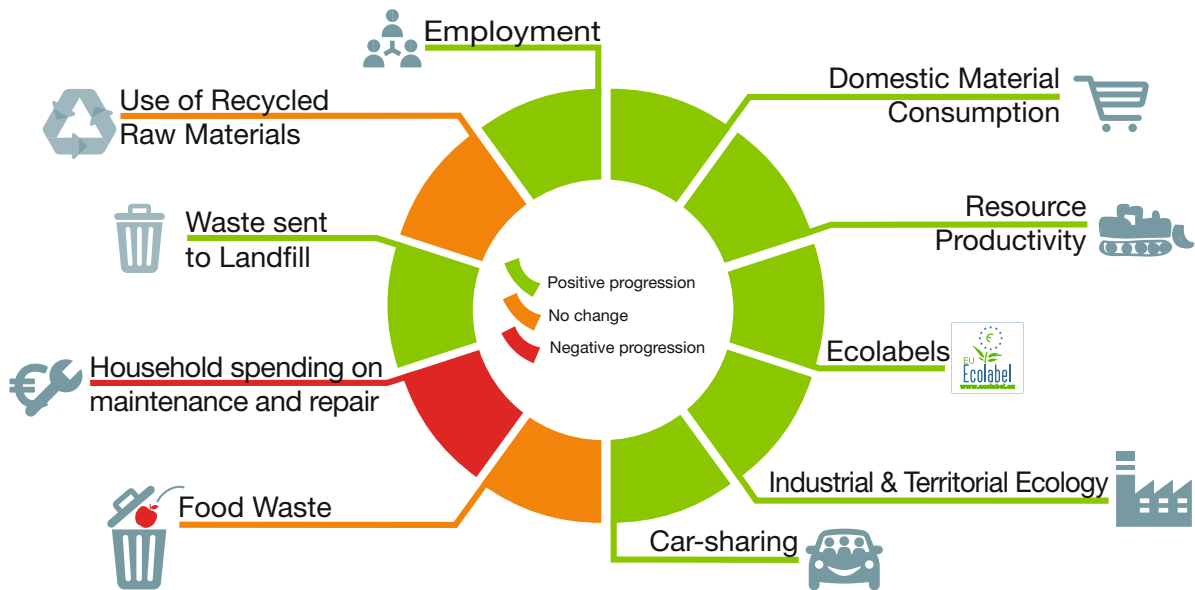
Part 3: What trends can be observed across the indicators examined?

