

# 2014

## THE ENVIRONMENT IN FRANCE Major trends



Ministry of Ecology, Sustainable Development and Energy

[www.developpement-durable.gouv.fr](http://www.developpement-durable.gouv.fr)





# Contents

## 04 KEY FIGURES, observations/solutions

**KNOWLEDGE IS IMPROVING**  
the results remain mixed

**08 WATER, AIR AND SOIL**  
the human footprint

**17 BIODIVERSITY**  
natural environments under pressure

**21 NATURAL RESOURCES**  
increasing demand

**26 RISKS**  
France exposed

**ACTIONS**  
local initiatives and long term solutions

**36 Towards SUSTAINABLE CONSUMPTION AND LIFESTYLES**

**40 Towards a GREEN ECONOMY**

**46 Towards TERRITORIES WITH LESS EXPOSURE**

**“** *In the run-up to the Paris-Climat conference and following the Environmental Conference, the State of the Environment report highlights how urgent it is to act. I would like this report to be distributed as widely as possible, as democratic choices are based on the knowledge and sharing of information.”*

*Ségolène Royal*



**Ségolène Royal**  
Minister of Ecology,  
Sustainable Development  
and Energy

# THE STATE OF THE ENVIRONMENT IN FIGURES



Increasing  
needs

+40%

**HOMES**

in 30 years (between 1983 and 2012)



1  2,100

MWatts of electric  
power consumed in 2012  
against 79,730  
10 years ago

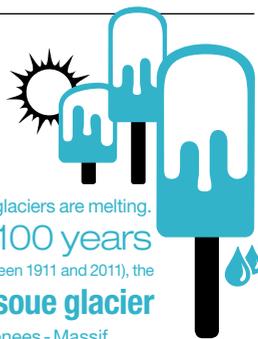
A climate  
in change

 **shift in**  
grape harvests  
in Champagne,  
now earlier

Natural environments  
under pressure



**Pesticides**  
are found in of  
93% **water**  
courses



The glaciers are melting.  
In 100 years  
(between 1911 and 2011), the  
**Ossoue glacier**  
(Pyrenees - Massif  
du Vignemale)  
has lost 59%  
of its **surface**

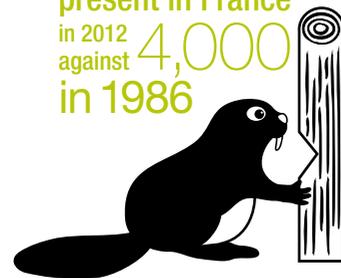
20% of **species**  
in metropolitan France  
are



The equivalent of around  
180 football  
pitches  
were **developed on**  
each day, to the detriment  
of agricultural land as well as  
natural habitat, between  
2006 and 2012



14,000  
**BEAVERS**  
present in France  
in 2012  
against 4,000  
in 1986



Better informed  
**public**

85,000

**PUBLIC BIBLIOGRAPHICAL**  
resources referenced on the portal  
[Toutsurlenvironnement.fr](http://Toutsurlenvironnement.fr)

Individual and collective  
**actions**

 3 X less  
**energy**  
**CONSUMPTION,**  
this is the target  
of the thermal  
regulation 2012

 470  
local authorities  
and regions  
recognised as  
France local agenda 21  
since 2006

Almost  
11,500   
(natural risk prevention plans)  
**approved**  
in 2014

4,000  **EVENTS**  
throughout France  
**each year**  
during sustainable  
development week



98%  
**of bathing**  
**areas**  
in metropolitan France are  
**compliant**  
**with regulations**

At the end of 2012,  
4.7%   
of French  
**farms**  
were committed to  
an organic farming  
**approach**

10  fewer  
**plastic**  
**bags** in 12  
years

## THE ENVIRONMENT IN FRANCE

# KNOWLEDGE IS IMPROVING

The results remain mixed

What is the state of the environment? How is it changing? Thanks to monitoring and research, knowledge of the different environments has improved. Some monitoring indicators are positive thanks to technical progress, investment and the impetus created by regulations, incentive-led measures and behavioural change. The situation nonetheless remains a concern.





# WATER, AIR AND SOIL

## THE HUMAN FOOTPRINT

**Continental and aquatic environments support the life of animal and plant species.** They provide numerous services and the future of all ecosystems depends on their quality. Affected by the consequences of human activities, they suffer pollution, the majority of which changes according to lifestyles. The assessment of this pollution relies on the monitoring put into place by the public authorities. Regulations and prohibitions are having significant effects but new pressures are appearing.



### DEFINITION

CONTINENTAL WATERS include surface waters (water courses and bodies of water) and underground waters (groundwater). The first are subject to direct pressure (discharges from water treatment plants and rainwater runoff), whilst the second have the natural protection of the soil and subsoil, which have varying efficacy against diffuse pollution.



### THE WATER FRAMEWORK DIRECTIVE (WFD)

Adopted in 2000 by the Member States of the European Union, the WFD sets a legal framework through which each Member State commits to a process of protecting and recovering water quality in aquatic environments. It introduces a results-driven policy and aims to attain good water condition in 2015. The ecological state of surface waters is assessed based on their biological (flora and fauna), chemical (phosphorous, nitrates, etc.) and hydromorphological quality (state of the banks, etc.). The condition of underground bodies of water is the combined result of their chemical and quantitative states. In accordance with this directive, monitoring campaigns are conducted regularly.

## Continental waters

**Water courses and groundwater have been monitored** for a number of years, both for health reasons and to protect the environment. The Member States of the European Union follow the instructions of the water framework directive. France has adopted the different regulations by prohibiting certain products such as phosphates in household fabric detergents in 2007

and bringing collective drainage up to standard. Some of the pollution effectively comes from discharging waste water directly into surface water. From this point of view, significant progress has been made by bringing outdated water treatment plants up to standard, enabling a fairly marked decrease in the presence of certain macropollutants such as phosphates in the water.

## POLLUTION OF CONCERN

**In spite of this, surface waters and groundwater** are polluted by numerous products. The levels of groundwater pollution by nitrates are higher than those of water courses and frequently attain very high values.

Nitrates from agricultural pollution contribute to the poor ecological condition of water. Although essential to plant development, their concentration in some regions, at very high levels, is harming the environment.

### In an image

#### Average nitrate concentration in underground waters in 2011

In 2011, 27% of groundwater in metropolitan France had an average nitrate content of over 25 mg/l, with 11% higher than 40 or even 50 mg/l.

#### Average per aquifer (mg/l)

- Over 50
- Between 40 and 50
- Between 25 and 40
- Between 10 and 25
- Less than 10
- No measurement
- Groundwater with just one measuring point

Guadeloupe    Guiana    Mayotte  
Martinique    La Réunion

Source: water agencies and offices - BRGM, Ades banks (RCS and RCO networks), 2012. SOeS, aquifers according to the BRGM's BDRHFV1 database

### MACRO AND MICROPOLLUTANTS

Macropollutants, so called to differentiate from micropollutants, include suspended matter, organic substances and nutrients, such as nitrogen and phosphorous. Unlike micropollutants (pesticides, chemical products and metals), which are toxic at very low doses, macropollutants disrupt aquatic environments or present risks to human health at higher concentrations.



### NITRATES STILL VERY PRESENT

When it rains, nitrates, present in excess on farmland, run off into water courses or drain into the soil to eventually join the underground waters. Water courses transport them to the sea where they can cause "green tides". Nitrates accumulate in groundwater, which they often take years to reach.

●●● To increase crop yields, additional feed is provided by spreading nitrogen, chemical or organic fertilisers. Intensifying agricultural production is therefore accompanied by increased use of nitrogen fertilisers. Nitrogen fertiliser deliveries increased by 60% between 1970 and 1990 and have since stabilised and very slightly decreased.

**In spite of the development of alternative farming prac-**

**tices**, the issue of the contamination of continental waters with nitrates has yet to be resolved. This worrying situation is equally true for pesticides, which are also polluting water courses and groundwater. As a large agricultural country, France is one of Europe's biggest consumers of pesticides.

## In an image

### Pesticide concentration in water courses in 2011

In 2011, pesticides were present in 93% of the monitoring points in water courses in metropolitan France and in 85% in overseas territories.

Average per point (µg/l)	% of points
More than 5	0.7
Between 0.5 and 5	30
Between 0.1 and 0.5	37.9
Less than 0.1	24.1
No quantification	7.3
No data available	



Source: water agencies and offices, 2012 - Processing: SOeS, 2013

## CHANGING CONTAMINATION

**Other substances**, used or discharged on a large scale, also reach all the aquatic environments. Regular micropollutant analysis campaigns highlight the presence of PAH, phthalates and PCB in water courses, and VHOC in groundwater. Two complementary campaigns, conducted in France in 2011 and 2012, confirmed the presence of numerous products as diverse as petrol additives, solvents, parabens and even medicines (especially anti-inflammatories

and anxiolytics), essentially in water courses. Contamination is changing in line with regulations and use. Thus in the 1970s, the pollution of water courses with metals was very worrying. This is less the case today, due to the reduction of their discharge by industry. ●

# Marine waters

**Rivers, estuaries, coastal waters and the high sea** provide essential ecological continuity, but also enable pollutants to transfer. Over 80% of sea pollution originates from the land

via rivers and from spillage from coastal areas. Thanks to the implementation of measures to limit pollutant discharges, we are noticing an improvement in the condition of marine waters.

## AN IMPROVEMENT IN THE QUALITY OF THE MARINE ENVIRONMENT

**Overall, the microbiological quality of coastal waters** is being maintained at a good level. Local authorities have worked hard to limit the sources of pollution: improving water treatment systems and making the waste- and rainwater collection networks more reliable. Restrictions on the use of certain substances are having direct positive effects. For

example, the prohibition of lead in petrol at the end of 1999 has decreased its presence in the environment. In addition to land policies, there are also fewer discharges from ships at sea. International law prohibits hydrocarbon discharges and, following the Erika oil spill in 1999, sanctions against polluters have been toughened.

## High quality bathing waters



The blue flag flies over high quality waters

In 2011, 98% of sea bathing areas in metropolitan France complied with regulations. The quality of French bathing waters is good, significantly improving up to the start of the 2000s. Stagnation has since been observed.

