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DATA LAB

ENVIRONMENT

Tourism intensity at a local level: environmental pressure or preservation factor?

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2017 INTERNATIONAL YEAR OF SUSTAINABLE TOURISM FOR DEVELOPMENT

Tourism intensity at a local level: environmental pressure or preservation factor?

Contents

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foreword

France has a remarkable heritage and incredible landscapes which makes it particularly attractive to tourists. However, the steady growth in the number of visitors raises the question of tourist destinations' carrying capacity to preserve their natural and cultural heritage. Aware of such issue, the United Nations has proclaimed 2017 as the International Year of Sustainable Tourism for Development, and integrated tourism among sustainable development goals.

This publication examines the environmental pressures exerted by tourism in France in destinations that are subject to strong population change. It also examines the forms of sustainable tourism implemented in order to mitigate these impacts.

— Sylvain Moreau
HEAD OF THE MONITORING AND STATISTICS DIRECTORATE (SOeS)

part 1

Introduction

Tourism is a fundamental industry for the French economy and society. In 2015, France welcomed 84.5 million foreign tourists to mainland France and around 400,000 to the overseas territories, placing it at the top of the list of tourist destinations worldwide[1]. This activity generated €41.4 billion (€ bn) of revenue. Domestic tourism consumption (*see definitions*) amounted to €158.6 billion, or 7.3% of the GDP. The tourism sector accounts for 7.8% of salaried employment (i.e. more than one million employees, in full-time equivalent)[2]. In order to make France the world leader in tourism, the Ministry of Foreign Affairs has set a target of 100 million tourists per year by 2020 on the national territory.

However, tourism is also creating pressures on the environment. Tourist travel, whether air or road transport, contributes to greenhouse gas emissions and degrades air quality. In areas where tourism is a major activity, the environment is also subject to strong pressures. The development of tourist accommodation causes soil degradation resulting from increased urbanisation and leads to an increase in the pressures on natural resources.

Concentrated in France for short periods, mainly during the school holidays, tourism activity is particularly marked in July and August. In 2014, these two months accounted for 40% of overnight stays for personal reasons. This seasonality increases the influx of visitors to areas that are sometimes sparsely populated. With the population growing considerably at certain times of the year, there is an increase in pressures on natural resources, which requires appropriate management arrangements.

This publication examines the impact of demographic changes caused by tourism on the environment, in tourist destinations. First, it is necessary to identify the areas undergoing significant demographic changes linked to tourism and define their common characteristics. In this respect, the tourism intensity rate, which is an indicator of tourism intensity, makes it possible to quantify the theoretical multiplication of the population during periods of tourist influx by comparing the number of tourist beds to the resident population of a territory. The accommodation capacity (number of tourist beds in a territory) and the tourist density (number of tourist beds per km^2) and additional indicators, are also mobilised to complete this analysis.

The challenge of characterising destinations in this way then consists of observing the pressures exerted on the environment in destinations with a high tourism intensity. This analysis raises the question of their carrying capacity to cope with the pressures generated by tourism (such as soil degradation resulting from increased urbanisation, drinking water abstraction, electricity consumption, waste generation and protected areas). It focuses on the study of resources in tourist areas. The pressures on the environment caused by transport, in particular the transport that enables holidaymakers to visit their place of stay, are therefore not studied here.

Faced with the development of tourism, and in order to limit pressures on resources and thus preserve destinations, actions promoting sustainable tourism development are spreading. This publication examines the place and evolution of these private and public initiatives, which are increasing towards a sustainable tourism.

part 2

Location and profile of French municipalities according to their tourism intensity

- Municipalities with a high tourism intensity rate are located mainly in high and mid-mountainous areas, as well as on the mainland coast, especially in the island territories. The change in the accommodation capacity between 1999 and 2016 shows an intensification of tourism in local destinations already benefiting from a high tourism function rate.

Profile of municipalities according to their tourism intensity rate in 2016

The tourism intensity rate, an indicator of tourist pressure

The tourism intensity rate (also known as the tourism intensity indicator) is the ratio between the capacity of tourist accommodation in municipalities (number of tourist beds) and their permanent resident population. Quantifying the theoretical increase in the population in times of tourist influx is an indicator of tourism pressure. A tourism intensity rate of 100 means that the destination has a tourist accommodation capacity equivalent to the permanent population and is therefore likely to double its population. The most significant tourism intensity rates are located in territories with a low annual population and a high accommodation capacity. However, there can also be significant tourism pressures on the environment without the tourism intensity rate being high. This is particularly the case for certain destinations with a high tourist density.
The changes in population caused by tourism raise the question of a destination's carrying capacity, aiming at estimating the level or threshold of tourist traffic that must not be exceeded or else there is a risk of sustainably compromising the destination's environment.
The study took more than 21 million tourist beds into account in 2016 divided into different types of tourist accommodation: hotels, campsites, holiday villages, tourist residences, youth hostels, sports centres and second homes. Rentals between private individuals are not taken into account.

Tourism activity, analysed in terms of the tourism intensity rate, is distributed very unevenly over the national territory (*Map 1*). In 2016, France had an average tourism intensity rate of 32 beds per 100 inhabitants. There are, however, considerable disparities between territories.

In order to study the municipalities from a tourism intensity view, the latter were divided into 5 classes according to their tourism intensity rate *(Table 1)*.

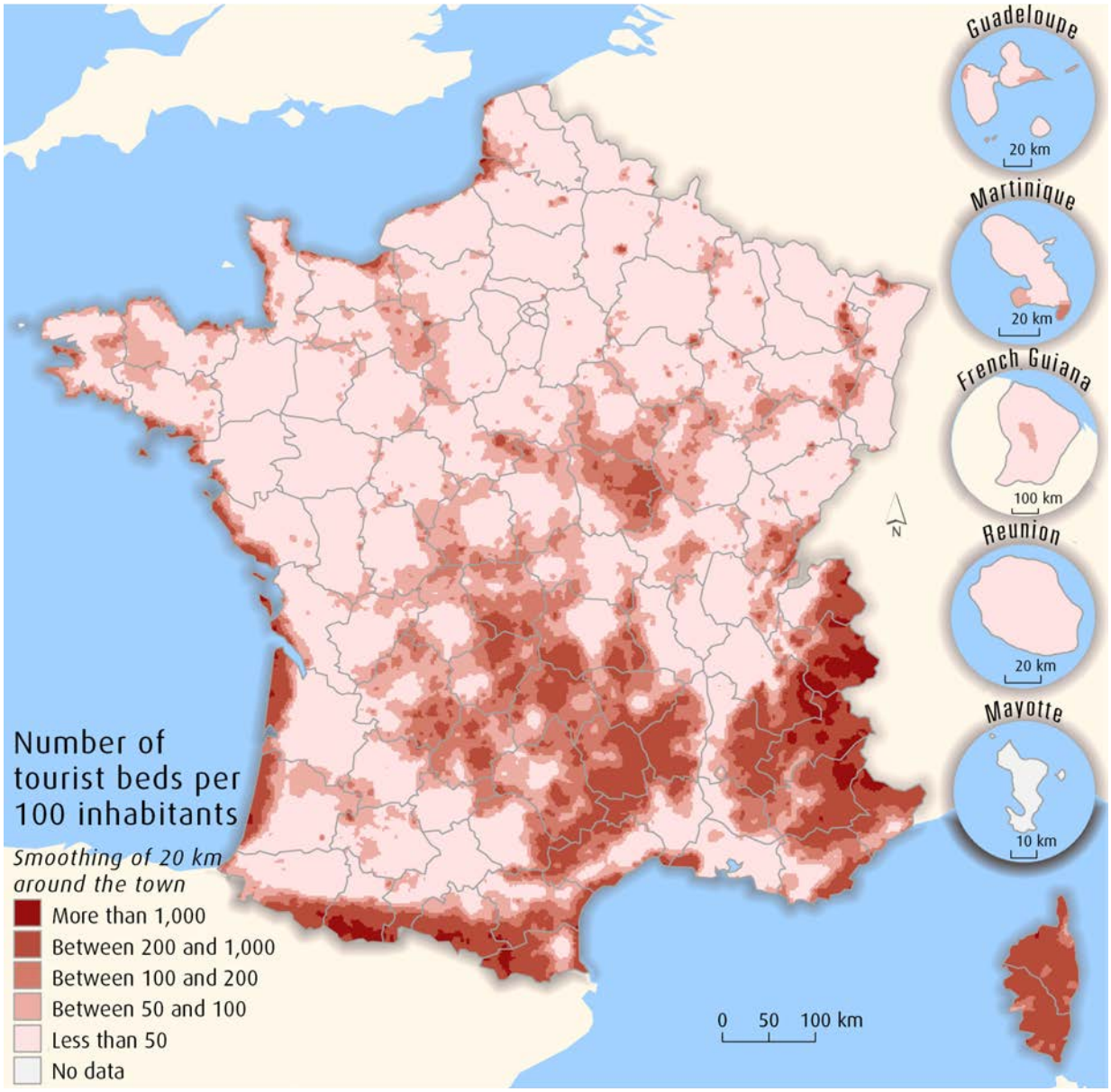
There are two classes of municipalities known as "low-intensity tourism" areas:

- Class 1: tourism intensity rate less than 50 beds per 100 inhabitants;
- Class 2: tourism intensity rate between 50 and 100 beds per 100 inhabitants.

There are three classes of municipalities known as "high-intensity tourism" areas (likely to at least doubling their population):

- Class 3: tourism intensity rate between 100 and 200 beds per 100 inhabitants;
- Class 4: tourism intensity rate between 200 and 1,000 beds per 100 inhabitants;
- Class 5: tourism intensity rate 1,000 beds or more per 100 inhabitants.

Map 1: tourism intensity rate in 2016



Sources: *Insee, DGE, tourist accommodation capacity files, 2016; Insee, 2012 population census (second homes). Statistical processing: SOeS, 2016*

Table 1: Characteristics of French municipalities, according to their tourism intensity rate

	1 (Less than 50)	2 (Between 50 and 100)	3 (Between 100 and 200)	4 (Between 200 and 1,000)	5 (More than 1,000)
Number of municipalities	25,495	5,010	3,275	2,667	235
Number of inhabitants *(in millions)*	58.4	3.3	1.9	1.8	0.16
Average number of inhabitants per municipality	2,291	652	589	679	702
Total area *(in millions ha)*	41.9	8.9	5.8	6.2	0.9
Average area per municipality *(in ha)*	1,643	1,779	1,784	2,336	3,814
Accommodation capacity *(in millions of tourist beds)*	6.2	2.3	2.7	7.2	2.7
Accommodation capacity per municipality *(in tourist beds)*	244	451	813	2,695	11,433
Tourism intensity rate *(in number of tourist beds per 100 inhabitants)*	11	69	138	397	1,629
Tourist density *(in number of tourist beds per km²)*	15	25	46	115	300
Examples of municipalities	Annecy, Bayonne, Paris, Saint-Brieuc, Tours	Guérande, Narbonne, La Roche-Bernard, Honfleur, Sainte-Anne	Antibes, Cassis, Puy-Saint-André, Besse, Saint-Estèphe, Saint-Malo	Bormes-les-Mimosas, Île d'Yeu, Royan, Arcachon, Porto-Vecchio, Chambon-sur-Lac	La-Faute-sur-Mer, Les Angles, Saint-Clément-des-Baleines, Île d'Aix, Le Mont-Saint-Michel, Megève

Scope: France including overseas departments (excluding Mayotte).
Sources: *Insee, DGE, (tourist accommodation capacity files, 2016); Insee (2012 population census). Statistical processing: SOeS, 2016*

Focus on… Class 1: numerous and disparate municipalities, data close to the national average

Class 1 (tourism intensity rate less than 50 beds per 100 inhabitants) covers 70% of French municipalities. This class brings together municipalities with widely varying demographic and geographic characteristics, with the common characteristic being a small demographic change as a result of tourism. It includes both heavily populated and urban municipalities (Paris, major cities) as well as sparsely populated and rural municipalities.
Given its size, the characteristic data of this class will often be representative of the national situation. This publication focuses more on studying the characteristics of classes 2 to 5 and highlighting the peculiarities associated with the demographic variations generated by tourism in these territories.