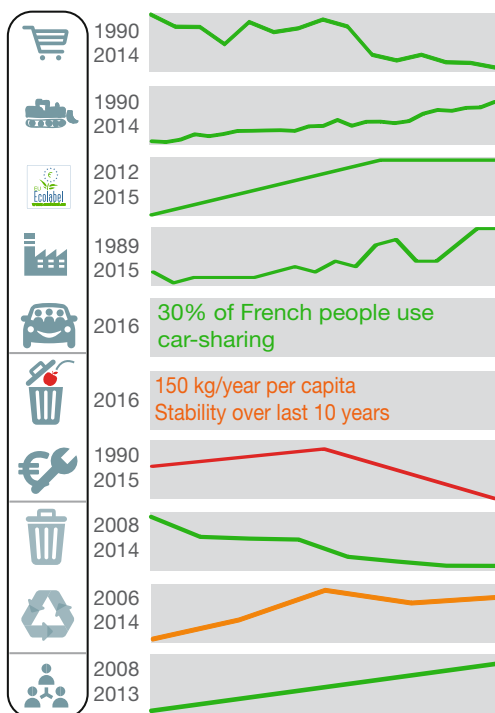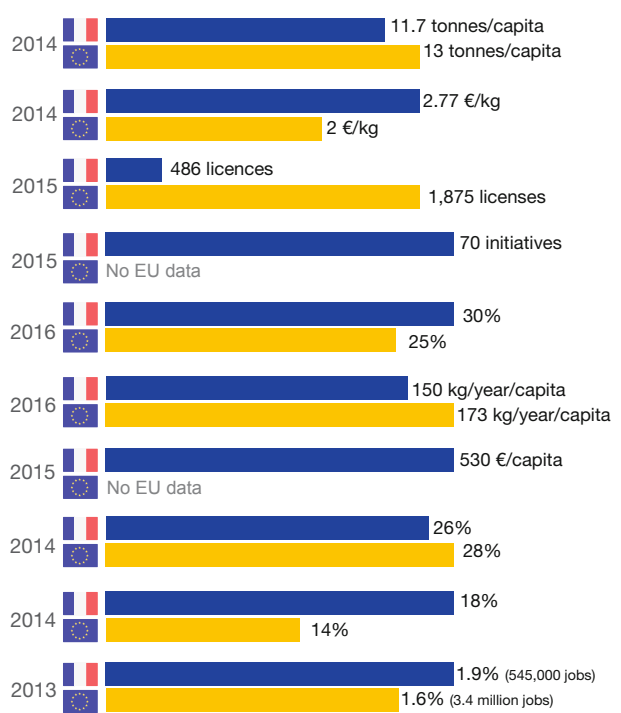| Circular Economy Pillar	Indicator	Trend	Year	Value France	Value EU-28
Extraction/operation and sustainable supply chains	❶ Domestic Material Consumption per capita	↗ - 18% between 2004 and 2014	2014	11.7 t/capita	13 t/capita
	❷ Resource Productivity	↗ + 8% between 2010 and 2014	2014	2.77 €/kg	2.0 €/kg
Eco-design (products and processes)	❸ Ecolabel holders	↗ + 7% ecolabel holders between 2012 and 2014	2015	228 holders of 486 labels (circular criteria)	1,875 labels awarded in Europe (circular + non-circular criteria). France ranked 1st
Industrial and territorial ecology	❹ Number of industrial and territorial ecology projects	↗ Number of initiatives has doubled between 2010 and 2015	2015	70 initiatives	No EU data
Functional Economy	❺ Car-sharing frequency rates	↗	2016	30% of French people have used car-sharing	25% of Europeans consider car-sharing to be a viable solution to urban transport problems
Responsible Consumption	❻ Waste quantities	→ Stable over 10 years	2016	150 kg/capita/year	173 kg/capita/year
Extension of product lifespan	❼ Household spending on maintenance and repair	↘ - 9% between 1990 and 2015	2015	530 €/capita	No EU data
Recycling (materials and organic matter)	❽ Quantities of waste sent to landfill over time	↗ - 21% between 2008 and 2014	2014	26% of municipal waste goes to landfill	28% of municipal waste goes to landfill
	❾ Use of secondary raw materials	↗ 6-point increase in incorporation rate of paper/cardboard between 2010 and 2014 → plastics stable ↗ 3-point increase in the materials circularity indicator between 2006 and 2014	2014	66% for recycled paper/cardboard 6.5% for recycled plastics 18% of economic demand is met by using recycled materials	51% for recycled paper/cardboard in 2012 11% recycled plastics 14% of European economic supply needs are met using recycled materials
7 pillars as a whole	❿ Employment in the circular economy	↗ + 11% between 2008 and 2013	2013	545,000 jobs within the circular economy	3.4 million jobs in repair, re-use, waste, recycling and rental services in 2012

Key data

Circular Economy in France

Key Indicator Trends

- Employment
- Use of Recycled Raw Materials
- Waste sent to Landfill
- Household spending on maintenance and repair
- Food Waste
- Domestic Material Consumption
- Resource Productivity
- Ecolabels
- Industrial & Territorial Ecology
- Car-sharing