## TOO MUCH MACRO-WASTE



**Some pollution is highly spectacular**, such as the presence of green algae on the beaches of Brittany or even macro-waste in the majority of seas or on the backshore. This waste includes objects or materials thrown or abandoned at sea, on the coast

and on the land: household appliances, bags, cigarette butts, fishing nets, etc. Their life span at sea is often very long and has a significant impact on the fauna, which confuses them with their prey and dies of asphyxia or suffocation. ●

# 150

million waste items

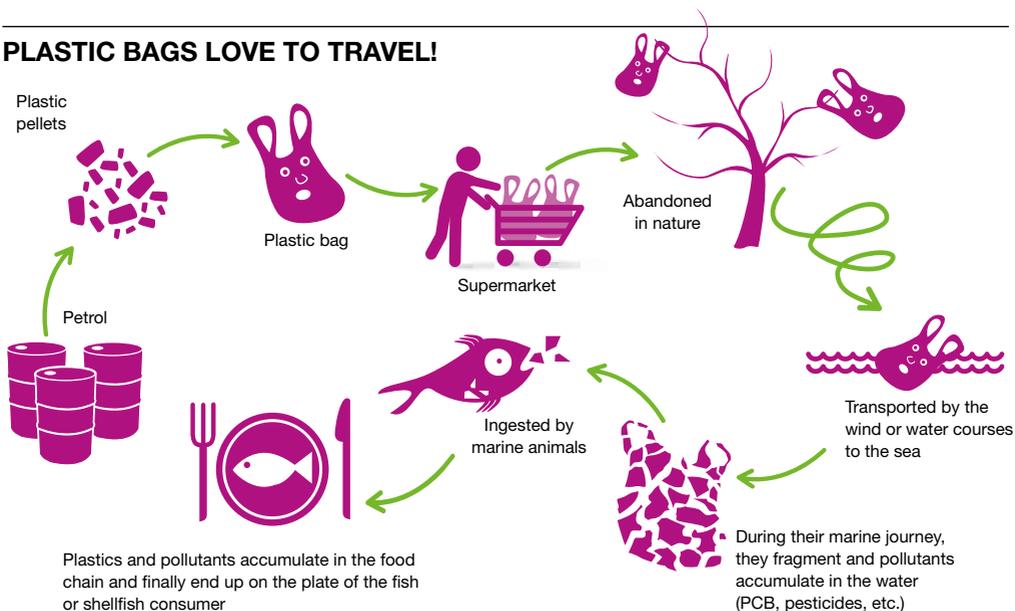


Ifremer estimates there to be 150 million pieces of waste on the seabed in the North Sea, over 50 million in the Bay of Biscay, from the coast to the edge of the plateau, and 175 million in the north-west basin of the Mediterranean.



This is the approximate number of water abstraction points intended for human consumption abandoned between 1998 and 2008 due to diffuse pollution of agricultural origin (nitrates and pesticides).

## PLASTIC BAGS LOVE TO TRAVEL!



In France, although the number of single-use plastic bags has been divided by 10 between 2002 and 2009, **1 billion** bags were still put into circulation in 2009! Many end up in the sea.



## Outdoor air

**G**ases and particles are emitted into the air by natural phenomena and human activities. In addition to so-called primary pollutants, certain so-called secondary pollutants such as ozone, nitrogen dioxide (NO<sub>2</sub>) and particles can form during physico-chemical reactions in the atmosphere. The effects of atmospheric pollutants

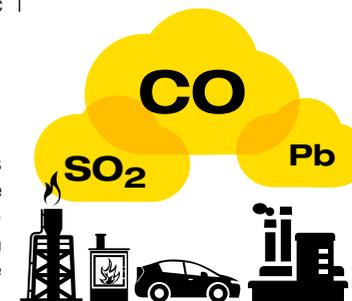
on health vary, ranging from minor ailments (fatigue, nausea, eye or skin irritation) to more serious (asthma and allergies) and even fatal illnesses (cancers and cardiovascular diseases). The International Agency for Research on Cancer (IARC) has classified outdoor air pollution as carcinogenic to humans. Although French emissions of atmospheric

pollutants are down over the period 1990-2012 for the majority of substances, numerous problems with air quality persist, especially in cities, due in particular to emissions from transport and homes.

## IMPROVEMENTS

**Sulphur dioxide** (SO<sub>2</sub>) is the pollutant whose emissions and concentrations in the air have been the most reduced (92% lower emissions between 1980 and 2012): decrease in fossil fuel consumption, use of fuels with lower sulphur

content, deindustrialisation, etc. The environmental standards imposed on road transport have enabled emissions and atmospheric concentrations of carbon monoxide (CO) and lead (Pb) to be significantly reduced.



## DIFFICULTIES COMPLYING WITH REGULATIONS

**The complexity of the chemical reactions** that occur in the atmosphere and the multiplicity of the sources of emissions explain the difficulty in reducing certain pollution. In spite of a 47% decrease in nitrogen oxide emissions since 1990, France is exceeding the European ceiling on emissions. This is partly explained by the increase in traffic and the move towards diesel for cars, which have slowed the progress made by the road transport sector. NO<sub>2</sub> concentrations still exceed the European thresholds set to protect human health, mainly in proximity to road traffic and in large cities. Although French particle emissions decreased between 1990 and 2012, European thresholds have been exceeded for PM<sub>10</sub>

and PM<sub>2.5</sub> (fine particles), especially in large cities. The particles' effects on health vary according to their size and physico-chemical composition. Fur-

thermore, episodes of ozone pollution with NO<sub>2</sub> and PM<sub>10</sub> are being recorded each year. ●

### In an image

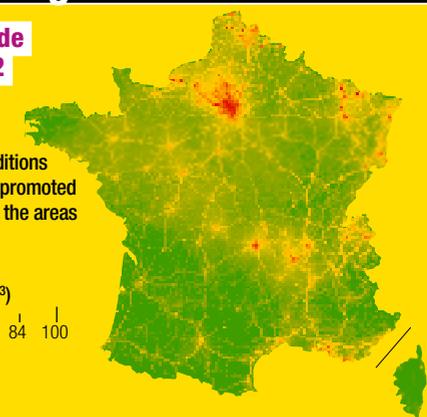
#### NO<sub>2</sub> pollution episode on 17 January 2012

Stable meteorological conditions with fairly low winds have promoted the accumulation of NO<sub>2</sub> in the areas in which it is emitted.

Concentration of NO<sub>2</sub> (µg/m<sup>3</sup>)

0	14	28	42	56	70	84	100
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Source: PREVAIR



# Indoor air

**The French spend between 20 and 22 hours per day in enclosed or semi-enclosed spaces:** homes, offices, schools, transport, etc. Providing a good quality of air in these living spaces is all the more important as the sources of pollution therein are so numerous:

building materials and wall and floor coverings, furniture, domestic activities, combustion appliances and so on. It is therefore essential to ensure these spaces have good ventilation conditions. Like outdoor air, poor quality indoor air can have short or long term effects on health. For exam-

ple, 22% of homes have formaldehyde concentrations greater than or equal to the regulatory guideline value. Formaldehyde is a gas that irritates the eyes, nose and throat. The IARC has classified it as carcinogenic to humans since 2004.

## THE QUALITY OF INDOOR AIR UNDER SURVEILLANCE



**Since January 2012**, volatile pollutant emission levels have been indicated by special labeling for building and wall and floor covering products as well as paints and varnishes. Some building materials and decorating products are now prohibited from sale. Perchloroethylene, used in dry cleaning, is in the process of being banned from use in premises adjoining those occupied by

third parties. The monitoring of establishments open to the public is becoming mandatory and will be introduced gradually from 2015 (institutions open to groups of children under six to begin with). The task of the Indoor Air Quality Observatory is to draw up an inventory of the quality of indoor air, improve knowledge and pass on information and best practices. ●

# The atmosphere

**The properties of the atmosphere allow life on earth.** The greenhouse gases naturally present in the atmosphere play an important role in regulating the climate. The ozone layer filters the sun's ultraviolet rays and protects living beings. The atmosphere and its properties are weakened by the pollutant emissions caused by human activities.

## GREENHOUSE GAS EMISSIONS THREATEN THE CLIMATE

**French and European greenhouse gas (GHG) emissions** decreased between 1990 and 2012, by 12 and 18% respectively. But the carbon footprint of the French, like the residents of the other major western countries, is not decreasing and remains greater than the CO<sub>2</sub> emitted on the territory. The emissions associated with imports, which have increased by 62% since 1990, represented

half of the carbon footprint of the French in 2010. The target of limiting the average world temperature increase to 2°C compared with the pre-industrial era requires world GHG emissions to be reduced to half of 1990 levels by 2050. Given the population growth, technical progress alone will not enable this target to be reached, hence changes in lifestyle are required.



## DEFINITION

A PERSON'S CARBON FOOTPRINT represents the quantity of greenhouse gas – expressed in tonnes of CO<sub>2</sub> equivalent – emitted to satisfy his consumption. It is composed of a domestic portion (emissions from households and industries, commerce and services) and outsourced portion (emissions generated abroad in the manufacture and transport of imported goods and services).

## THE VISIBLE EFFECTS OF CLIMATE CHANGE IN FRANCE

**In metropolitan France**, the increase in temperatures since 1900 (+0.92°C) is slightly higher than the world average (+0.85°C). According to projections, global warming could reach 1.7 to 5°C in metropolitan France at the end of the century. Thanks to the absorbing effect of the oceans, the increase will be lower in over-

seas territories, at around 1 to 3°C. Precipitation levels are expected to fall and water course flows could decrease by 20 to 30% on average by 2060. Heat waves would become more frequent and more intense. The rise in sea levels by the end of the century will probably be between 40 and 60 cm. ●

**11.6**  
tonnes of CO<sub>2</sub> eq. was the average carbon footprint of a French person in 2010, almost 6 tonnes of which were emitted on the territory.



## The role of forests and oceans in reducing the greenhouse effect

**Very high volumes of CO<sub>2</sub>** are exchanged between vegetation and the atmosphere and the atmosphere and the surface of the oceans. Due to the increase in the atmospheric concentration, ocean CO<sub>2</sub> capture and vegetation photosynthesis are increasing. We estimate today that over half of net CO<sub>2</sub> emissions by humans are captured in this way by these "carbon sinks". But the stabilising role played by vegetation and the oceans is fragile and should decrease as the climate warms.



## DEFINITION

**SOIL** is the uppermost layer of the earth's crust. Soil is formed of rocks decomposed by climate, living organisms and human activities. It permanently interacts with air, flora and fauna, water and rocks.

**S**oil is at the heart of the major environmental challenges, as are climate change, water resources and the protection of biodiversity. It contains the water and nutrients essential to plant growth; it regulates water flows, filters and breaks down pollutants and, by storing carbon, contributes to regulating greenhouse gas flows.

Yet soil is weakened and even damaged by the pressure of human activities: agriculture, industry, construction, transport and domestic activities.

## NUMEROUS DISRUPTIVE FACTORS

**A natural phenomenon, the erosion of soil by rain** – called hydric erosion – is aggravated by modifications to the landscape and certain practices such as intensive cropping, deforestation, development, etc. The resulting

loss of the fertile soil layer (1.5t/ha/year on average) is accompanied by a decrease in agricultural yields. Development operations that restructure and render the ground impermeable hamper its functions, often irreversibly.

## SOIL, A RECEPTACLE FOR VARIOUS POLLUTION

**Soil pollution can be diffuse:** atmospheric fallout of pollutants emitted by industry, transport and heating; spread of pollutant products in farming (pesticides, metals, fertilisers and livestock effluent). It can also be one-off: industrial pollution relating to transport or handling accidents

or to poor containment. In 2012, the Basol database recorded 4,142 polluted sites and soils requiring the preventive or curative intervention of the public authorities, especially in former mining areas and the most urban regions. ●

## In an image

### Lindane contents of French soil

Persistent organic pollutants impregnate the soil for a long time after their use. One such pollutant is lindane, used as an insecticide and antiparasitic and prohibited in agriculture since 1998 due to its toxicity to humans and the environment. Lindane pollution affects the intensive crop and livestock regions of the north-west of France.