A HIGH ACCOMMODATION CAPACITY FOR A SMALL NUMBER OF MUNICIPALITIES

Approximately 6,000 municipalities (17%) in classes 3 to 5 have a tourism intensity rate of more than 100 beds per 100 inhabitants and are therefore likely to receive as many visitors as there are permanent residents. This can lead to the doubling of the population at certain times of the year. While only 6% of the national population resides there on a yearly basis (approximately 3.9 million inhabitants), 60% of the tourist beds are concentrated in these areas in 2016 (an accommodation capacity of almost 12.5 million tourist beds).

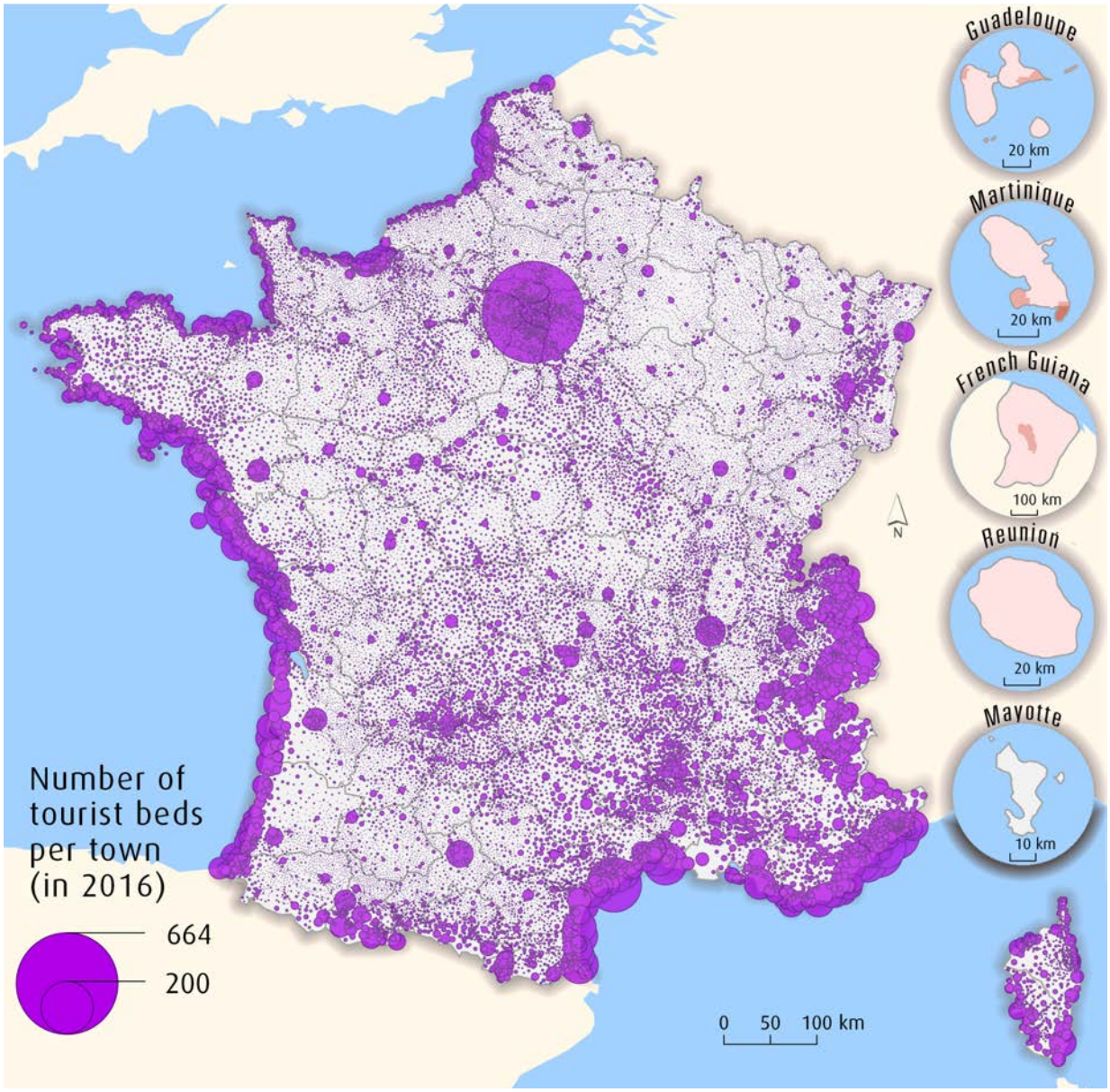
Of these, 235 municipalities, which are in class 5, have a tourism intensity of more than 1,000 beds per 100 inhabitants. While they account for less than 1% of the municipalities and less than 2% of the French territory area, they account for 13% of tourist beds, with an average tourism intensity rate of more than 1,600 beds per 100 inhabitants.

In the overseas territories, tourism intensity is lower than the mainland average (10 beds per 100 inhabitants compared to 33 beds per 100 inhabitants). However, tourist accommodation does not include the number of cruise ship passengers, estimated in 2014 at more than 350,000 in Martinique, and more than 220,000 in Guadeloupe[3]. The most significant tourism intensity rates concern coastal municipalities in Martinique and Guadeloupe.

When compared with the number of municipalities, this accommodation capacity in tourist beds (*Map 2*) also increases with the tourism intensity. With approximately 800, 2,700 and 11,400 tourist beds on average per municipality, classes 3 to 5 have an accommodation capacity well above the national average (less than 600 tourist beds per municipality), accounting for nearly 60% of the tourist beds studied.

The overseas departments, which account for 1% of French tourist beds, have an accommodation capacity of more than 1,600 tourist beds per municipality. Guadeloupe (2,500 tourist beds per municipality) has the highest accommodation capacity ahead of Reunion (1,600 beds), Martinique (1,500 beds) and French Guiana (500 beds).

Map 2: accommodation capacity in tourist beds in 2016



Sources: *Insee, DGE, tourist accommodation capacity files, 2016; Insee, 2012 population census (second homes). Statistical processing: SOeS, 2016*

A CONCENTRATION OF MUNICIPALITIES WITH A HIGH TOURISM INTENSITY IN THE MOUNTAINS AND ON THE COASTALINE

France comprises more than 6,000 municipalities in mountain areas[4] (20%) - *(Figure 1)* and nearly 900 so-called "Coastline Act[5]" municipalities (3%). More than half of them (53% and 57% respectively) are in classes 3 to 5, that is, they consist of municipalities with a high tourism intensity. In proportion to the number of municipalities in each class, the share of municipalities in mountain areas and on the coast increases with tourism intensity.

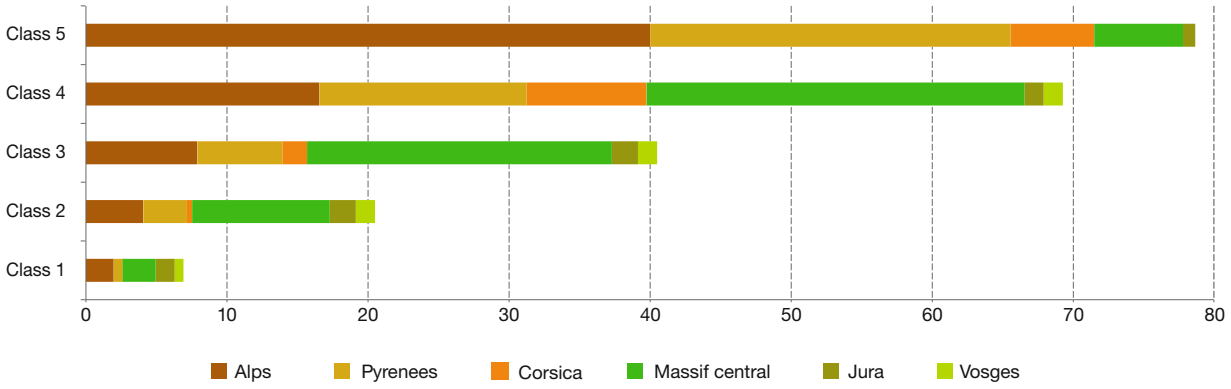
Nearly 80% of the municipalities in class 5 and 70% of the municipalities in class 4 belong to mountain areas, whereas the latter represent less than 20% of the municipalities in France and in class 2 and less than 10% of the class 1 municipalities.

In class 5, more than half of the mountain municipalities are located in the Alps, and almost a third of them are located in the Pyrenees. These municipalities, mainly composed of ski resorts, are sparsely populated during the year (the largest of which has nearly 8,500 inhabitants).

In classes 3 and 4, the mountain municipalities are first located in the Massif Central (half of the municipalities in class 3 and 40% of the municipalities in class 4), then in the Alps (respectively one quarter and 20%, approximately) and the Pyrenees (respectively 20% and 15%).

Figure 1: Distribution of municipalities in mountain areas, by mountain range, according to their tourism intensity rate

In %



Scope: Mainland France.
Sources: *CGET; DGCL; MAAF; Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

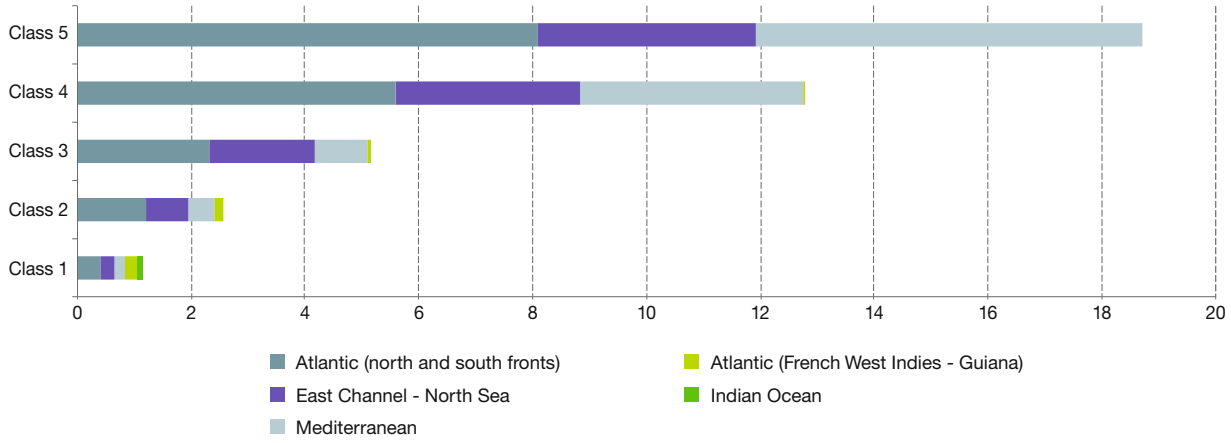
On the coast, tourism intensity is particularly marked along the Atlantic coast (notably the Aquitaine basin), around the Mediterranean rim, with the exception of Bouches-du-Rhône, as well as around the Bay of Somme *(Figure 2)*. The demographic variation in coastal municipalities, though less significant than in the mountains, remains high since the majority of these municipalities are likely to double its population during the summer period, even though they are densely populated throughout the year.

Seventy per cent of the Mediterranean coastal municipalities are located in classes 3 to 5. The latter also bring together 60% of the coastal municipalities on the Atlantic seaboard as well as the coastal municipalities of the Channel-North Sea coastline.

In relation to the number of municipalities in each class, nearly 20% of class 5 and 13% of class 4 include coastal municipalities, against less than 3% for class 2 and 1% for class 1.