Positive progression
No change
Negative progression

Progression over time

	Period	
🛒	1990 2014	
🚜	1990 2014	
Ecolabel	2012 2015	
🏭	1989 2015	
🚗	2016	30% of French people use car-sharing
🗑	2016	150 kg/year per capita Stability over last 10 years
🔧	1990 2015	
🗑	2008 2014	
♻	2006 2014	
👥	2008 2013	

European comparisons

Year	France	EU
2014	11.7 tonnes/capita	13 tonnes/capita
2014	2.77 €/kg	2 €/kg
2015	486 licences	1,875 licenses
2015	70 initiatives	No EU data
2016	30%	25%
2016	150 kg/year/capita	173 kg/year/capita
2015	530 €/capita	No EU data
2014	26%	28%
2014	18%	14%
2013	1.9% (545,000 jobs)	1.6% (3.4 million jobs)

Sources: SOeS, 2017

Glossary

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

Sustainable extraction/exploitation and 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 (source: Ademe).

Collective Consumption: practices aimed at exchanging and sharing goods and services between individuals and limiting intermediaries between producer and consumer (source: DGE).

Domestic Material Consumption: equals the sum of materials extracted from the territory and those which are imported, minus the amount of exported materials. This refers to the quantity of a material consumed by the population of a given country for its own internal needs (source: CGDD/SOeS).

Responsible Consumption: in which the purchaser, whether an economic agent (public or private) or a citizen-consumer, makes his choice based on the environmental impact of all stages in the life cycle of the product, good or service (source: Ademe).

Car-sharing: (U.S.: *car pooling*) shared use of a domestic road vehicle between a driver and one or several passengers as part of the driver's own journey, without but less than the growth any remuneration aside from sharing the cost of fees. A fee-paying service may be used to put drivers and passengers in contact with one another for this purpose (source: French law on Energy Transition for Green Growth).

Decoupling: this term refers to the breaking of a link between an environmental variable and an economic one. According to the definition set by the Organisation for Economic Cooperation and Development (OECD), decoupling occurs when the growth rate of an environmental pressure is less than that of its driving economic force (e.g., GDP) over a given period. Absolute decoupling is said to occur when the environmentally relevant variable is stable or decreasing while the economic driving force is growing. Decoupling is said to be relative when the growth rate of the environmentally relevant variable is positive, but less than the growth rate of the economic variable. (source: Eurostat).

Eco-design: refers to the systematic integration of environmental aspects from the outset of the design and development of products (goods and services, systems) with the aim of reducing the negative environmental impact throughout the life cycle while still performing to an equal or superior level (source: AFNOR standard NF X 30-264).

Industrial and Territorial Ecology: industrial and territorial ecology, also referred to as industrial symbiosis, is a form of inter-company organisation based around shared energy and material flows or aggregation of company needs (source: Ademe).

Functional Economy: an economy that optimises the use of a product over possession, leaning towards product-linked services rather than the products themselves (source: Ademe).

Planned obsolescence: defined as any technique by which a company putting a product on the market aims to deliberately reduce that product's lifespan in order to increase replacement rates (source: French law on Energy Transition for Green Growth).

Waste recycling and recovery: refers to any and all repurposing operations via which waste (including organic waste) is transformed into a substance, material or product to be used again, either for its original purpose or another use. Operations that derive energy from waste, as well as those that convert waste into combustible fuels or use it for backfilling may not be considered recycling (source: French Environmental Code).

Re-use: any activity via which substances, materials or products that are not rubbish are used again for the same purpose for which they were originally designed. (source: French Environmental Code)

Reutilisation: any activity via which substances, materials or products having been deemed waste materials are returned to use (source: French Environmental Code).

Is the transition from a linear to a more circular economy actually effective?
This publication, comprising 10 indicator sheets and a scoreboard, provides the first results of national monitoring of the circular economy. The indicators chosen relate to all of the seven pillars of the circular economy. International comparisons shed light on France's position in relation to its European neighbours.

10 Key Indicators for Monitoring the Circular Economy
2017 Edition

General Commission for Sustainable Development

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