Lindane concentrations (µg/kg of earth)

■ Over 1.36	■ Between 0.50 and 0.67
■ Between 1.10 and 1.36	□ Between 0.35 and 0.50
■ Between 0.86 and 1.10	□ Less than 0.50
■ Between 0.67 and 0.86	□ No data available

Source: Gis sol - RMQS, 2013 - Processing: SOeS, 2013



## BIODIVERSITY

# NATURAL ENVIRONMENTS UNDER PRESSURE

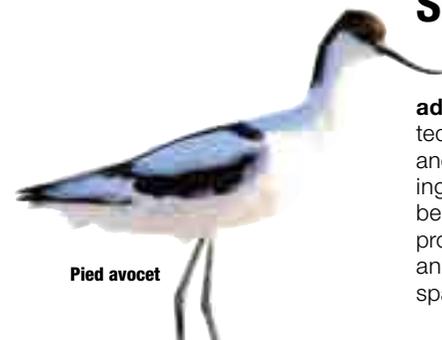
**Humans have always used natural resources for their development and have now colonised almost all of the space available to them.**

Today, the situation is of great concern. Even though locally some circumstances are improving thanks to protective measures, the pressures suffered by ecosystems are less and less tenable. Human activities threaten numerous habitats and species now in decline. France is especially concerned, as it is among the world's 10 countries with the highest number of species under threat, mainly due to the pressures placed on biodiversity in the overseas territories and Mediterranean area.

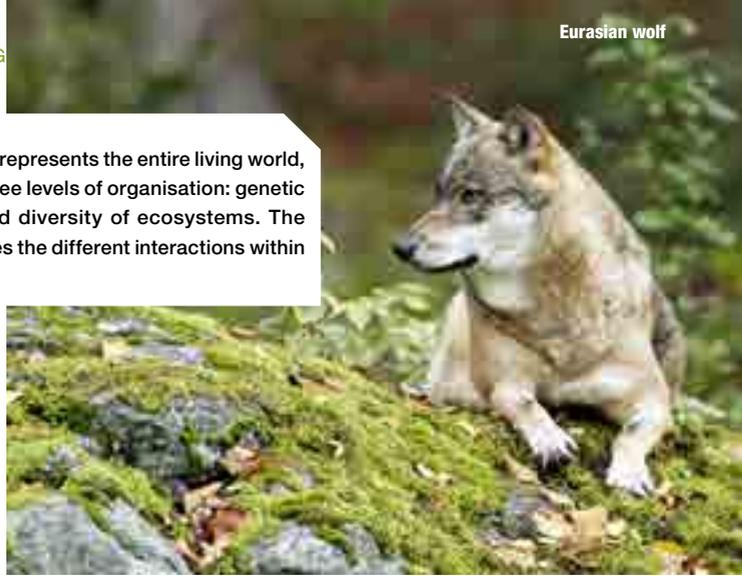
## MEASURES TO PROTECT SPECIES

**As part of the European Union, for several decades France** has been committed to protecting environments and species that are disappearing. Protective measures are being implemented, such as the prohibition of destroying species and the creation of protected spaces where human activities

are limited (national parks, natural reserves, prefectural biotope protection orders and so on). This is particularly the case for areas in which migrating birds breed or overwinter, for example in the Camargue and on the Atlantic coast. Today, the populations of the majority of waterbirds have increased in France, which is now home to the third largest population of overwintering birds in Europe. The general change in anatidae (Canada geese, ducks, etc.) and ●●●



Pied avocet



**DEFINITION** BIODIVERSITY represents the entire living world, including humans, according to three levels of organisation: genetic diversity, diversity of species and diversity of ecosystems. The concept of biodiversity also includes the different interactions within these three levels.



●●● wader numbers (black-tailed godwit and pied avocet) is positive thanks to this protection. Other emblematic species such as the otter, beaver and wolf are recolonising their environments, mainly due to their legal protection. In parallel, a more integrated approach to ecosystems allows human activities to be reconciled with the protection of biodiversity. The Natura 2000 network, developed on a Euro-

pean scale, identifies particularly vulnerable areas in order to implement management measures. Regional natural parks aim just as much to promote and protect natural heritage as to ensure harmonious local development (tourism, commerce, leisure, etc.). Over the period 1998-2013, areas protected by contracts and international commitments increased in metropolitan France by 67%.

## CONTRASTING SITUATIONS

**For some species and ecosystems,** the situation is more contrasting. Although emblematic species with a heritage importance have been relatively well protected by the policies implemented, other, more "ordinary" species are in decline. Some species that specialise in agricultural environments are in marked decline, such as the sky lark and common buzzard (-30%). In cities, house sparrow and barn swallow numbers are also down (-17%). However, other, non-specialised species such as the blackbird, blue tit and wood pigeon are on the

increase. Land biodiversity does not change uniformly, but according to the pressures placed on it. The same applies to the ecological condition of bodies of water, which is highly dependent on human activities and pollution. In France, less than half of them are in a good ecological condition. The heads of basins are more preserved, especially the mountainous areas where the human footprint is smaller. The situation is worse on the rest of the territory, particularly on the large crop plains.

# 10

Over million km<sup>2</sup>

This is the maritime area under French jurisdiction. Thanks to its overseas territories, France is the world's second largest maritime space and home to 10% of the planet's coral reefs.



Common crane

## SPECIES AND HABITATS STILL IN DECLINE

**Numerous species and habitats** – particularly coastal habitats – are in decline due to human activities: 54% of species of community importance are in a poor state of conservation, as are 88% of habitats on the Mediterranean coast. Dunes, peat bogs and calcareous fens are strongly affected. Threats to biodiversity are caused by a number of factors, such as development (buildings and roads), intensive farming activities, the mass use of phytosanitary products, overfishing, the introduction of species, etc. Practices such as filling ponds and pulling up hedges are

destroying entire ecosystems. Finally, climate change is modifying all ecosystems. The situation is of concern in metropolitan France and in the overseas territories. In La Réunion, a 2010 study (French Committee of the UICN) indicates that one in five vertebrate and insect species, a third of the flora and 40% of molluscs are threatened with extinction. ●

## Sharp increase in forest since the 19th century

Mont Ventoux in 1800



Mont Ventoux in 2000



**At 16.4 million hectares,** the metropolitan French forest represents 30% of the territory's surface area. It has sharply increased since the 19th century. This increase in forested areas can prove to be antagonistic: it maintains a continuity of forest habitats and allows a specific biodiversity to develop, but closes open environments, such as grassland and moorland. In addition, the numbers of large fauna are sharply increasing and with them the problems: harm to natural environments, road collisions, damage to farmland, etc.

## In an image

### THE OTTER, RECOLONISATION IN PROGRESS

#### Otter presence 1970-1980



Source: Christian Bouchardy - SFEPM Otter Group - MNHN/SPN

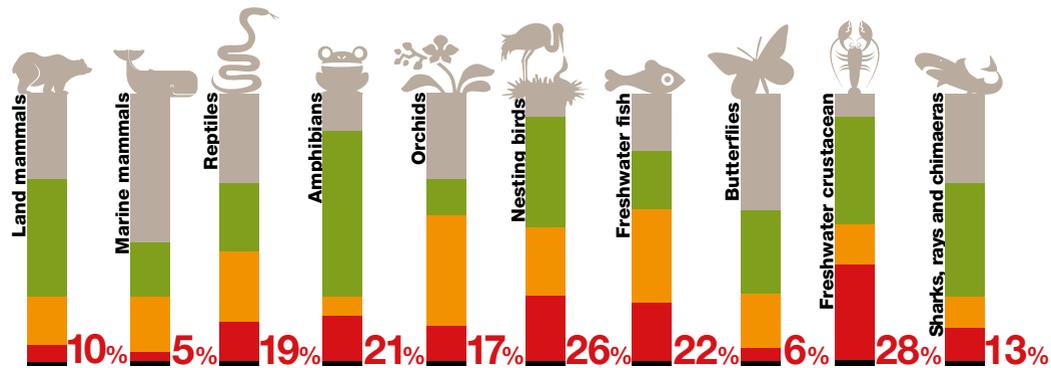
#### in 2012



Source: SFEPM - MNHN/IEGB/SPN and contributors, National action plan 2010-2015 - Processing: SOeS, 2012

## RED LIST OF THREATENED SPECIES IN METROPOLITAN FRANCE

Data in %.



■ Extinct in metropolitan France ■ Endangered ■ Near threatened ■ Of minor concern ■ Insufficient data  
Source: French Committee of the IUCN-MNHN, 2013

At the end of 2013, **20%** of all species evaluated were considered to be threatened. Some species, such as the Mediterranean monk seal, are completely extinct.

## 3 examples of human pressure on biodiversity



### BUILDING AND DEVELOPMENT

Development reduces the natural areas in which species live and reproduce. The ground becomes impermeable, which amplifies runoff phenomena. On the coast, this phenomenon is very significant. At less than 500 m from the coast, developed areas occupy 28% of the land.



### EARLY MOWING

Early mowing on grasslands can have harmful effects. For example, the corn crane is a bird that lives in long grass. The female lays and sits on eggs in a nest at ground-level from May to July. She is often trapped and killed with her brood during mowing.



### LIT AREAS

There is a very high number of artificial lights in France: almost 9 million have been recorded. Insects are the most affected. Although some flee, others are attracted and become easy prey for their predators such as bats. Butterflies are also particularly vulnerable.



# NATURAL RESOURCES INCREASING DEMAND



Gas pipeline

### DEFINITION

**FINAL ENERGY AND PRIMARY ENERGY**  
Final or available energy is that delivered to the consumer for final consumption: petrol at the pump, electricity in the home, etc. **Primary energy** is a raw energy, in other words, not converted following extraction: oil, natural gas, etc.

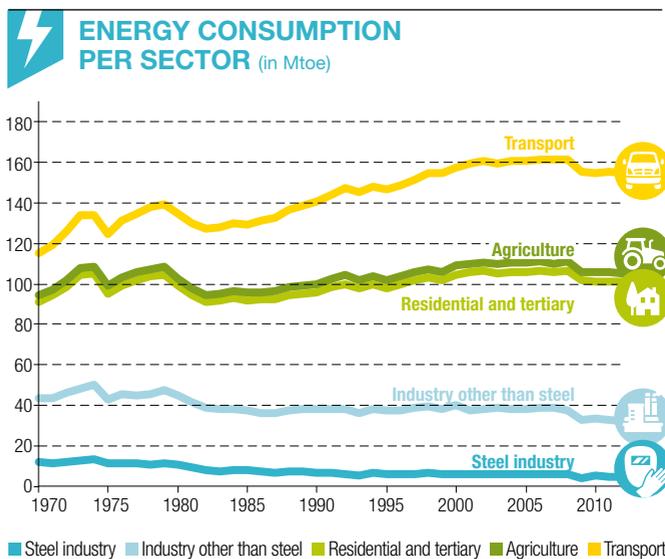
**Consumption, housing, transport...** the lifestyles of developed countries require an ever increasing quantity of resources to be extracted. The extraction and harvesting of materials (ores, cereals, etc.) have continuously increased in the world for 30 years. France does not escape this trend, in spite of the crisis. Its needs, for energy in particular, are increasing.