Figure 2: distribution of the "Coastline Act" municipalities, by sea front, according to their tourism intensity rate

In %



Note: fusion of the two Atlantic fronts "North Atlantic-West Channel" (Brittany, Pays de la Loire) and "South Atlantic" (New Aquitaine).
Scope: France including overseas departments (excluding Mayotte).
***Sources:** ONML; Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

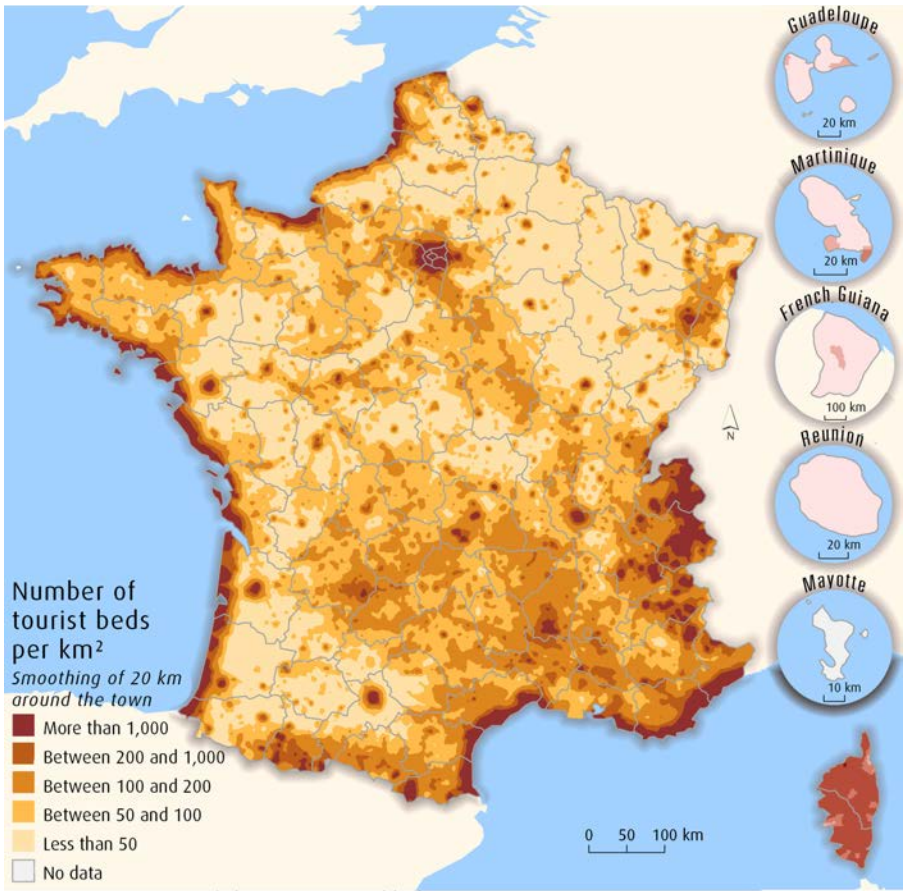
The class 5 coastal municipalities are essentially in the island territories, particularly the îles du Ponant (the Ponant Islands)[6] and Corsica. This tourism intensity sometimes extends over the whole area of the island, since certain islands such as Corsica, Belle-Île-en-Mer, Noirmoutier, Ré and Oléron, have tourism rates above 200 beds per 100 inhabitants throughout almost the entire territory.

INCREASED TOURIST DENSITY IN MUNICIPALITIES WITH A STRONG TOURISM INTENSITY

In 2016, France has an average tourist density of 33 beds per km², in comparison with a population density of 118 inhabitants per km²[7]. This tourist density increases with the tourism intensity rate of the municipalities *(Map 3)*. Below the national average in the class 1 and 2 municipalities (respectively 15 and 25 beds per km²), it is, on average, 46 beds per km² in class 3 municipalities and 115 beds per km² in class 4 municipalities. Tourist density reaches 300 beds per km² in the class 5 municipalities, with a tourism intensity rate of over 1,000 beds per 100 inhabitants.

In mainland France, the coastline (Atlantic and Mediterranean fronts), island territories and the Alps are particularly affected by this situation. In the overseas territories, there are wide disparities between the territories. Tourist density is very low in French Guiana (less than 1 bed per km²), but reaches almost 50 beds per km² in Guadeloupe and Martinique.

Map 3: tourist density in 2016



Sources: *Insee, DGE, tourist accommodation capacity files, 2016; Insee, 2012 population census (second homes).*
Statistical processing: SOeS, 2016

Trends in tourist flows in the municipalities, according to their tourism intensity rate

Methodological accuracy

Due to the lack of data available in 1999, certain types of tourist accommodation (tourist residences, holiday villages, youth hostels, sports centres) taken into account in calculating the 2016 tourism intensity rate could not be counted to measure the changes discussed below. Only hotels, campsites and second homes in mainland France have therefore been included in the calculation of changes based on the number of tourist beds (accommodation capacity, tourism intensity, tourist density).

ACCOMMODATION CAPACITY IN HOTELS, CAMPSITES AND SECONDARY HOMES WHICH INCREASE MORE QUICKLY IN MUNICIPALITIES WITH A HIGH TOURISM INTENSITY

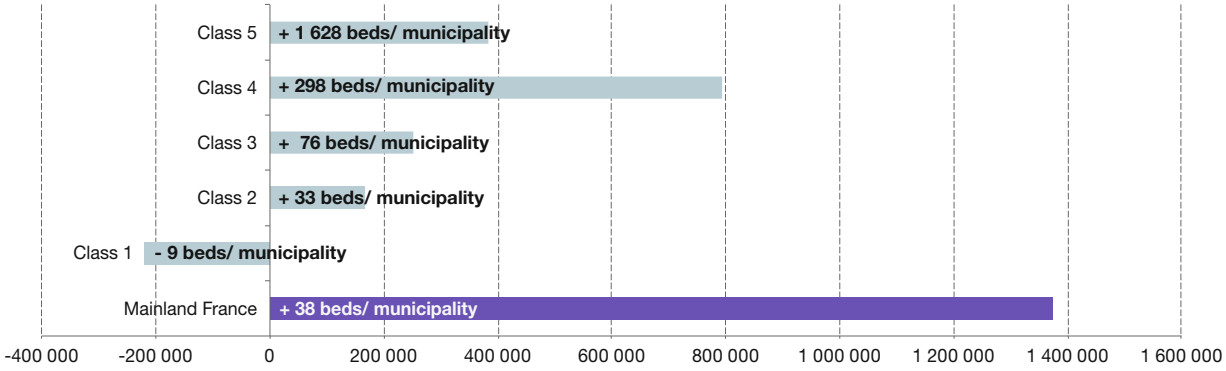
Between 1999 and 2016, accommodation capacity in hotels, campsites and second homes increased by 7% in mainland France, an increase of nearly 1.5 million tourist beds. With an increase of more than 123,000 tourist beds, Paris is the city whose accommodation capacity has increased the most. It outstrips cities located on the coast, in the Mediterranean basin (Nice, Cannes, Marseilles), and in Corsica (Porto-Vecchio). Analysed in terms of the tourism intensity rate, the situation varies considerably according to the class *(Figure 3)*.

Between 1999 and 2016, in the class 1 municipalities, which includes the capital, the accommodation capacity in tourist accommodation decreased by almost 200,000 tourist beds, i.e. - 9 beds per municipality. It increased in all the other classes according to variable volumes. The number of tourist beds increased in similar proportions in classes 2 and 3 (+166,000 and +250,000 beds in total respectively, i.e. an increase of 33 and 76 beds per municipality). Class 4 had the highest volume increase (nearly 800,000 beds, approximately 300 beds per municipality), followed by class 5 (almost 380,000 beds), which is the most significant (+1,628 beds per municipality) given the number of municipalities.

The most affected municipalities are located on the Britany coast, the Atlantic coast, in the Ponant islands, the Ré and Oléron islands, the Channel -North Sea front and in the mountains, in the Alps and Hautes-Pyrenees.

Figure 3: change in the accommodation capacity in tourist beds in municipalities between 1999 and 2016, per class

In number of tourist beds



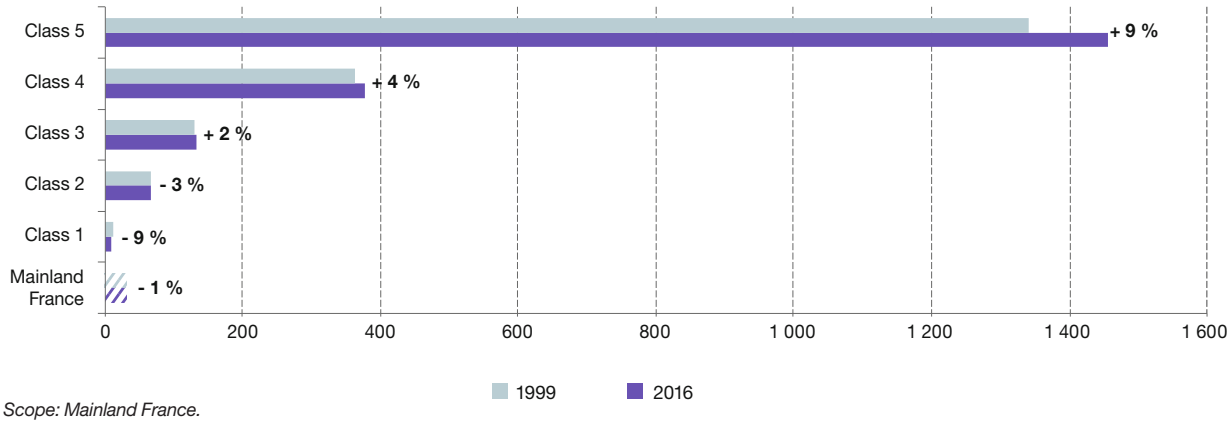
Note: the change in number of tourist beds per municipality is displayed inside the bars.
Scope: Mainland France.
Sources: *Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

AN INCREASE IN THE TOURISM INTENSITY OF MUNICIPALITIES WITH A TOURISM INTENSITY RATE THAT IS ALREADY HIGH

This increase in the spatial concentration of tourist accommodation can also be seen in terms of the changes to the tourism intensity rate *(Figure 4)*. In France, the latter decreased slightly between 1999 and 2016 (-1%). However, the trends are contrasted according to the classes studied. There is a decrease in class 1 and 2 (-9% and -3% respectively), the tourism intensity rate of municipalities increases in classes 3 to 5, to a tourism intensity rate of more than 100 beds per 100 inhabitants (+2%, +4% and +9% respectively).

Figure 4: Change in the tourism intensity rate of municipalities between 1999 and 2016, per class

In number of beds for 100 inhabitants



Scope: Mainland France.
Sources: *Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

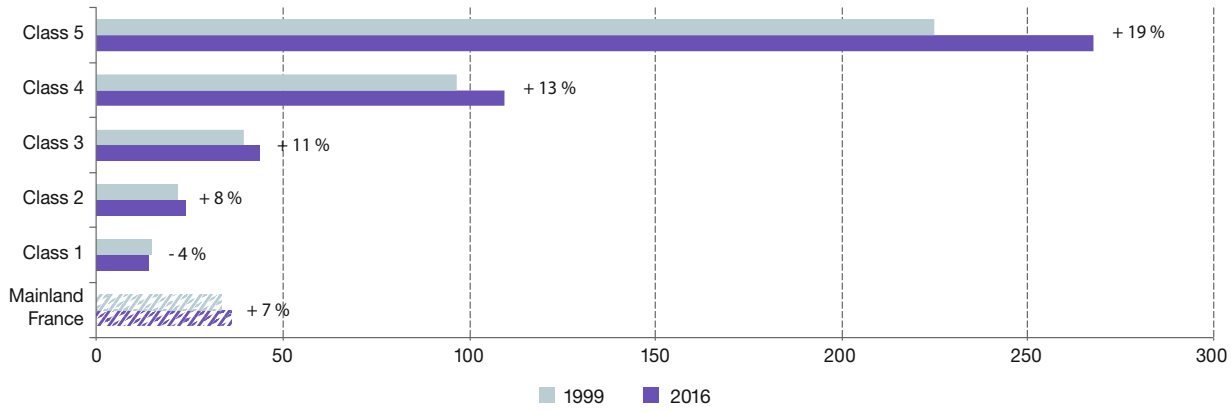
While the accommodation capacity and the population have increased at a similar rate at the national level (+7% and +9%), these two variables have evolved differently according to the tourism intensity rate of the municipalities. Accommodation capacity grew faster than the population in high-intensity tourism municipalities, especially in classes 4 (+13% vs. +9%) and 5 (+19% vs. +9%). Conversely, the latter decreased (-4%) while the population increased (+ 9%) in class 1, with a low rate of tourism intensity.

A STRONGER DENSIFICATION OF TOURISM IN HIGHER-INTENSITY TOURIST MUNICIPALITIES

In mainland France, the tourist density increased (+7% between 1999 and 2016) with disparities nevertheless according to territories. Over the period observed, the tourist density tended to increase in territories with a high tourism intensity rate, which already had a significant tourist density *(Figure 5)*. Between 1999 and 2016, the number of tourist beds per km² slowed slightly in class 1, with a low tourism intensity rate (-4%, i.e., 1 bed per km²), whereas it increased on average with the tourism intensity of a municipality, from an increase close to the national average in class 2 (+8% i.e. +2 beds/km²) to a rise of nearly 20% in class 5 (+43 beds/km²).