## HIGH DEPENDENCE ON ENERGY IMPORTS

**The consumption of raw materials, finished and semi-finished products** in France rose from 829 million tonnes in 1990 to 911 million tonnes in 2007. The 2008 crisis slowed but did not stop this continuous increase in consumption. With few of its own resources, France imports fossil fuels in great quantities,

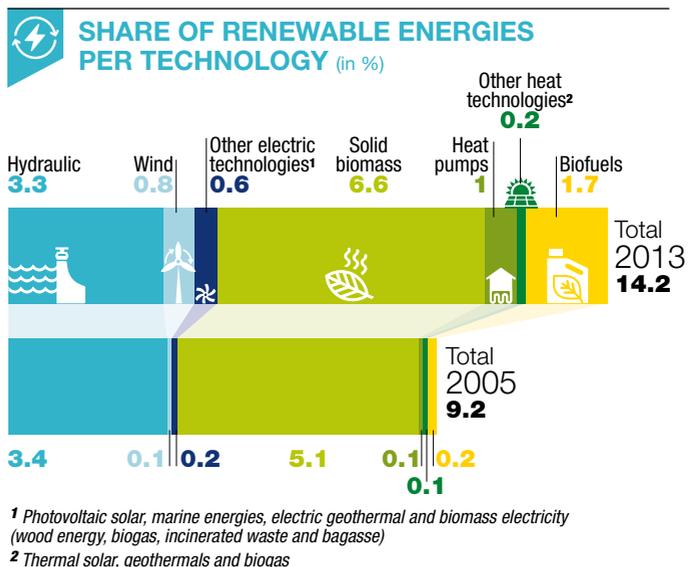
including for the nuclear sector (all of the uranium used to produce electricity in French power plants is imported). The development of renewable energies is contributing to reducing this dependence by diversifying energy sources. The renewable energies developed are: hydro-electricity, ●●●

••• photovoltaics, wind power, geothermal, biogas and biofuels. Wood has a special place in France. After having reached a minimum of forest at the start of the 20<sup>th</sup> century, the country has since seen its forested area sharply increase. Today, wood energy is used almost exclusively for heating purposes (93%). France also imports the non-energy mineral resources on which it depends: iron, copper, silver and gold. However, the building materials (aggregates, sand and gravel) used in France originate almost entirely from the national territory. Access to raw materials remains a constant concern for European countries due to procurement difficulties and geopolitical uncertainties. Many of these materials are used in the process of manufacturing a number of everyday items.



The transport and residential/tertiary sectors remain the largest energy consumers.

Source: SOeS, energy audit of France for 2013



<sup>1</sup> Photovoltaic solar, marine energies, electric geothermal and biomass electricity (wood energy, biogas, incinerated waste and bagasse)  
<sup>2</sup> Thermal solar, geothermals and biogas

Almost 9% in 2005, the share of renewable energies in final consumption reached **14.2%** in 2013.

Source: SOeS, energy audit of France for 2013

**1%**  
of gas requirements  
France met 71% of its natural gas requirements in 1970 and 1% in 2012

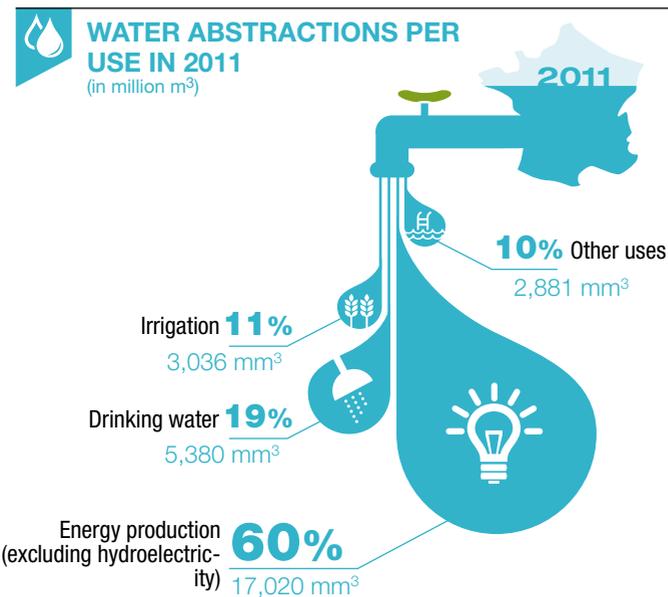
## WATER, A RESOURCE UNDER PRESSURE

In addition to energy, water resources are in high demand to meet the daily needs of the French. In 2011, the abstraction of fresh water in metropolitan France reached 28 billion m<sup>3</sup>. After having increased up to the 1990s, abstractions to produce drinking water have been decreasing since the 2000s. This change is partly explained by the acquisition of more water-efficient bathroom furniture and household appliances and changes in people's practices. Water is also abstracted for energy production, industry, irrigation, etc. The monitoring of flow rate measurements in French water courses over the period 1968-2007 highlights an increase in the severity of low water levels (fall in



water course flow rates) and their duration over vast areas of the territory. The resource is no longer as abundant and the cause, climate change or other, has yet to be clearly established. Special attention is now paid to the quan-

titative state of the bodies of water available to guarantee its access to all. As well as the water abstracted in France to meet domestic needs, the water footprint of French consumption includes abstractions made abroad to produce goods consumed in France (water associated with the production of exported goods is deducted). Given its trade balance, France is to all intents and purposes a water importer, such that in this scope the volume of water abstracted in France and abroad to meet French demand for goods and services would be 40 billion m<sup>3</sup> per year. According to an even wider scope, the water footprint of consumption includes rain-water which, stored in the soil, is spontaneously absorbed into agricultural crops in addition to water abstracted for irrigation. The corresponding overall volume of water is estimated at over 60 billion m<sup>3</sup> per year in France.



The volumes abstracted for energy production are essentially returned to the rivers, which is not the case for irrigation.



### GMOs FOR OUR LIVESTOCK SECTORS

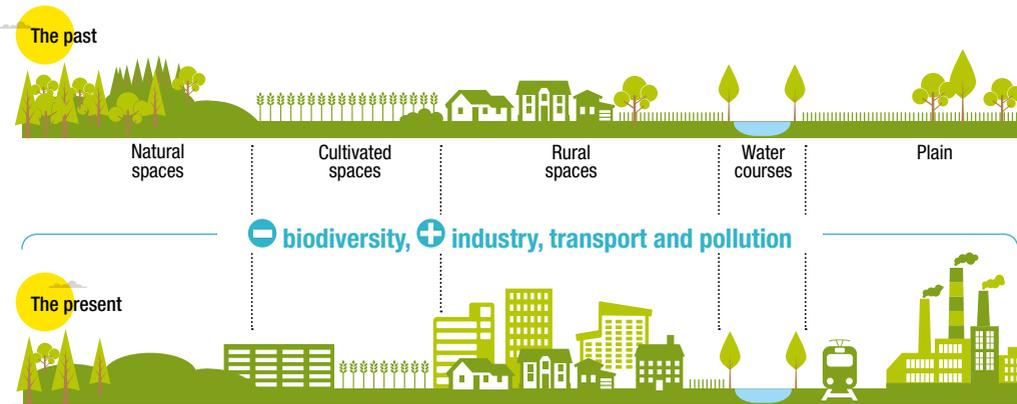
The use of GMOs most covered in the media remains that of growing genetically modified plants in open fields and using them in food. In Europe, only maize genetically modified to resist corn borers is allowed to be grown (MON810). However, 37 GMOs are allowed to be imported, essentially to provide protein for livestock.

## A DECREASE IN AGRICULTURAL LAND

**Soil, like the rest of the natural resources, is in high demand,** particularly for urban development. In 2012, agricultural land occupied 51% of the area of metropolitan France, semi-natural environments and areas of water 39.4% and developed land 9.1%. The need to develop land is increasingly great, due to changes in demographics and lifestyles. The amount of homes and infrastructure has consid-

rably increased: extension of roads and motorways, areas devoted to treating waste, commercial activities, leisure, etc. This situation is particularly critical on the coast, where the population density is very high – 285 people/km<sup>2</sup>, 2.5 times the average density for metropolitan France.

### LAND DEVELOPMENT



For 20 years, **natural spaces have been in decline** to the benefit of ground that has been built on, covered or stabilised (roads, car parks, etc.)

## FISHING: IMPORTS AND QUOTAS

**The increase in fish catches** on a world level since the 1970s has led to a significant decrease in world stocks and an imbalance in fish municipalities. To combat this phenomenon the European Union has adopted a common fisheries policy which sets, each year, the quantities of fish that can

be caught per fishery area. As a result of this quota policy, since 2009, the state of fish stocks in the European Atlantic and adjacent waters has improved. However, some fishing methods such as trawling are criticised as they are considered to be indiscriminate. In the Mediterranean, only

red tuna is subject to quotas. Evaluations of other species have only recently begun, but the initial results indicate that three quarters of stocks are overfished. The French situation is paradoxical. The quantities of fish sold by the

metropolitan fleet and the number of boats fell by 30% between 2002 and 2012. However, the consumption of aquatic products in France increased by 23% between 1999 and 2012, reaching 36 kg per person per year.

## BIOMASS PRODUCTION



**Biomass** originating from the French territory is made up of plant produce (cereals, fruits and vegetables, etc.), harvest remains and grazed fodder. Imports and exports include, in addition to raw materials, live animals (excluding fish) and manufactured products arising from plant and animal produc-

tion. The level of biomass production on the territory is on average 230 million tonnes per year for the period 2009-2011. Imports (particularly of soya oil cake) increased sharply in the 1990s before stabilising. Exports remain stable, consisting of over 50% cereal.

## TOWARDS A CIRCULAR ECONOMY?

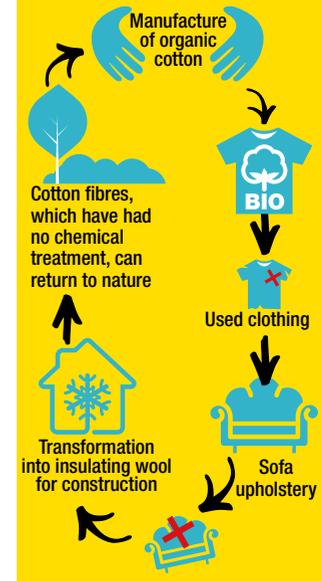
**To remove the pressure on raw materials** and the resulting production of waste, one solution consists of better sorting, recycling and reusing materials. 70% of the waste produced in France is composed of mineral waste originating almost entirely from the building sector. With 5.5 tonnes of waste per resident per year, the country is at a level slightly above the European average. The collection, sorting and

recycling of waste have developed considerably over these past 20 years due to regulatory changes and the habits adopted by the French. For example, selective collection in 2011 was at over 16 million tonnes (excluding rubble), a rise of 80% since 2000. In particular, waste sorting centres are a great success. The most marked change concerns pre-treatment facilities (sorting and composting). Recy-

## The circular economy

**The circular economy is inspired by natural cycles in which nothing is lost and everything is transformed.**

This model today responds to the ecological crisis. Here is an example with a T-shirt.

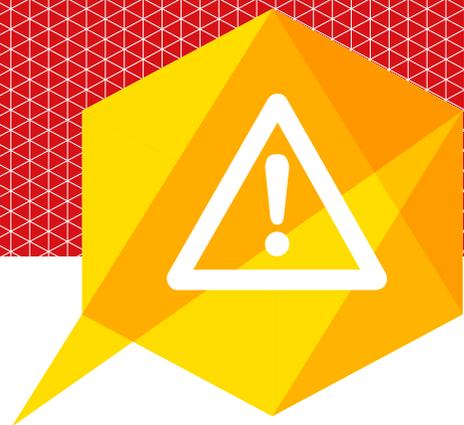


cling has also seen significant growth: today almost 60% of all waste processed in France is recycled on the national territory. Recycling is specialised by technology and waste type (batteries, packaging, furniture, tyres, etc.), which improves performance. ●

# 87%

of aquatic products consumed in France are imported





## THE RISKS

# FRANCE EXPOSED

Better knowing, identifying and quantifying the risks enables suitable preventive and protective policies to be put into place. France is exposed to multiple risks. Some are natural: flooding, sea flooding, storms and cyclones, coastal erosion, earthquakes, landslides, forest fires and volcanic eruptions. Others are technological: industrial and nuclear facilities, large dams, transport of hazardous substances and mining sites. The most significant, both in terms of frequency and severity, are floods and storms.

### DEFINITION

RISK = HAZARD x STAKES

A hazard is a potentially dangerous natural or technological event. In the presence of human, economic or environmental implications, it produces a risk.



The risk

## Natural risks

In France, almost 7 million people are exposed to the risk of flooding by water courses and one in every two municipalities is partially or entirely on a flood plain. Between 1988 and 2012, 65 serious floods were recorded. By making the ground impermeable, growing urbanisation and development are increasing the severity and intensity of the flooding hazard. The

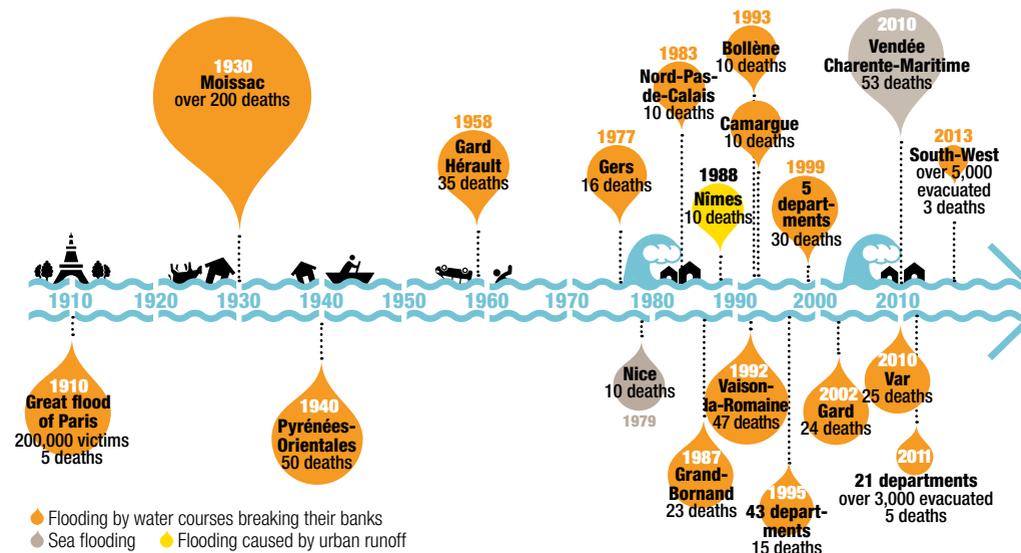
phenomenon of sea flooding is also a source of floods on the territory. In metropolitan France, 7,100 km<sup>2</sup> of coastal areas are subject to this hazard which results from a combination of extreme phenomena (atmospheric depression, wind, rain, etc.) and strong tidal coefficients. To this risk is added the phenomenon of erosion which concerns almost a quarter of the coastline.

# 16

billion Euros

This is the estimated total cost of insurance payouts relating to natural disasters between 1988 and 2011.

### CHANGE IN FLOODING AND SEA FLOODING FROM 1910 TO 2013



Since the 1980s, very severe floods have become more frequent

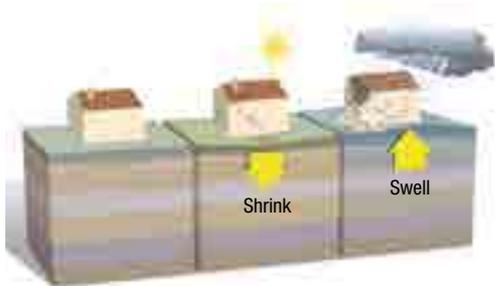
Although it is possible to limit the consequences of flooding through preventive work (dikes, dams, etc.) and by avoiding building on the flood plain, it is much more difficult to protect against the wind. A storm (or cyclone in the overseas territories) can occur almost anywhere and extend over

a huge area. Metropolitan France is not particularly exposed to earthquakes and tsunamis. The Antilles however, have high levels of earthquake and tsunami risk. Of varying violence, depending on where they occur, landslides can also have catastrophic consequences.

In 2013, 14,800 municipalities were classified at risk in France. Although in itself it does not represent a major risk to the population, clay shrinkage and swelling can cause significant damage to the structure of buildings (cracking in walls and floors). ●●●

It led to 19,000 natural catastrophe orders being adopted in metropolitan France between 1982 and 2013.

Overall, damage relating to natural risks (sea flooding, forest fires, landslides, etc.) could increase in France over the next decades due to the effects of climate change (increase in extreme meteorological events, rising sea levels, etc.). ●



The shrink-swell phenomenon is particularly detrimental to numerous detached houses built on shallow foundations.

## Great flood of Paris

**Pont de l'Alma on 28 January 1910**



In January 1910, the Seine reached 8.62 metres at the Pont d'Austerlitz: 200,000 people were

affected and half of the metro network was flooded. If a swell of the same scale were to occur today, 850,000 people would be directly affected (435,000 homes) and 5 million indirectly exposed to malfunctioning networks (electricity, transport, etc.).

# Technological risks

**Technological risks**, which cover industrial, nuclear and biological risks, are characterised both by low frequency and high severity.

## INDUSTRIAL FACILITIES

Any industrial operation liable to create risks or cause pollution or problems, particularly to neighbouring populations, is an installation classified for the protection of the environment (ICPE). Over 20,000 accidents involving ICPE were recorded in the period 1992-2012. The so-called Seveso establishments are the most dangerous. In 2013, France

had 1,083 of these, 39 of which in overseas departments. These sites are located in the industrial areas of large cities, on the banks of rivers or near to major roads. They relate to the oil, gas, pharmaceutical and chemical industries, warehouses storing hazardous products, silos, etc. The accidents that occur on these sites can have several types of effect, combined or not: thermal, toxic, excess pressure and projection. On the French territory, in 2013 232,600 people lived less than 500 metres from a Seveso establishment in operation. The public authorities pay particular attention to the interactions between natural hazards and dangerous industrial facilities.



In France, 747 NaTech (contraction of natural and technological) accidents were recorded between 1992 and 2012, most often caused by flooding, lightning and extreme temperatures. ●

## The last major technological accidents



**1959**

Rupture of the Malpasset dam, 423 deaths and 7,000 victims.



**1966**

Explosions and fires in the LPG storage area at the Feyzin refinery, 18 deaths and 84 injured.



**2001**

Explosion in the AZF plant in Toulouse, 31 deaths and several thousand injured.



## Seveso

It was an accidental discharge of dioxin in 1976 in an Italian chemical plant near to the town of Seveso which prompted the European Union to adopt a common policy relating to the prevention of major industrial risks. The Seveso directive of 24 June 1982 was extended and strengthened in 1996 and 2012. It commits Member States and companies to identifying the risks associated with dangerous industrial activities and taking the necessary measures to confront them.

## NUCLEAR INSTALLATIONS

At the end of 2012, France had 125 basic nuclear installations (BNI), mainly the reactors based in the 19 power plants as well as research centres, nuclear fuel manufacturing and reprocessing plants and radioactive waste disposal facilities. Due to the nature of these installations, their design, construc-

tion, operation, shutdown and decommissioning are strictly regulated and monitored. France also has 19 BNIs of interest to national defence as well as ionising radiation facilities. These include the electrical appliances that generate ionising radiation and the sealed radioactive sources used for medical, indus-

trial and research purposes. In terms of nuclear installations, zero risk does not exist. To prevent accidents and limit their consequences, "defence in depth" provides several independent levels of protection. ●●●

Each nuclear site has an off-site emergency plan that defines the measures necessary to protect the public in the event of an accident. Its radius varies from 600 m to 10 km according to the type of site and its activity. In France, 782,000 people live within the radius of a nuclear installation's off-site emergency plan.

## Nuclear incidents and accidents



The events that occur in civil BNIs and during the transport of radioactive substances are ranked according to their severity on the INES scale (International Nuclear Event Scale). Created in 1987, it comprises 8 levels (0 to 7). The accidents that occurred at the Chernobyl (1986) and Fukushima (2011) nuclear power plants are ranked at level 7, which corresponds to a radioactive discharge with harmful effects on health and the environment. To date, the most serious events that have occurred in France, at the Saint-Laurent-des-Eaux nuclear power plant, are at level 4 and did not lead to any radioactive discharges outside the site.

## TRANSPORT OF DANGEROUS SUBSTANCES

Each year, 15 million packages of dangerous substances transit the French territory by road, rail, air, sea, river and canal. 6% of these packages are composed of radioactive materials. These transits can present a risk to the public and to the environment if there is

an accident involving the means of transport used. The consequences depend on the transported substances: thermal, mechanical or toxic effects, contamination and irradiation for radioactive materials, environmental pollution, etc. Between 1992 and 2012, 3,578 accidents

during the transport of dangerous substances (excluding radioactive materials) were recorded. In 2012, 59 events that occurred during the transport of radioactive materials received a classification on the INES scale. ●

### The different risks incurred



## Chronic environmental risks

Technological developments, like activities and lifestyles, contribute to disseminating new, potentially hazardous substances (metals, pesticides, etc.) in the environment. The exposure of a proportion of the population to radioactivity, noise pollution and electromagnetic waves is also monitored.