Figure 5: Evolution of the tourist density between 1999 and 2016, according to the tourism intensity rate of municipalities

In number of beds per km²



Scope: Mainland France.
Sources: *Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

part 3

Tourism intensity of destinations: an environmental pressure?

— Although high-intensity tourism territories are mainly located in natural environments, they are also confronted with the phenomenon of soil degradation resulting from increased urbanisation. Moreover, in relation to the number of inhabitants, the volumes of water extracted to supply drinking water, electricity consumption and the production of household and similar waste are, on average, higher in municipalities with a high tourism intensity rate. Wastewater management is also more complex. At the same time, tourist municipality areas are home to a larger share of natural environments and protected areas.

One of the peculiarities of tourism is its high concentration in time, mainly during school holidays, and in space. Analysed from a tourism intensity rate view, this doubling of concentration, and the demographic variations it causes, contributes to the dynamism of the territories concerned, but also generates two kinds of environmental pressures:

- *pressure on the availability and/or quality of resources (water, energy) and on natural environments (soil degradation resulting from increased urbanisation, increased visits to fragile sites, especially in protected areas);*
- *pressure on the management of the environment by the tourist communities, variations in population that often require oversized services during the seasonal period (increase in the quantity of waste and volume of wastewater).*

The use of these different resources and the pressures exerted are analysed here in terms of the tourism intensity rate and the five classes presented in the part two.

Tourism intensity and land take

MUNICIPALITIES WITH A HIGH TOURISM INTENSITY RATE LOCATED IN NATURAL ENVIRONMENTS

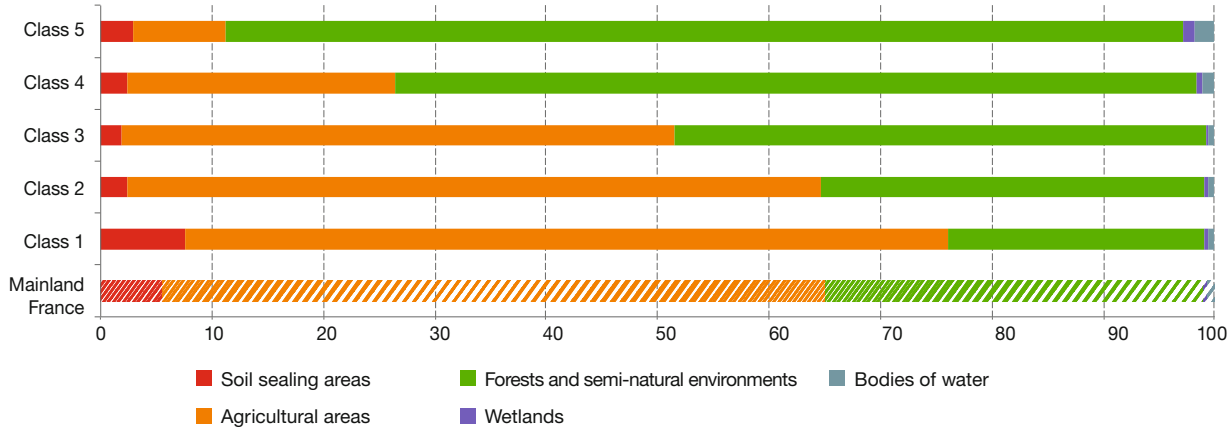
The share of forests and semi-natural habitats is higher in municipalities with a high tourism intensity *(Figure 6)*. Whereas the national average consists of nearly a third of forests and semi-natural habitats, this category covers almost half of the area of the municipalities in class 3, 72% of the area of municipalities in class 4, and 86% of the area of municipalities in class 5. Conversely, the share of agricultural territories is lower than the national average (nearly 60%) in municipalities with a high tourism intensity (half of the area of the municipalities in class 3, a quarter of the municipalities in class 4, and less than 10% of the area of municipalities in class 5).

This dominance of natural environments in class 4 and 5 municipalities is explained by the geographical location of most of these territories, in natural areas, along the coast and in mountainous areas.

Although the share of regions with degradation is lower than the national average (5.5%) in high-intensity tourism municipalities, it does not decrease with the tourism intensity rate of municipalities. With the exception of class 1, the degradation rate is considerably higher (7.6%), the share of degraded territories is quite close to classes 2, 3 and 4. Class 5 occupies the second place in degraded surfaces (2.9%).

Figure 6: Land use in 2012, according to the tourism intensity rate of municipalities

In %



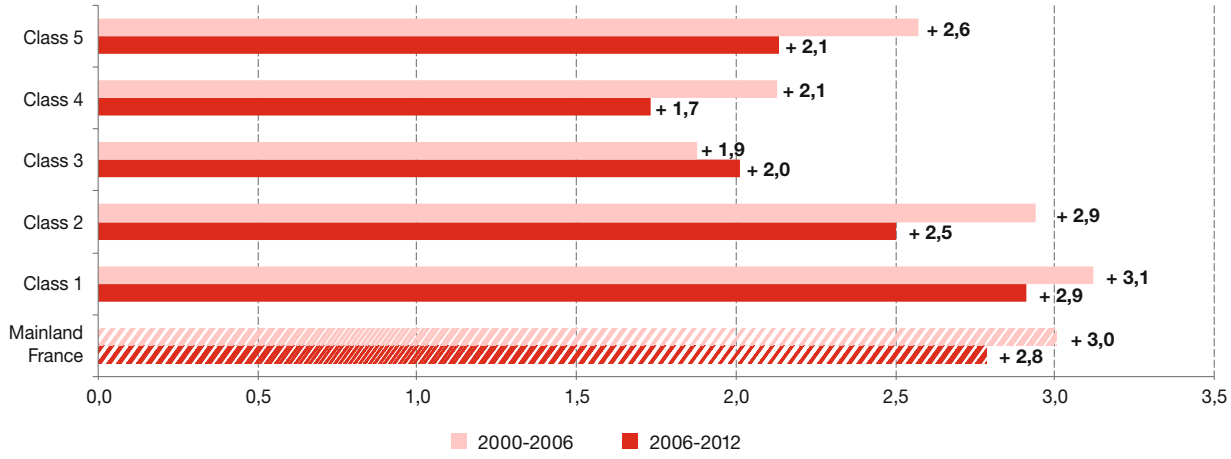
Scope: Mainland France.
Sources: *SOeS (CORINE Land Cover); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

AN INCREASE IN SOIL DEGRADATION RESULTING FROM INCREASED URBAN SPRAWL IN MUNICIPALITIES WITH A HIGH TOURISM INTENSITY RATE, NEAR THE NATIONAL AVERAGE RATE

According to the national dynamics, soil degradation resulting from increased urbanisation increases in municipalities with high-intensity tourism *(Figure 7)*. Between 2000 and 2006, degradation increased in class 5 municipalities (+2.6%), at a rate close to the national average (+3%) as well as in classes 1 and 2 (+3.1% and +2.9% respectively). Between 2006 and 2012, just like the national average (+2.8%) and classes 1 (+2.9%) and 2 (+2.5%), the rate of degradation slowed down in the high-intensity tourism municipalities (+1.7% and +2.1% for classes 4 and 5). Class 3 is an exception, as degradation increased slightly faster than in the previous period (+2% versus +1.9%).

Figure 7: Evolution of soil degradation resulting from increased soil sealing between 2000 and 2012, according to the tourism intensity rate of municipalities

In %



Scope: Mainland France.
Sources: *SOeS (CORINE Land Cover); Insee; Insee-DGE. Statistical processing: SOeS, 2016*

Soil degradation resulting from increased soil sealing is the cause of the decline of arable land and natural environments, the disruption of the water cycle and soils, and the commercial development of landscapes. This divides natural habitats, ecosystems and landscapes and affects biodiversity. The increase in the accommodation capacity of high-intensity tourism municipalities, as mentioned earlier, explains this increase in degradation, which, as for the whole of France, is taking place at the expense of certain agricultural territories and forests and semi-natural habitats.

Tourism intensity and water use

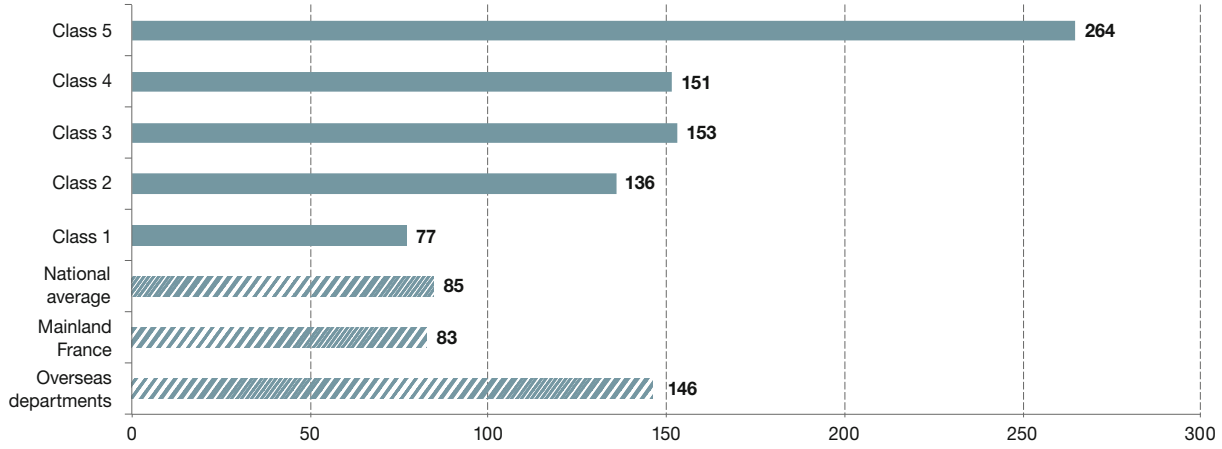
HIGH LEVELS OF DRINKING WATER ABSTRACTION IN AREAS WITH HIGH TOURISM INTENSITY RATES

The 6,000 municipalities with a tourism intensity rate of more than 100 beds per 100 inhabitants (classes 3 to 5) accounted for 10% of the drinking water abstracted in 2013 (613 million m^3 out of 5.6 billion m^3 abstracted in France). In relation to their number of inhabitants, the volume of these extractions is high compared to the national level *(Figure 8)*. While the national average per capita is 85 m^3 per year, the volumes abstracted exceed, on average, 150 m^3 in class 2 and 3 municipalities. They triple in class 5 municipalities, where the tourism intensity is greater than 1,000 beds per 100 inhabitants.

In the overseas territories, the average drinking water abstraction per capita is also higher than the national average (151 m^3 per year). Maximum volumes are reached in Guadeloupe (about 200 m^3) and Reunion (about 170 m^3), as well as in some municipalities in Martinique.

Figure 8: drinking water abstraction per capita in 2013, according to the tourism intensity rate of municipalities

In m^3



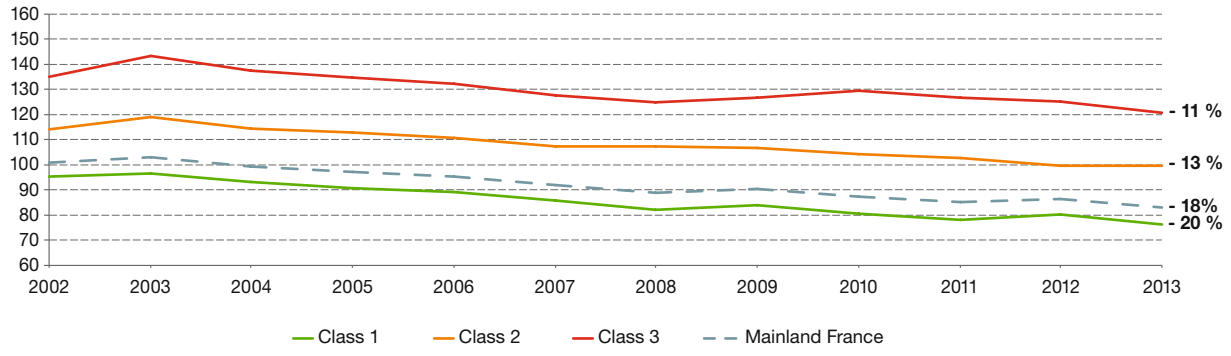
Note: the place of abstraction is not necessarily the place of consumption. Some abstractions in a municipality are intended to supply drinking water to other municipalities or even neighbouring departments, thus requiring larger volumes of water. With the exception of the Paris region, transfers between regions remain limited, with the water that is used to produce drinking water being abstracted most often near its place of consumption[8].
Scope: France including overseas departments (excluding Mayotte).
Sources: *Onema (BNPE); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

This demand for drinking water supplies may lead to some island territories being dependent on the continent, which would require underwater pipelines to be installed or ship transfers to meet the needs generated by seasonal tourist peaks.

In France, water abstraction decreased by 18% per capita between 2002 and 2013. However, at the departmental level *(see methodological notes)* and in terms of the tourism intensity rate, the evolution varies from one territory to another *(Figure 9)*. While class 1, grouping together departments with a tourism intensity rate of less than 50, follows this general trend (-20% over the observed period), the per capita volumes decreased less rapidly in classes 2 and 3 (-13% and -11% respectively).

Figure 9: Evolution of drinking water abstraction per capita, by departmental tourism intensity rate

In m³/year per capita



Scope: Mainland France.
Sources: *Water agencies; Onema; Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

The highest increases (more than 10% between 2002 and 2013) were observed in Hautes-Pyrénées (+25%), Côtes-d'Armor (+20%), Hautes-Alpes Haute-Corse (+15%) and Vendée (+13%). With the exception of the Côtes-d'Armor, all of these territories belong to class 3, which groups the departments with the highest tourism intensity.

These high volumes are partly attributable to tourism-related activities. Abstractions resulting from sport and recreational activities also take a toll on this resource. This is particularly the case for watering golf courses (25,000 m³ per year on average per 9 holes - almost 10% of golf courses use drinking water[9]), filling swimming pools, producing artificial snow, and accommodation and catering services, as well as tourists' direct consumption.

Depending on the type of tourist accommodation, the volume of domestic hot water required may vary. Given that there is a need for 30 litres of hot water per person per day at 60°C with a solar thermal installation in a "conventional" dwelling, the amount of hot water increases from 30 to 80 litres per day depending on the range of hotels (number of stars)[10].

Focus on… The increasing pressure on mountain water resources to maintain snow cover at ski resorts

In winter, tourism-related water abstractions can also generate pressures on the resource, particularly in mountainous areas, where water resources are, however, generally plentiful. The peak demand for water in ski resorts, linked to the influx of tourists, coincides with the low water flows. On top of the demand generated to satisfy the daily needs of tourists (such as tourist accommodation and catering), there are also water abstraction linked to supplying snow cannons, as some ski resorts use drinking water to supply some of them. Artificial snow cover is progressing at a rapid rate, increasing from 19 ha covered in artificial snow during the 1979-1980 season to approximately 5,300 ha in the 2007-2008 season[11]. Although the total volumes supplied by drinking water systems for this purpose are unknown to date[12], some territorial studies provide an order of magnitude. For example, Savoy[13] estimates that during winter (3 months), a winter sports resort with 30,000 inhabitants and a 150-hectare ski area uses about 540,000 m^3 of drinking water and 600,000 m^3 of water to make artificial snow. This demand for water, which is also sought in the context of hydroelectric power, is liable to stress the resource. While the hill reservoirs anticipate water needs by extracting it during non-winter periods, a part of the water abstractions nevertheless takes place during low water periods. The supply patterns of these reserves vary and sometimes require the use of drinking water, such as abstractions from watercourses or groundwater, drainage of run-off from surrounding land, drinking water supplies or even water systems reserved for hydroelectric power.

Focus on… Wastewater treatment: sometimes complex to manage in tourist municipalities

Wastewater treatment can be difficult in small and/or island tourist municipalities due to the large increase in population and activities. The sanitation system (collective or non-collective) set up on these tourist territories must take into account this change load change to ensure good quality wastewater treatment.

As regards collective sanitation, the operation of sewage treatment plants is not always satisfactory. The undersizing of the station in relation to the volumes of water generated by the seasonal peaks may lead to non-compliance with discharge standards. In the case of islands, transfer of wastewater to the mainland may be necessary in the event of an undersized station.

Urban wastewater purification aims to treat wastewater before it is discharged into the natural environment, thus preserving the quality of the environment. A lack of sanitation or poor treatment of this wastewater results in non-compliance with the European Urban Wastewater Directive and has a serious impact on the degradation of the quality of watercourses and bathing waters and sensitive uses (such as water catchment, shellfish aquaculture, fish farming, swimming and aquatic activities).

In France, in 2014, according to the Roseau national database, 9% of wastewater treatment plants (WWTPs) of all sizes were declared non-compliant in terms of performance (*see definitions*) and around 3% in terms of equipment (*see definitions*)[14]. In order to achieve the compliance of these wastewater treatment plants and improve their performance, France has put national action plan 2012-2018[15] in place. In particular, it aims to improve the reliability of sanitation systems (collection systems and wastewater treatment plants).

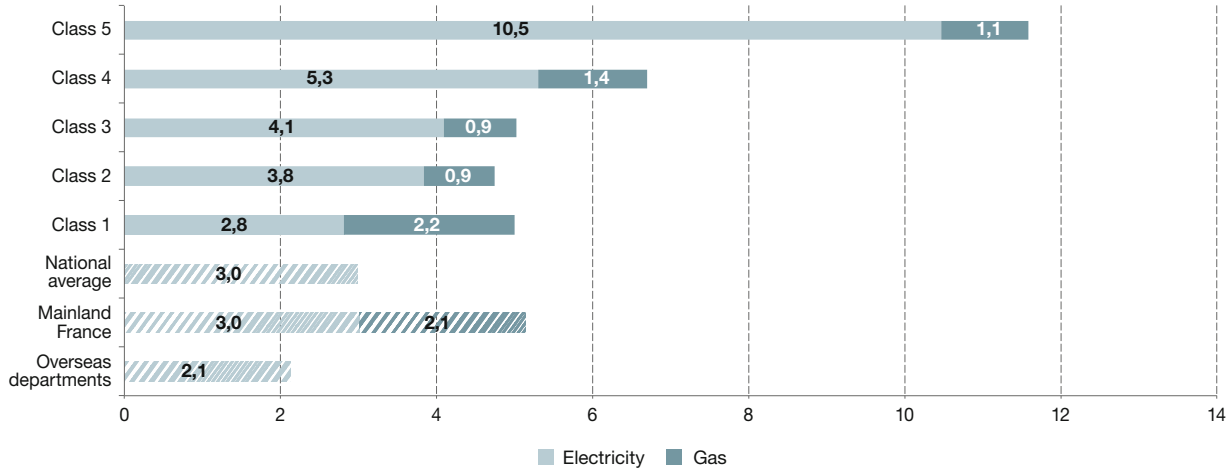
Tourism intensity and energy consumption

ENERGY CONSUMPTION: MORE ELECTRICITY, LESS GAS

In France, in 2014, the average electricity consumption at low voltage[16] amounted to 3 MWh per year per capita. There are disparities depending on the tourism intensity of the municipalities *(Figure 10)*. Electricity consumption increases according to the average tourism intensity of the municipalities. On average, it is 4.1 MWh in municipalities with a rate of between 100 and 200 beds per 100 inhabitants and 5.3 MWh in municipalities with a rate of between 200 and 1,000 beds per 100 inhabitants. It reaches 10.5 MWh in municipalities with a tourism intensity of more than 1,000 beds per 100 inhabitants.

Figure 10: Electricity and natural gas consumption per capita in 2014, according to municipalities' tourism intensity rate

In MWh



Notes: Total consumption of low voltage electricity (power less than or equal to 36 kVA and more than 36 kVA); total consumption of natural gas in T1 tariffs (consumption of less than 6,000 kWh per year) and T2 (consumption between 6,000 and 300,000 kWh per year); there are no results for gas in the overseas departments as they are not connected to the grid.
Sources: *ELD/GRD; Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

The municipalities whose per capita consumption is particularly high are located in high mountain areas (Alps, Pyrenees), as well as a part of the Atlantic coast. Island territories are particularly affected: the average electricity consumption exceeds 5 MWh per capita in most of the Ponant islands as well as in almost half of Corsica.

In the overseas territories, with 1.8 MWh per year per capita, the average electricity consumption is less than half the national average. Guadeloupe (2.5 MWh) and Martinique (2.1 MWh) have the highest average consumption.

Conversely, per capita gas consumption in 2014 was, on average, higher in municipalities with a low tourism intensity (2.2 MWh) and very close to the national average (2.1 MWh). However, average per capita consumption gaps are lower for gas than for electricity. Gas consumption is less than 1 MWh in municipalities with a tourism intensity rate of between 50 and 200 beds per 100 inhabitants. It exceeds 1 MWh in municipalities with a tourism intensity rate of over 200 beds per 100 inhabitants (1.4 MWh on average for municipalities with between 200 and 1,000 beds per 100 inhabitants and 1.1 MWh for municipalities with more than 1,000 tourist beds per 100 inhabitants). These disparities can be explained in particular by the fact that the gas consumption of island territories, in particular the overseas territories, is not taken into account because they are not connected to the natural gas network.

Tourism and the resulting demand, the high level of facilities offered by tourist accommodation to cover the needs of tourists (such as air conditioning, heating, television and household appliances) explain the higher levels of consumption of electricity in territories with a high rate of tourism intensity. However, it is sometimes difficult for them to meet this growing demand. Certain tourist territories, such as the Provence-Alpes-Côte d'Azur region located at the end of the network[17], consume more electricity than they produce. The transit of energy is sometimes delicate in island territories too. Some of the Ponant islands (Ouessant, Molène, Sein) which are not connected to the continental grid or are not interconnected, produce their electricity through oil-fired power stations. Others islands (such as Bréhat, Batz, Belle-Île-en-Mer and Houat) are connected to the continental electricity grid by underwater cables, which are vulnerable to bad weather.

In order to meet the national targets set by the Energy Transition for Green Growth Act, both tourism and non-tourism-dependent territories have to implement energy actions. These targets include:

- reducing final energy consumption by 50% by 2050 compared to that of 2012, with an intermediate target of 20% by 2030;
- reducing the primary energy consumption of fossil fuels by 30% compared to the 2012 reference year.

They are stated in particular in regional climate, air quality and energy plans (SRCAEs) and territorial climate-air-energy plans (PCAETs). To achieve these targets, the State, local authorities, businesses, associations and citizens must take care to control energy demand and promote energy efficiency and sobriety. The tourism-based nature of some territories and their increasing attractiveness could make it more difficult to control energy consumption, and thus make it more difficult to achieve these different targets.

Tourism intensity and waste management

VOLUMES OF WASTE COLLECTED GREATER THAN THE NATIONAL AVERAGE

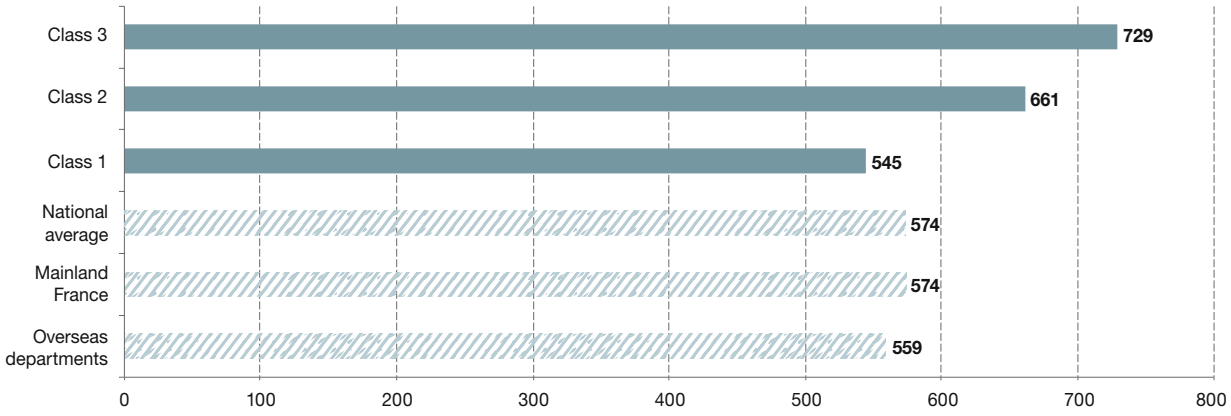
Changes in population caused by tourism also affect the generation of household and similar waste *(Figure 11)*. At the departmental level (*see methodological notes*), the volumes collected are higher than the national average (573 kg/year per capita) on the North West coast and on part of the Atlantic coast. In the South, tonnages are particularly high on the Mediterranean coast and in the Alps, along the Italian border. Some island territories also collect significant volumes, particularly Corsica and, among the overseas territories, Guadeloupe and Reunion.