## CHEMICAL SUBSTANCES PRESENT IN THE ENVIRONMENT

The management of chemical substances in the environment is complicated, all the more so as some pollutants remain a long time after having been prohibited from use and can transform or spread from one environment to another (air, water, soil and food). Knowledge of these substances' effects on health is improving and their role in the increase of certain pathologies has been recognised: for example, we estimate that 5 to 10% of cancers are linked to environmental causes. But in many cases it remains difficult to conclude as numerous factors interact: dietary habits, places of residence, duration of exposure,



# 55

chemicals

were assessed as part of the European REACH directive over the period 2007-2013.

REACH is a European regulation that registers, assesses, authorises and restricts chemical. It entered into force on 1st June 2007. Currently 55 chemical substances have been assessed as part of the European Reach directive over the period 2007-2013.

etc. In addition, a substance that is non-toxic at a low dose can become toxic when combined with other compounds; This is the so-called "cocktail-effect".

Chemical substances known as endocrine disruptors interfere with the hormonal ●●●

## Air quality



**Exposure to air pollution increases mortality.** In 2000, 42,000 deaths were attributable to fine particles (PM<sub>2.5</sub> - particles of a diameter of less than 2.5 microns). Exceeding the World Health Organisation's guideline value for fine particles (10 µg/m<sup>3</sup> annual average of PM<sub>2.5</sub>) in 25 European cities with 39 million residents results in 19,000 premature deaths each year, 15,000 of which with cardiovascular causes. Diesel engine exhaust emissions and outdoor air pollution have been classified as carcinogenic to humans.

... system: bisphenols, phthalates, PCB, etc. These compounds are present in food, packaging, cosmetics, electronic devices, furniture and so on. They are suspected of affecting certain reproductive functions and promoting hormone-dependent cancers (breast, ovarian and prostate), as well as several chronic illnesses (obesity, diabetes and cardiovascular diseases) at low doses. The use of several of these substances has already been restricted or prohibited.

**Pesticides** are present virtually everywhere in the environment: aquatic environments, air, soil and foodstuffs. For several decades there have been suspicions regarding their role in the development of illnesses such as cer-

tain cancers as well as foetal development anomalies and fertility problems. Parkinson's disease has just been recognised as an occupational illness for those who use pesticides.

**Nanoparticles and nanomaterials** are particles smaller than 100 nanometres (100 billionths of a metre). They enter into the composition of mass consumer products available on the French market: cosmetic and hygiene products, textiles, food, building materials, etc. Given the uncertainties regarding the effects of nanomaterials on health and the environment, it is recommended to follow the principle of precaution.

## POLLEN



**Today, almost 40% of the French have allergies**, half of them suffering from hay fever (allergy to pollen, essentially from birch, cypress, ragweed and grasses). This proportion has doubled since the early 1980s.

These pollen allergies primarily manifest in the form of rhinitis, conjunctivitis and asthma. They are aggravated by atmospheric pollution and climate change.



## RADIOACTIVITY

**Radioactivity is a natural phenomenon**, present everywhere on Earth. A French person receives an average annual dose of 3.7 millisieverts per year, two thirds of which are inherent in this natural radioactivity. The primary sources of the artificial radioactive

elements present in the environment are regulated discharges (nuclear installations), fallout from the Chernobyl accident and atmospheric nuclear tests.

## NOISE POLLUTION

**For almost 10% of the French**, noise pollution (from neighbours, business, transport, etc.) is of great concern. According to the World Health Organisation, it is the second highest cause of death amongst environmental risk factors in Europe after atmospheric pollution. Noise disrupts communication and damages auditory acuity. Its effects

can range up to sleeping problems, arterial hypertension, a reduced field of vision, nerve inflammation and depression. In France, almost 40% of residents of cities with a population of over 250,000 are exposed to a daytime noise level of over 60 dB caused by road traffic.



# 9,600



**aerial relays**  
on average are located in each department.

## ELECTROMAGNETIC FIELDS

**Electromagnetic fields are naturally present in the environment.** Numerous devices need electromagnetic fields to operate: televisions, microwave ovens, radios, mobile and cordless telephones, compact fluorescent light bulbs, not forgetting aerial relays, the number of which increased sixfold between 1997 and 2012 with the development of mobile telephony. The assessment of the effects of electromagnetic waves on health is still subject to debate. The intensive use of the mobile telephone is a source of exposure

not to be underestimated. Likewise, exposure to extremely low frequency fields, generated by any installation or device that transports or consumes electricity, is difficult to estimate. As a precaution, it is recommended not to create new establishments for children and pregnant women within 100 metres of very high voltage lines. ●

## THE ENVIRONMENT IN FRANCE

# ACTIONS

## Local initiatives and long term solutions

Although lifestyles are changing towards increased consideration of the environment, consumption, travel and urbanisation still weigh heavily on resources. However, the public authorities are implementing measures to reduce the impact of activities on the environment and the regions' exposure to risks and problems. The green economy is becoming a reality for a number of sectors.



## TOWARDS SUSTAINABLE CONSUMPTION AND LIFESTYLES

**For the French, responsible consumption corresponds to two approaches:** avoiding waste by preferring to buy only what is necessary and supporting local jobs by limiting the movement of goods. It encourages differing levels of commitment: some consumers opt for more environmentally-friendly products and services whilst others go as far as sacrificing some of their comfort by redefining their needs and lifestyle. But although overall the French agree with the principles of greener and more restrained consumption, putting this into action remains difficult, often for economic reasons.



### DOMESTIC PRACTICES

**Monitoring** energy and water consumption, reducing waste production and avoiding the regular use of pollutant products are the main challenges facing households concerned with minimising the environmental impact of their domestic practices.

Heating represents 75% of the final energy consumption of households, compared with 80% in 1990. The progress achieved in this area is counterbalanced by the increase in specific electricity consumption (lighting, household appliances, TV, etc.).

This is linked to the increase in the number of electrical appliances, although their energy performance is improving. Multimedia equipment has also widely spread into households: in 2012, almost 80% of the French had a computer at home. The domestic use of potable water in France is on average 151 litres per person per day, with a downward trend of 2% per year since 2005. Amongst individual actions to reduce water use, some are now the subject of wide consensus, such as taking showers rather than baths and



### of resources

Almost 3.8 million households are in fuel poverty as they devote over 10% of their resources to energy expenditure (Insee, 2011).



being watchful of water leaks. For some years, disparity has been appearing between households' consumption expenditure, which continues to rise, and the total production of household waste, which is changing at a lesser rate. Over 4 out of 5 French claim to sort their waste. However, food waste still represents 20 kg/resident/year, 7 kg of which is unconsumed food, still in its packaging.

As socio-economic worries override environmental concerns, almost half of households are choosing to reduce their level of consumption due to financial constraints. Only 14% of them do this out of conviction.

Source: Credoc, 2014



### LOCAL INDIVIDUAL MOBILITY

**The French devote 10.6% of their expenditure to transport** - as much as for food. On average, the number of daily trips has remained stable since the 1990s, at 3.15 per person per day, but the distances and average duration are increasing. The car remains the dominant mode of transport for local trips, accounting for 83% of the dis-

tances travelled, far ahead of public transport (11%), walking (2%), or even cycling (1%). The first decade of the 2000s was marked by notable changes: car use in large cities decreased for the first time and car traffic stabilised on a national scale. In parallel, public transport such as trams have seen increased use. Bikes have made a comeback in

### The thermal regulation



**It was in response to the first oil crisis** that in 1974 France adopted a thermal regulation (RT) for new homes to reduce its energy bill. Subsequently, different RT (1982, 1988, 2000, 2005 and 2012) have increased insulation standards and equipment efficiency levels.

## Fewer trips by car

**This recent change** has been observed in large cities. Public transport, motorcycles and walking are on a marked increase. The bicycle is making a comeback but still remains little used.

**15%**

This is the proportion of bike use in Strasbourg city centre



**15%**

This is the proportion of public transport use in Grenoble



towns, thanks in particular to the self-service bike offer. Finally, methods of pooling travel and vehicles are developing in parallel to the rise of information and communication technologies: car pooling, car sharing, etc.

**Largely dominated by diesel** (60% of private vehicles) and petrol engines, the car market nonetheless offers alternatives: superethanol engines and electric cars (8,700 units sold in 2013). In addition to engine choices, a second level of action consists of modifying one's practices. Eco-driving (maintaining a

stable speed, keeping the vehicle well maintained, anticipating traffic and avoiding brusque gear changes and accelerations) is emblematic of this. Easy to implement, eco-driving allows one to manage fuel costs (up to 15% lower consumption), limit greenhouse gas and pollutant emissions and reduce the risk of accidents.



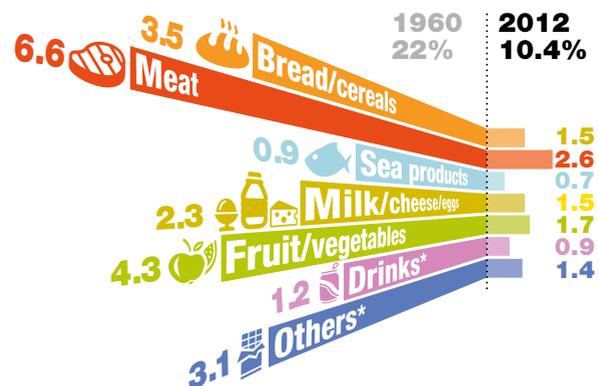
## FOOD

**Food's share** of the French's budget has sharply decreased, falling from 22% of spending in 1960 to 10.4% in 2007. Although 44% of consumers make price

their main criterion in their choice, 71% of them claim to favour environmentally-friendly products when making their purchases (compared with 66% in

## DISTRIBUTION OF FOOD SPENDING

Data expressed as a percentage.



\* Non-alcoholic

Source: Insee, national accounts-2005 base

In 50 years, the budget devoted to food by the French has fallen by approximately **53%**.



2011). Three out of five French say they occasionally consume organic products, with health protection, product quality and environmental protection as the primary motivations. Amongst those who do not buy organic products, 77% consider their prices to be too high. The proportion of organic products in collective catering (3 billion meals per year) only represents 2.4% of food purchases but is markedly increasing.

**In a context marked by the increase in short distribution channels** and the desire to support local jobs, one person in two claims to frequently pay attention to food miles. However, the French remain indisposed to modifying their diet for environmental reasons: 52% do not envisage reducing their meat consumption (90 grammes per person per day instead of the recommended 52 grammes).

**Directing food consumption choices** towards more environmentally-friendly production methods, favouring local, seasonal products and being mindful of the environmental impact of the method of transporting the products home are just some of the ways of reducing the environmental impact of food. ●

## Associations for the support of traditional agriculture (Amap)

**The purpose of the Amap** is to preserve the existence and continuity of local farms with a concern for sustainable, traditional, socially equitable and ecologically healthy agriculture. Their members purchase the produce of one or more farmers in advance. The first Amap was created in 2001. Today, 1,500 structures of this type supply over 50,000 families across the whole of France.