On average, waste generation is more than 700 kg per year per capita in the departments with a tourism intensity rate of more than 100 beds per 100 inhabitants. However, it is lower than the national average in the departments with a tourism intensity rate of less than 50 beds per 100 inhabitants.

While the average in the overseas territories (559 kg/year per capita) is lower than the national average, Guadeloupe (654 kg/year per capita) and Reunion (618 kg/year per capita) reach significant volumes.

Figure 11: household and similar waste generation per capita in 2013, according to the tourism intensity rate of the departments

In kg/inhabitant



Scope: Including overseas departments (excluding Mayotte).
Sources: *Ademe (Collecte survey); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

Between 2005 and 2013, per capita household and similar waste generation increased more rapidly in the classes of municipalities with a high tourism intensity *(Figure 12)*. As regards mainland France, the production of household and similar waste generation decreased slightly (-1%). In terms of tourism intensity, it continues to increase in class 2 (+3%) and 3 (+5%), the latter bringing together the departments with the highest tourism intensity rates. Conversely, per capita household and similar waste generation decreases slightly in class 1, according to national dynamics.

The highest increases is observed in Southern Corsica (+54%), Landes (+31%), Vendée (+28%), Lozère (+24%), Pyrenees-Orientales (+21%) and Alpes-de-Haute-Provence (+20%) - departments that are grouped together in class 3, with a tourism intensity rate of more than 100 beds per 100 inhabitants.

Figure 12: evolution of household and similar waste generation per capita, according to the tourism intensity rate of the departments

In kg/year/inhabitant

Scope: Mainland France.
Sources: *Ademe (Collecte survey); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

The volume and type of waste generated by the tourist attractiveness of a municipality may vary according to the type of tourist accommodation. On average, every second home contributes to an increase of 150 kg per year in the amount of residual household waste (OMR)[18]. In hotels, the amount of residual household waste generated by the offer of an extra bed (265 kg per year per capita in 2009) is higher than that produced by an additional resident (221 kg). In campsites, the amount of residual household waste per capita is about half as low as for hotels, while the quantities of packaging, newspapers and magazines and glass collected per capita are higher. The occupancy rate of tourist accommodation, or the option for tourists to sort waste, help explain these disparities[19].

Focus on… Waste into the sea

On the coast, more than 10 million tonnes of macro-waste[20] are released into the marine environment every year, the bulk of which (80%) comes from the land. According to the French National Observatory of the Sea and the Coast (ONML), 15% of this waste is discharged on the beach, 15% floats on the surface or in the water column, and the majority (70%) sinks and is deposited on the seabed[21]. The effects of this waste are particularly harmful to the marine environment, including the transport of persistent organic pollutants, diffusion of toxic compounds, and the death of many marine species.

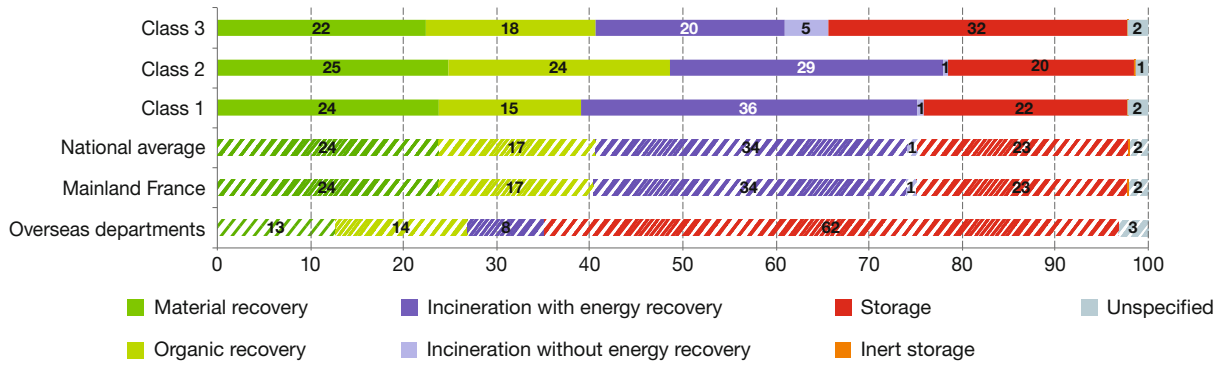
SPECIFIC ISSUES OF WASTE TREATMENT REINFORCED BY SOMETIMES UNDERSIZED INSTALLATIONS

In the absence of adequate treatment, this waste can be a source of environmental pollution. However, processing this waste often requires an increase in collection frequencies and overcapacities in temporary storage, or even sometimes a transfer to the continent with a view to eliminate or recover it in the case of metropolitan islands without a suitable storage facility. This is the case, for example, in the Ponant islands (except Belle-Île-en-Mer, which has a non-hazardous waste storage facility).

Added to these difficulties in infrastructure sizes are problems inherent to the geographic characteristics of tourist destinations. The natural constraints of the mountain environment have an impact on the methods of waste management. The mountainous environment reduces the amount of available and suitable space. The isolation and/or the dispersion of housing makes it difficult to make the necessary arrangements. As regards the road network, the use of taxiways, which are often small and narrow, is difficult or impossible at certain times of the year because of climate factors (such as snow cover, frost and avalanches). In addition, rainfall and moisture in the mountains can be an aggravating factor in the pollution caused by waste, in particular due to the impact of rainwater run-off (leaching of waste)[22].

Figure 13: treatment of household and similar waste in 2013, according to the tourism intensity rate of the departments

In %



Scope: France including overseas departments (excluding Mayotte).
Sources: *Ademe (Collecte survey); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

The material and organic recovery rate is close to the national average (41%) in departments with a tourism intensity rate of more than 100 beds per 100 inhabitants *(Figure 13)*. On the other hand, the rate of waste destined for storage increases on average with the tourism intensity of the departments, from 22% in the departments with a tourism intensity rate of less than 50 beds per 100 inhabitants, to 32% in the departments with a rate higher than 100 beds per 100 inhabitants.

WASTE RELATED TO TOURISM, A PROBLEM WHICH IS INCLUDED IN A NATIONAL CONTEXT OF WASTE REDUCTION OBJECTIVES

Territories with high-intensity tourism produce an average of 27% more domestic and household waste per capita than the national average. The share of waste stored in these territories is 9 points higher than the national average.

Article 70 of Law 2015-992 of 17 August 2015 on the energy transition for green growth sets objectives for the prevention and reduction of waste. All territories, whether tourist areas or not, are subject to these objectives, among which they must:

- give priority to the prevention and reduction of waste production, by reducing the quantities of household waste and equivalent products produced per capita by 10% and reduce the quantities of waste from economic activities per unit of value produced in 2020 compared to 2010;
- increase the quantity of waste recovered, especially organic material, by directing non-hazardous, non-inert waste to this channel. The aim is to recover 55% and 65% of this waste by 2020 and 2025 respectively, measured by mass. The public waste management service locally develops these objectives in order to reduce the quantities of residual household waste after recovery. To this end, it is improving in developing the sorting of organic waste at the source, until its generalisation for all waste producers before 2025. The objective is that every citizen has a solution at their disposal that enables them to not throw biowaste into residual household waste so that it is recovered and not eliminated. Local authorities define technical solutions for local composting or separate collection of biowaste and an adapted rate of deployment.

  These objectives are particularly reflected in territories in the regional waste management plans[23].

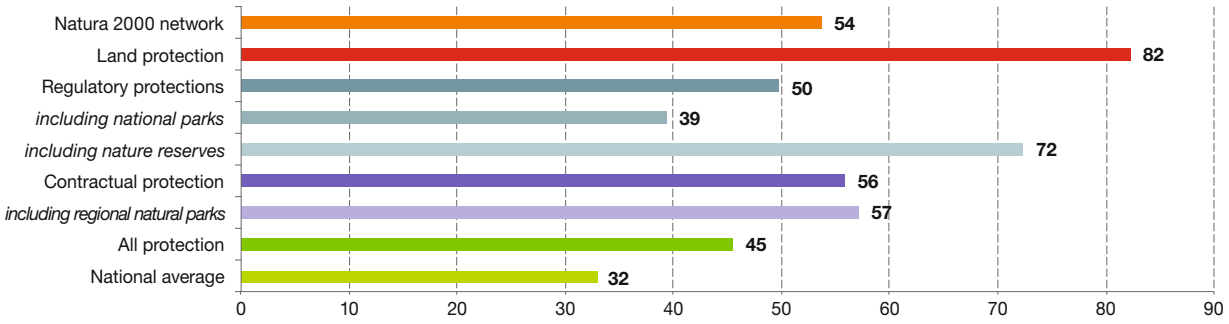
Tourism intensity and frequentation of natural areas

A GREATER TOURISM INTENSITY RATE THAN THE NATIONAL LEVEL IN ALL PROTECTED AREAS

In 2016, the tourism intensity rate of municipalities with at least one protected area was higher than the national average (45 beds per 100 inhabitants compared with 32), and varies according to the type of protection *(Figure 14)*. The highest tourism intensity rates are located in municipalities where part of the territory is under land-use control. These are land acquisitions by the Conservatoire du Littoral (the French Coastal Protection Agency), departments or natural areas protection agencies in order to avoid the urbanisation of these natural areas. The level of protection is high. Tourism intensity is also well above the national average in municipalities located in nature reserves (72 beds per 100 inhabitants on average), which are based on regulatory protection prohibiting or restricting certain human activities, as well as in regional nature parks (57 beds per 100 inhabitants).

Figure 14: municipality tourism intensity rate, by type of protected sheltered area in 2016

Number of tourist beds per 100 inhabitants



Scope: France including overseas departments (excluding Mayotte).
Sources: *French National Museum of National History (MNHN)(2016); Natura 2000 (September 2015); Federation of Conservatories of Natural Areas (2015); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

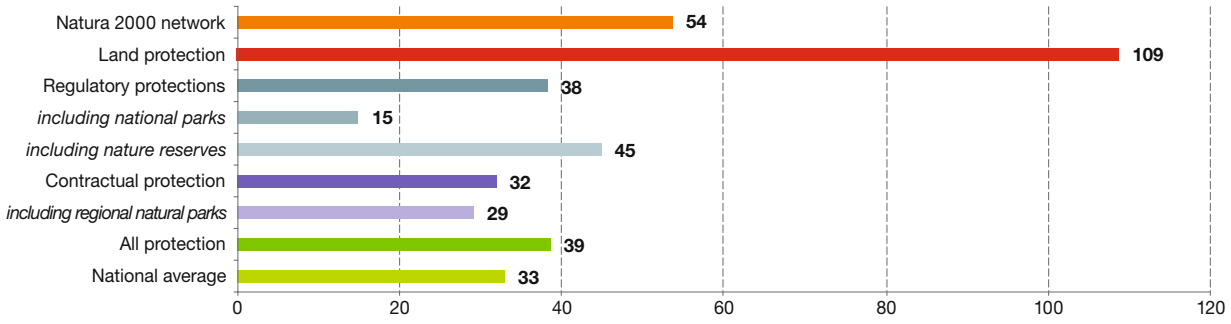
The number of inhabitants residing during the year in a municipality with at least one protected area varies according to the type of protection. While a very small portion of the population (3%, or nearly 2.1 million inhabitants) resides in municipalities with a core national park, nearly 37% of the French population (24.2 million inhabitants) live in a municipality with at least one protected area, all protections combined.

A CONTRASTED TOURIST DENSITY ACCORDING TO THE TYPE OF PROTECTED AREA

All protections combined, the municipalities with protected areas have, on average, a tourist density higher than the national average (33 beds/km²) *(Figure 15)*. Municipalities with the two types of protected areas with the highest tourism intensity rate (land protection and nature reserves) also have, on average, the highest tourist density (109 beds/km² for sites under land protection, which is almost 3.5 times the national average; 45 beds/km² for nature reserves). The average tourist density of municipalities with core national parks is lower than the national average (15 beds/km²), due to the particularly high level of protection of these sites.

Figure 15: tourist density of municipalities, by type of protected sheltered area in 2016

In number of tourist beds per km²



Scope: France including overseas departments (excluding Mayotte).
Sources: *French National Museum of National History (MNHN)(2016); Natura 2000 (September 2015); Federation of Conservatories of Natural Areas (2015); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

The influx of tourists, close to or in these protected areas, has an ambivalent effect. On the one hand, it demonstrates the attractiveness of natural spaces and is a vehicle for raising environmental and sustainable development awareness. On the other hand, overcrowding of these sites can jeopardise their preservation and the capacity of the natural environment to regenerate: land degradation which contributes to the ecological fragmentation of the site (such as the creation of paths due to numerous trampling and intrusion of tracks dedicated to nature sports), disruption of biodiversity due to human activities (such as odours, noises that disturb certain species, waste disposal, and natural imbalance generated by harvesting, fishing).

part 4

Which place for sustainable tourism and its environmental dimension in France?

—Sustainable tourism initiatives have been developing, especially over the last two decades. New practices, focusing on gentle roaming in particular, are spreading. Local actors are joining forces to commit themselves to practices that respect the environment. There has been an increase in the amount of logos, labels and brands that link tourism and the environment.

In order to limit pressures on natural resources and preserve their environment, new practices to develop sustainable tourism have been appearing in tourist destinations for several years. As defined by the World Tourism Organization[24], sustainable tourism is tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities. The objective is to establish a suitable balance between the three dimensions of sustainable development (economic, social, environmental) to guarantee tourism's long-term sustainability.

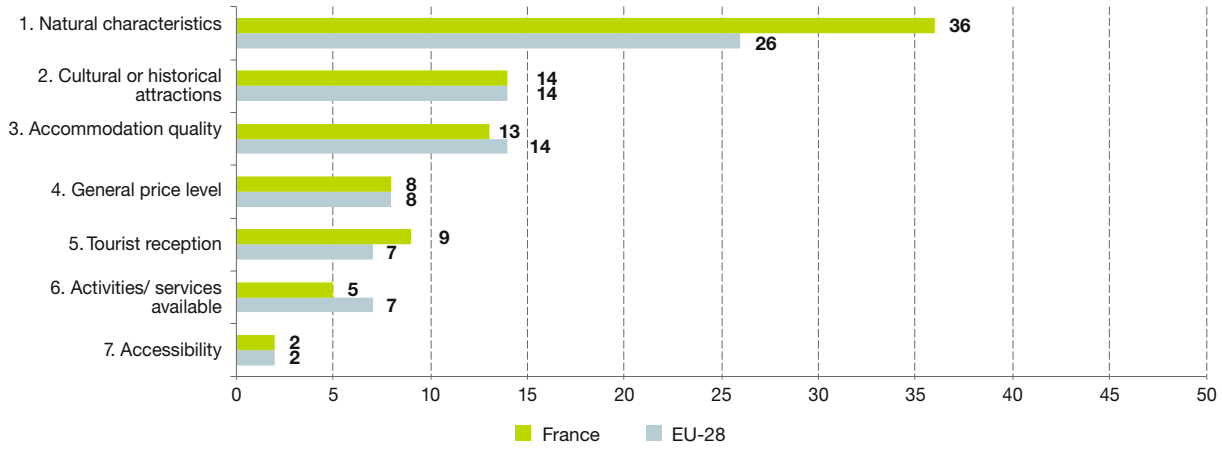
The attractiveness of natural areas

EUROPEANS AND TOURISM: THE APPEAL OF "NATURE" DESTINATIONS

In France, as in the rest of the European Union, natural features are the first criterion for tourists to return to holiday in the same place, according to the Eurobarometer on the European tourism preferences in 2016 *(Figure 16)*. This dimension outstrips cultural or historical attractions and the quality of accommodation. Natural features include criteria such as landscape quality or climate conditions. This was the case for more than a third of Europeans, and more than a quarter of the French surveyed.

Figure 16: first criterion for tourists to return to the same place

In %



Note: 2016 survey on 2015 holidays. The question was: "Which of the following would make you to go back to the same place for a holiday? Firstly? ". "Do not know" and "Other" responses not taken into account.
Source: *European Commission (Flash Eurobarometer 432, Preferences of Europeans towards tourism)*

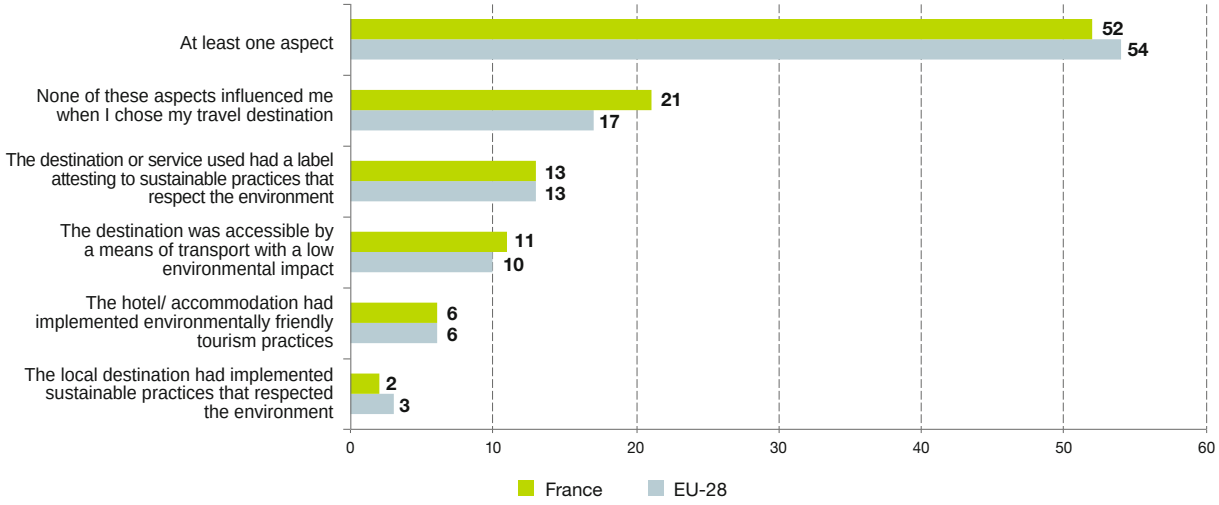
This survey, conducted by the European Commission, also indicates that Europeans (95%) and the French (98%) favour natural features as the first satisfaction criterion for their holidays, ahead of the safety and quality of the accommodation.

THE ENVIRONMENT, A CRITERION OF CHOICE FOR HOLIDAYING

For tourists, the environmental dimension is also a criterion in choosing their holiday destination. In 2016, according to the Eurobarometer, more than half of the Europeans surveyed claim to have taken into account at least one environmental aspect among the four proposed to choose their holiday destination in 2015 *(Figure 17)*. The French were slightly less concerned by this than Europeans overall (21% of them were not influenced by any of these criteria, compared with 17% for the European Union). For the French, as for all the Europeans surveyed, the presence of an environmental label and then access to the destination *via* modes of transport with a low environmental impact are the two main environmental factors taken into account.

Figure 17: environmental criteria taken into account by tourists when choosing their main holiday destination in 2015

In %



Note: 2016 survey on 2015 holidays. The question was: "Were any of the following aspects relevant for you when you chose the destination(s) to visit during your main holiday in 2015? " (three maximum responses among the proposed responses). "Do not know" and "Other" responses not taken into account.
Source: *European Commission (Flash Eurobarometer 432, Preferences of Europeans towards tourism)*

Nature tourism, between protection and development

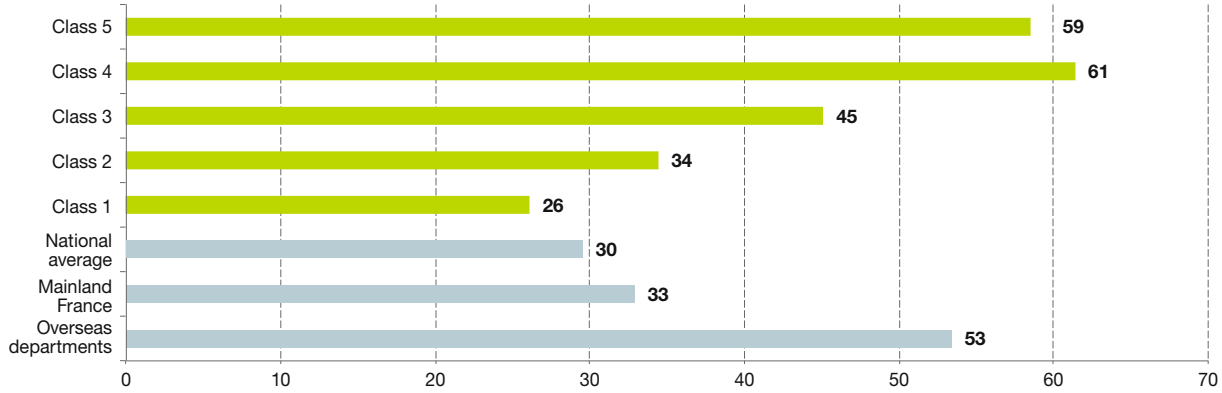
ENHANCED PROTECTION OF NATURAL SPACES

Most tourist territories have protected areas (such as Natura 2000, national parks, nature reserves, etc.). These natural environments contribute to the attractiveness of the tourist municipalities. For all types of protection[25], tourism intensity is, on average, one third higher than the national average.

In 2016, one third of the area of the French territory had a protected area, with all protections combined, or nearly 21 million hectares. The share of these areas in municipalities increases with their degree of tourism intensity *(Figure 18)*. On average, a quarter of the municipalities with a tourism intensity rate of less than 50 beds per 100 inhabitants have a protected area, compared with one third for those with a tourism intensity rate between 50 and 100 beds per 100 inhabitants. The protected area reaches 45% of the total area for municipalities with a rate of between 100 and 200 beds per 100 inhabitants, and nearly 60% for municipalities with a rate of more than 200 beds per 100 inhabitants.

Figure 18: portion of protected areas in the total area of municipalities in 2016, according to the tourism intensity rate of municipalities

In %



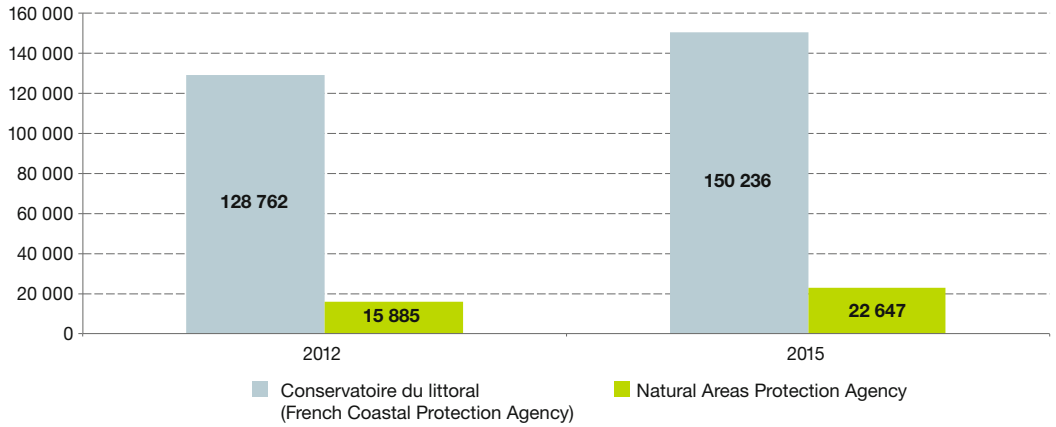
Scope: France including overseas departments (excluding Mayotte).
Sources: *French National Museum of National History (MNHN)(2016); Natura 2000 (September 2015); Federation of Conservatories of Natural Areas (2015); Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

In order to preserve the attractiveness of these remarkable spaces, and as a source of revenue for the relevant municipalities, tourism pressure is controlled by resorting to land protection, notably through the acquisition of sites by coastal protection agencies and natural areas protection agencies.