# TOWARDS A GREEN ECONOMY

**Environmental challenges** require us to redirect our economic models towards a green economy, in other words one which is focussed on more sustainable methods of production and consumption. To do this, the production chain must adapt. Systems and tools for monitoring these measures exist to support this change.



## THE VITALITY OF ECO-ACTIVITIES

The green economy brings together all company activities that act in favour of the environment. At the heart of these activities, we find eco-activities whose production (of goods and services) directly targets environmental protection or the sustainable management of resources. This is the case, for example, of the activities of collecting and treating waste or manufacturing solar-powered boilers. Compared with the rest of the economy, eco-activities

are experiencing a certain vitality in terms of production and added value. On the job market, they represented 447,500 jobs in 2012, 1.8% of total employment in France. Employment in this sector displayed marked dynamism over the period 2004-2012 with an increase of 3.9% on average per year, compared with 0.3% for the rest of the economy, mainly in the management of waste water and waste, and renewable energies.

Almost  
**1 million jobs**  
were generated by  
activities in the green  
economy in 2011



## A national observatory

The national observatory of green economy jobs and professions was created in 2010. This is an observation and measurement tool for better understanding the employment challenges of the green economy.



## DEFINITION

**THE GREEN ECONOMY**  
An economy that improves human well-being and social justice whilst significantly reducing environmental risks and ecological scarcity.



## MOBILISATION OF PUBLIC AUTHORITIES AND COMPANIES

The State is supporting the transition towards a green economy through several actions. It is playing a role in supporting and structuring the 19 green sectors. These represent the major industrial route towards a low-carbon, resource-efficient economy. Sector contracts set the joint commitments of the State, eco-industry manufacturers and unions. The most emblematic sectors are those of water, waste and renewable energies. Supporting R&D and innovation is a second means of increasing the competitiveness of green sectors. Structuring the economic fabric into "Competitiveness Clusters" is contributing to this modernisation of economic activity. 20 of such clusters perform an activity relating to sustainable development: environmental technologies, bio-resources, renewable energies, energy efficiency, energy sto-

rage, smart grids, natural risk management and sustainable towns and mobility. The innovation and R&D work deployed by these clusters are supported by the single inter-ministerial fund that finances collaborative R&D projects. The "Investing for the Future" programme supports projects promoting innovation and the creation of non-delocalisable jobs in sectors with high potential for the national economy.

**Within companies,** the integration of environmental concerns has increased over the last years. Thanks to more demanding regulations, corporate social responsibility has notably improved within the largest companies.

## Corporate social responsibility (CSR)

CSR is a representation of the principles of sustainable development at corporate scale. Since 2001, companies quoted on the stock exchange have had to include environmental and social information in their annual management reports. This obligation has since been extended. In concrete terms, 42 pieces of environmental, social and governance information must be provided in an annual report. 2,350 companies, including a little fewer than 900 quoted, are concerned by this obligation.



## CHANGE IN PROFESSIONS AND SKILLS

The job market, training and career guidance services must provide answers to these new economic realities. All professions are or will be affected by the economy becoming green, involving the acquisition of environmental skills.

Training, both continuing and initial, is an important factor in adapting to this new market. The promotion of professions and job offers on the one hand and the guidance and training of job seekers on the other are levers for the economy and professions becoming green.

**In terms of continuing training**, it is a case of adapting the training offer. The National Association for the Professional Training of Adults (Afp) trains 60,000 employees per year

(27,000 in construction, 15,000 in industry, 6,600 in commerce and retail and 5,000 in transport and logistics). To meet needs, the Afp has updated training leading to qualifications by including new green skills and offers complementary internships.

**In terms of initial training**, the offer in the environmental field is growing. In 2011, over a thousand initial training courses were registered, representing 10.5% of all training. The energy management and renewable energy sector is seeing the sharpest increase, i.e. +70.2% over the period 2008-2011.

**In agriculture**, organic farming is seeing a sharp increase, although it remains a marginal production method. Over a mil-

lion hectares were organically farmed in 2012; 3.8% of the agricultural area used.

**At Pôle emploi, the French State employment bureau**, in 2013, 13% of job offers and 14% of job requests fell under the green economy. Since 2010,

Pôle emploi has devoted 17% of its annual purchase budget to training leading to qualifications linked with the economy becoming green.

## PATENT APPLICATIONS IN THE FIELD OF ECO-INNOVATION PUBLISHED BY THE FRENCH PATENT OFFICE

In 2011 per field



Patents in the field of renewable energies represent **over a quarter** of all patents.

Source: INPI, 2011 data - Processing: SOeS, 2014

## Building is adapting



Affected by the new regulations relating to sustainable development, every sector of the economy is concerned and must adapt over the more or less long term. Building is emblematic of these changes. In concrete terms, the sector's professionals must take account of changes to standards and regulations (RT 2012), learn methods of using new materials and take on new working techniques (insulation, construction, etc.).

## EVER INCREASING NUMBERS OF PUPILS AND STUDENTS STUDYING THE ENVIRONMENT



Between 2008 and 2011, the number of environment students increased on average by 2.3% per year. This dynamic is borne by the energy field, emblematic of the development of professions, skills and training in light of the new energy transition model. ●

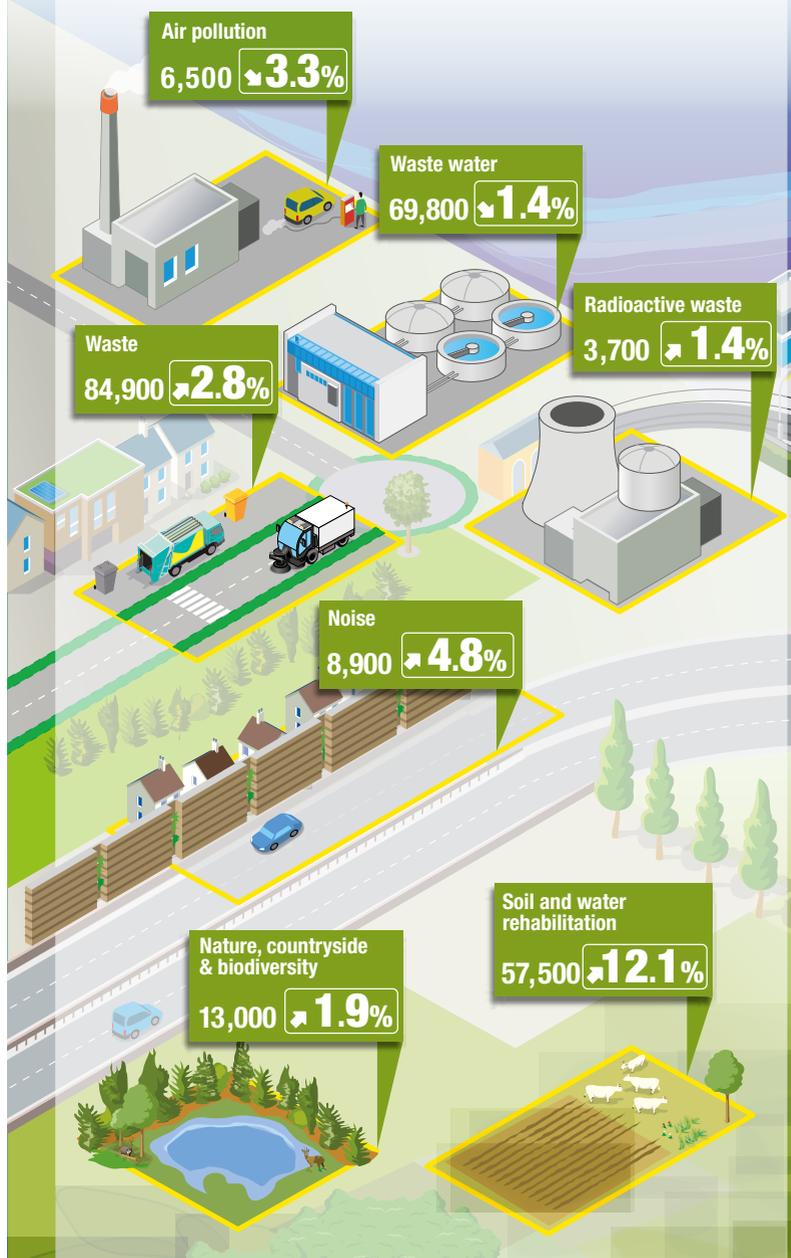


# 71,000

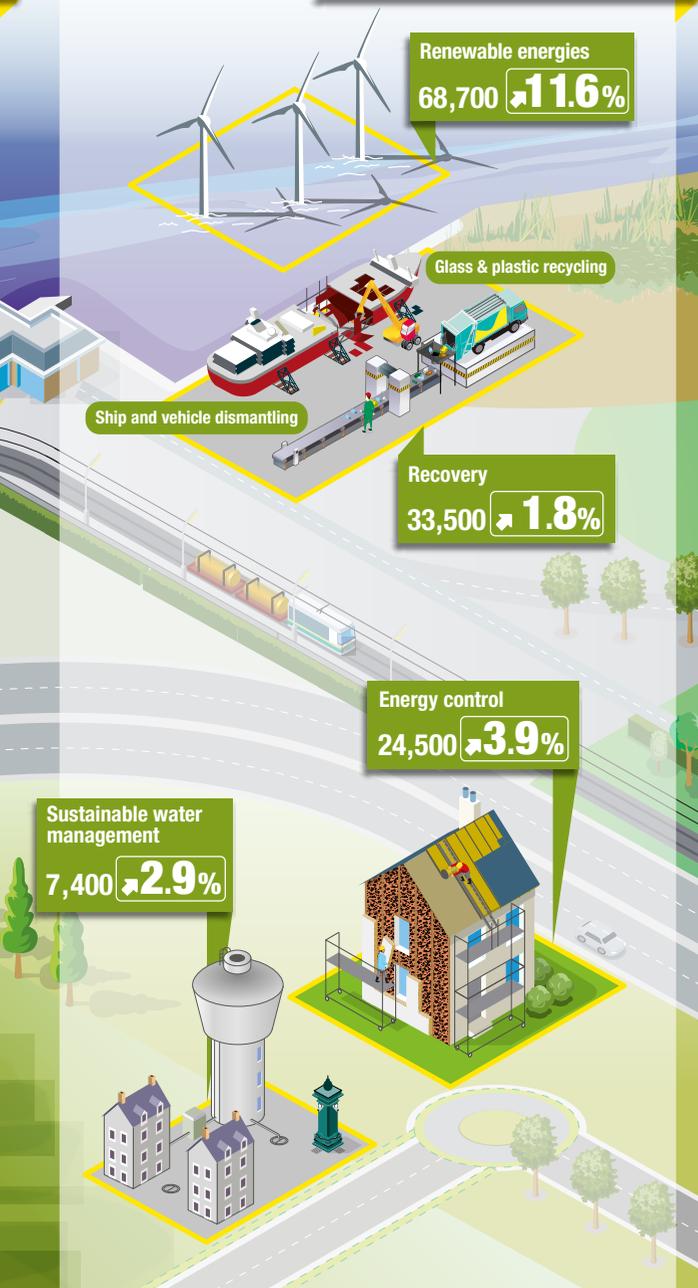
pupils and students were enrolled in the final year in initial environmental training in the 2011-2012 school year

## ECO-ACTIVITIES: NUMBER OF JOBS IN 2012 AND ANNUAL AVERAGE CHANGE OVER THE PERIOD 2004-2012

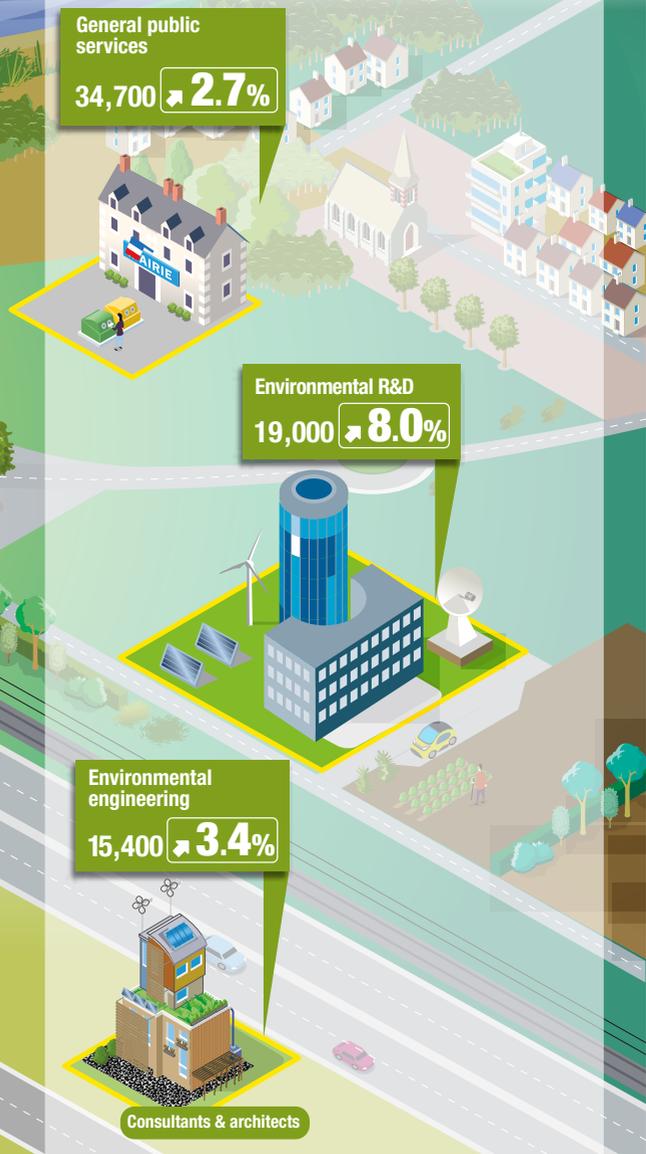
### Environmental protection



### Resource management



### Cross-cutting activities





# TOWARDS TERRITORIES WITH LESS EXPOSURE

**Current and past human activities have modified environments:** sites and soil polluted by industrial activities, pesticides in underground waters, emissions of pollutants into the air, noise pollution with the increase in road, air and rail traffic, etc. Territories and populations are more exposed to environmental risks and the challenges to those involved in development, in particular local authorities, are significant.



## CURATIVE ACTIONS BY SECTOR



The sector-specific measures undertaken ensure exposure levels are reduced:

- **For air pollution:** development of clean modes of transport, regulation of vehicle flows in affected areas, tax incentives for purchasing an electric vehicle, encouragement to opt for

"soft" forms of mobility;

- **For water pollution:** protection of abstraction points, treatment of natural water, sanitary monitoring of the water abstracted and treated;
- **For polluted sites and soil:** securing and assessment of the site, work or rehabilitation, mon-

**90**  
urban travel plans  
enforceable at the end of 2013



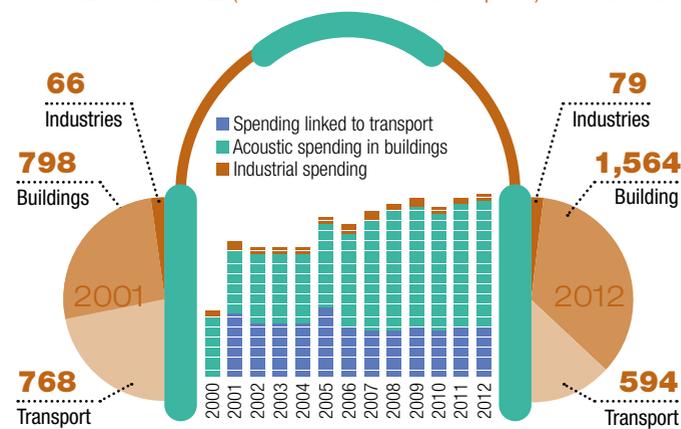
itoring or restrictions on use and inclusion in the Basias database of historic regional inventories;

- **For noise pollution:** acoustic screens by the sides of roads and railways, sound-proofing of buildings, quiet road surfacings.

In addition to these examples of curative actions, preventive measures have also been put into place.

## CHANGE IN SPENDING TO COMBAT NOISE (in millions of Euros at current prices)

Source: SOeS



Since 2000, spending to combat noise has continued to increase to settle at almost **2.3 billion Euros in 2012**, 1.8 billion of which devoted to constructing protective systems.



**68%**  
of water abstraction points are protected\*

Three protection perimeters are observed: immediate (fenced-off area), close (surrounding activities monitored) and outer protection (more extended area of vigilance). France has adopted a preventive approach by creating protected areas around springs used for drinking water supply.

\*2013. Source: Ministry of Health



## PREVENTIVE AND ADAPTIVE MEASURES



**To limit environmental exposure** linked to climate change, France is implementing reduction measures, with actions addressing the causes (decrease in greenhouse gas emissions, for example), and adaptation measures, with provisions that aim to adapt our regions to the effects of climate change. Several tools are at the heart of these approaches, such as the national plan for adaptation to climate change (2011), regional climate, air and energy schemes and

finally, at local level, regional climate and energy plans.

**To help the regions confront** natural hazards, the preventive policy implemented by France aims firstly to reduce the human and material impacts of the potential damage in advance. Risk prevention plans have been established for almost all types of hazard (flooding, rapid sea flooding, coastline management, earthquake risk and holes).

**In terms of technological risks**, a regulatory framework

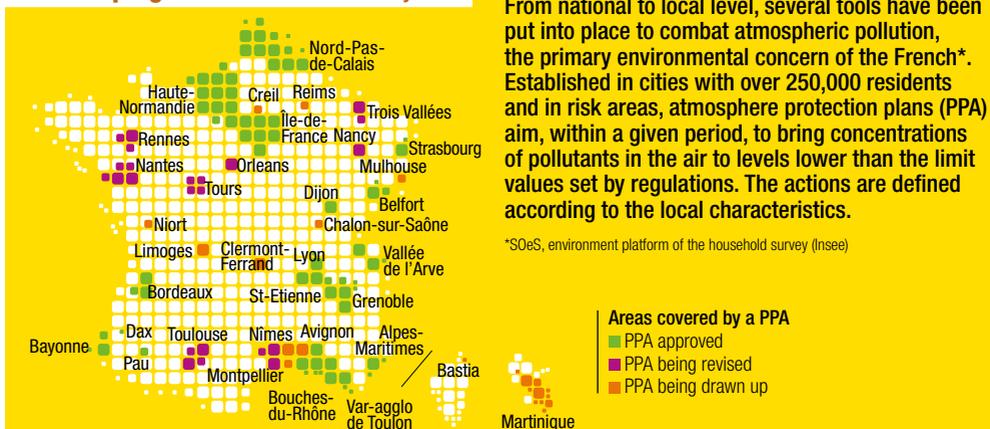
has also been set with the technological risk prevention plans that meet a dual objective: to manage the difficult urban planning situations inherited from the past and to control future urbanisation around the industrial establishments and underground disposal facilities concerned.

**To reconcile the challenges** of local development and environmental protection, local authorities are invited to draw up urban planning documents. The latter have progressively included the challenges of sustainable development. As of 1967, the town planning act created plans for ground occupation and guidelines. Throughout the 1980s and 1990s, the consideration of pressures (linked in particular with travel and urban planning) was strengthened: urban travel plans, coast and mountain acts, etc. In the 2000s, urban planning law

## In an image

### ACTING LOCALLY FOR AIR QUALITY

State of progress of PPA as at 23 July 2014

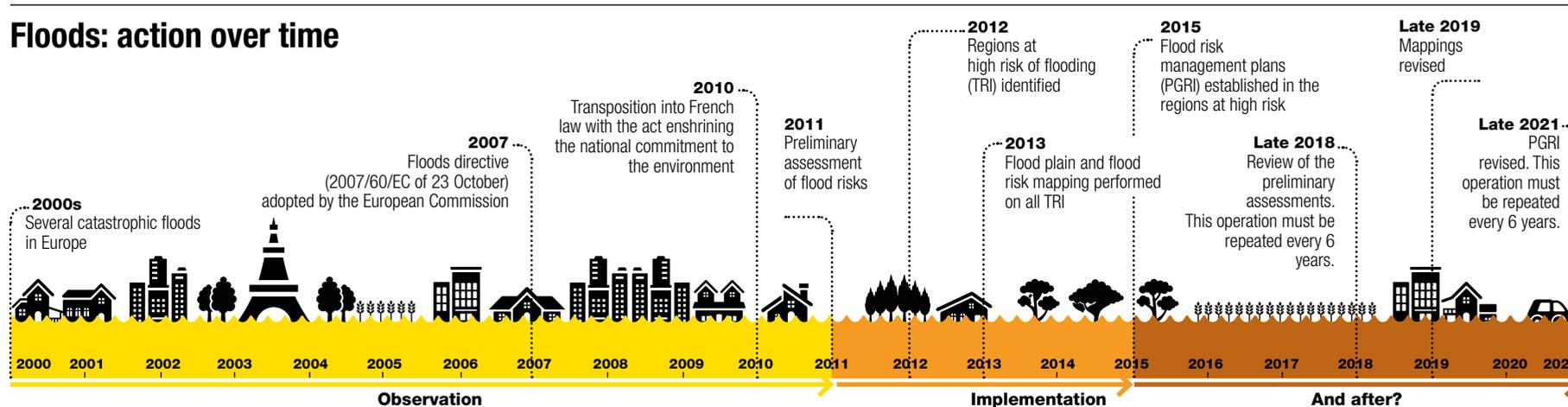


In July 2014, **18 PPA** had been approved, 9 were being drawn up and 9 revised.

changed, notably with the solidarity and urban renewal act which reshaped the concept of regional planning. Finally, the green and blue belt made a

breakthrough by strengthening the consideration of the ecological operation of spaces and species in regional development. ●

## Floods: action over time



(95% of the population) covered by an urban planning document.



**Ministry of Ecology, Sustainable Development and Energy**

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