Between 2012 and 2015, the area acquired by the Conservatoire du Littoral (the French Coastal Protection Agency) increased by almost 20%, from nearly 130,000 to over 150,000 hectares *(Figure 19)*. For natural areas protection agencies, the volume of totally acquired areas also continues to increase (+43% over the period observed), from 15,885 to 22,647 hectares.

Figure 19: land area acquired by the Conservatoire du littoral and the conservatories of natural areas

In hectares



Note: areas totally acquired by conservatories of natural areas (partially acquired areas not taken into account). Results on 1 January of each year.
Scope: France including overseas departments (excluding Mayotte).
Sources: *French Federation of Conservatories of natural areas; French National Museum of National History (MNHN). Statistical processing: SOeS, 2016*

THE DEVELOPMENT OF SOFT MOBILITY

Following the "Assises du tourisme" launched in 2013, and in order to meet the target of hosting 100 million foreign visitors by 2020, the Ministry of Foreign Affairs has set up five centres of excellence, one of which focuses on slow tourism. It is defined as tourism centred on soft mobility (river kayaking, cycling, walking, horseback riding), and prioritising accommodation that allows a proximity with nature and the destinations' residents[26].

France is the second most popular cycling destination in the world after Germany, with nearly 12,000 km of cycle routes and multi-purpose cycling trails, and paths such as the Vélodyssée (Atlantic coast), the Loire à Vélo and the Tour de Bourgogne by bike. In 2014, it is estimated that the French had 9.2 million holidays during which they took part cycling or mountain biking[27]. The development of this practice, for short trips or as full-fledged touring holidays, reflects holidaymakers' growing interest in sustainable tourism *(Table 2)*.

Table 2: soft mobility network in France

	Roaming mode	Cumulative distance
	Cycle routes and multi-purpose cycling trails (2015)	12,000 km
	Hiking trails (2016)	65,000 km
	Walking and hiking routes (2016)	115,000 km
	Coastal trails (2012)	4,600 km

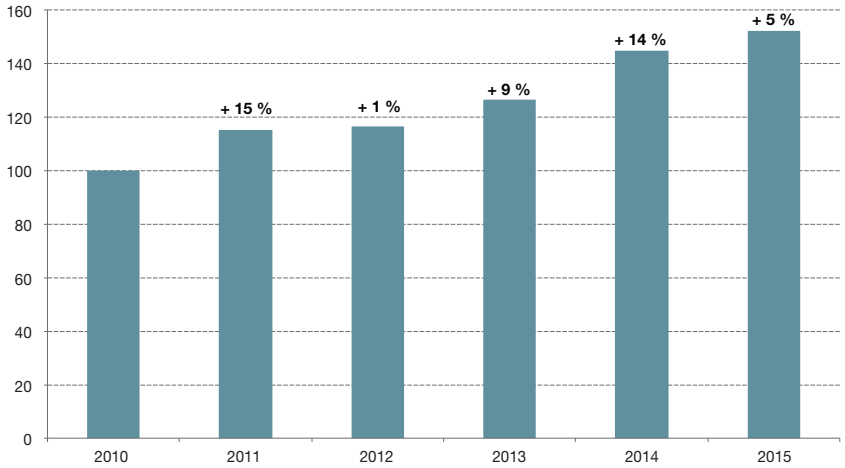
Sources: *SOeS (coastal trails)[28]; DGE (2015 Tourism Bicycle Barometer in France); the French Department of Foreign Affairs and International Development (MAEDI) according to the French Hiking Federation*

Focus on… the Loire à Vélo cycle route

The Loire à Vélo cycle route goes through the Centre-Val de Loire and Pays de la Loire regions and the "Loire-Anjou-Touraine" Regional Natural Park. From Cuffy in the Cher to Saint-Brevin-les-Pins in Loire-Atlantique, it extends over 900 kilometres, of which 280 km are a UNESCO World Heritage site.

Figure 20: Changes in the number of visitors to the Loire à Vélo cycle route

In base index 100 in 2010



Note: data calculated from the number of passes on the counters and not the number of cyclists. A cyclist going back and forth on a section where a counter is located will be counted as many times as they pass in front of said counter.
Source: *Centre-Val de Loire Regional Tourism Committee (visit data at automatic counting points)*

The number of visits has significantly increased in recent years (+52% between 2010 and 2015), from an average of 33,000 passes per counter to nearly 51,000 passes *(Figure 20)*.
A survey on the number of visits conducted in 2015[29] estimated that 935,000 cyclists had used the Loire à Vélo cycle route. Tourists account for 43% of cyclists (the remainder being day trippers), an increase of 42% compared to 2010. Nearly a quarter of them present on the route are there for cycle touring. They stay in the Loire regions for eight days on average, preferring camping (45%), then hotels (22%), as a mode of accommodation.

Development of the "sustainable tourism" display

LABELS, LOGOS AND BRANDS: CRITERIA FOR TOURISM THAT BETTER RESPECTS THE ENVIRONMENT

Professionals (such as tourist accomodations, restaurants and tour operators) are committed to quality initiatives in order to reduce the environmental pressures generated by their activities. These initiatives have taken many different forms, such as labels, brands and certifications *(Table 3).* This environmental display is marked by a strong disparity both in terms of criteria and commitments (such as efficient management of water and energy resources, responsible purchasing, non-use of pesticides and preservation of the surrounding environment) and in the degree of requirements.

Private or public, the environmental display is developing in terms of tourist accommodation. Focusing on ecological practices, tourist accommodation is committed, to varying degrees (charters, criteria, etc.), to reduce pressures on the environment: saving energy (such as the use of renewable energies and thermal insulation), reducing water consumption, waste management (such as waste sorting and reducing the volume of packaging), preventing noise pollution, raising awareness or environmental education, restricting motorised transport, sustainable purchasing (local or organic products, biodegradable cleaning products, natural materials), protecting biodiversity (such as limiting, or even prohibiting, the use of phytosanitary products). Some of them, such as Gîtes Panda or the hôtels au naturel, are located within or close to protected natural areas (such as a regional natural park or Natura 2000 sites).

Table 3: examples of logos and certifications for sustainable tourism

Relevant organisations	Creation	Number of holders in 2016
Cap France holiday villages	2004	49 accommodations
Tourist accommodations and restaurants	1994	669 accommodations and restaurants
Companies in the tourism sector	2009	2 establishments
Gîtes de France holiday rentals	2003	339 holiday rentals and 77 guest houses
Tourist accommodation and camping services	2003	358 accommodations
Gîtes de France holiday rentals in partnership with the WWF	1993	217 holiday rentals and 61 guest houses
High-volume sites with a remarkable landscape	1976	14 certified sites
Private or public sector companies in the tourism sector	1999	73 organisations
Hotels** within a protected natural area	1998	20 hotels
Municipalities with bathing points or recreational harbours	1985	170 municipalities, 400 beaches and 98 recreational harbours
Tourist services and local products located within a regional natural park	2016	1,000 service-providers

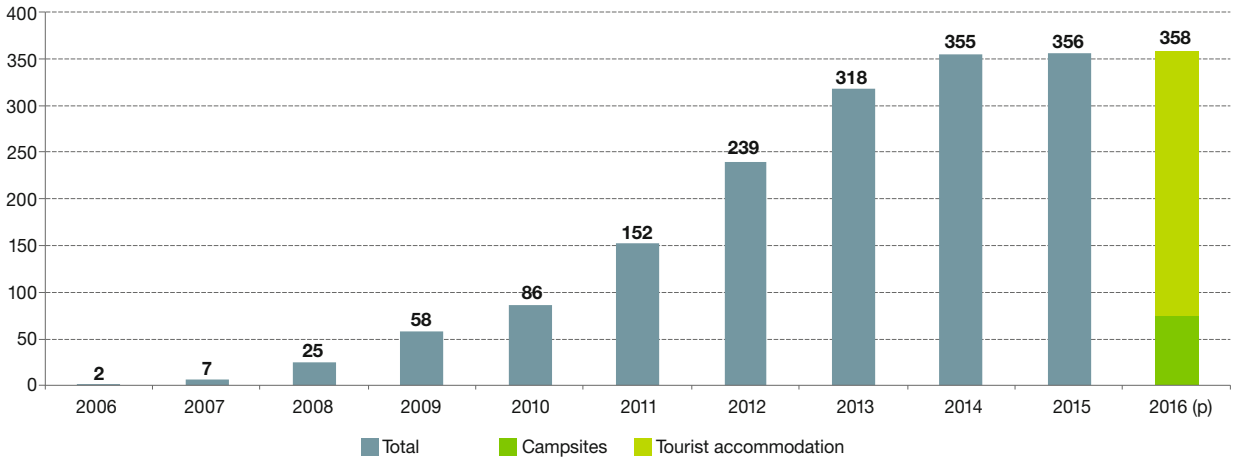
Note: 2017 data for major sites in France.
Sources: *organisations. Statistical processing: SOeS, 2016*

For example, the European "Tourist Accommodation Service" Ecolabel now comprises 358 certified establishments *(Figure 21)*. This label, which has applied to tourist accommodation and campsites since 2003, is based on a voluntary approach on the part of the institutions concerned. It is based on a comprehensive approach that takes into account the life cycle of the service, including purchasing, the use of its facilities and waste management.

In France, the number of labelled tourist accommodation has increased sharply in ten years, from 2 to 358 establishments between 2006 and 2016. However, although this progression is significant, the number of tourist establishments holding the European Ecolabel remains low in relation to the total number of tourist accommodation on national soil (less than 1% of commercial tourist accommodation).

Figure 21: number of establishments holding the European Ecolabel "Tourist Accommodation Service" in France

In number of establishments



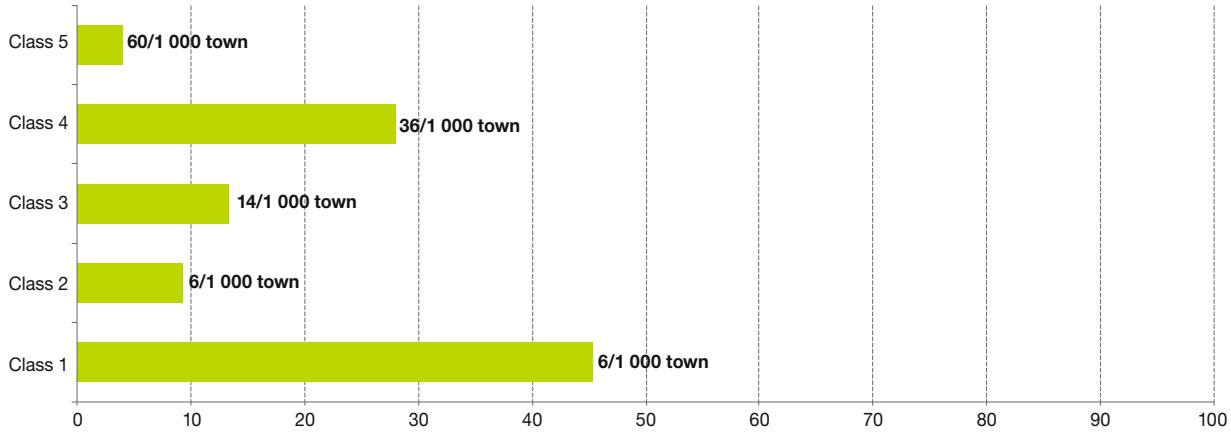
Notes: tourist accommodation services include hotels, hotel-restaurants, bed and breakfasts, holiday villages, holiday centres-youth hostels, tourist residences; (p) = provisional data.
Source: *AFNOR. Statistical processing: SOeS*

More than half of tourist establishments are located in municipalities with a low tourism intensity (less than 100 beds per 100 inhabitants) *(Figure 22)*. One third of the labelled establishments are located in municipalities in classes 4 and 5, whose tourism intensity is greater than or equal to 200 beds per 100 inhabitants.

In relation to the number of municipalities, the number of tourist establishments holding the Ecolabel increases with the tourism intensity. Class 5 has 60 establishments with the Ecolabel per 1,000 municipalities, while Class 1 only has 6. With 6, 14 and 36 certified establishments per 1000 municipalities, those in classes 2 to 4 respectively follow this development.

Figure 22: Distribution of the establishments holding the European "Tourist accommodation service" Ecolabel in 2016, according to the tourism intensity rate of municipalities

In %

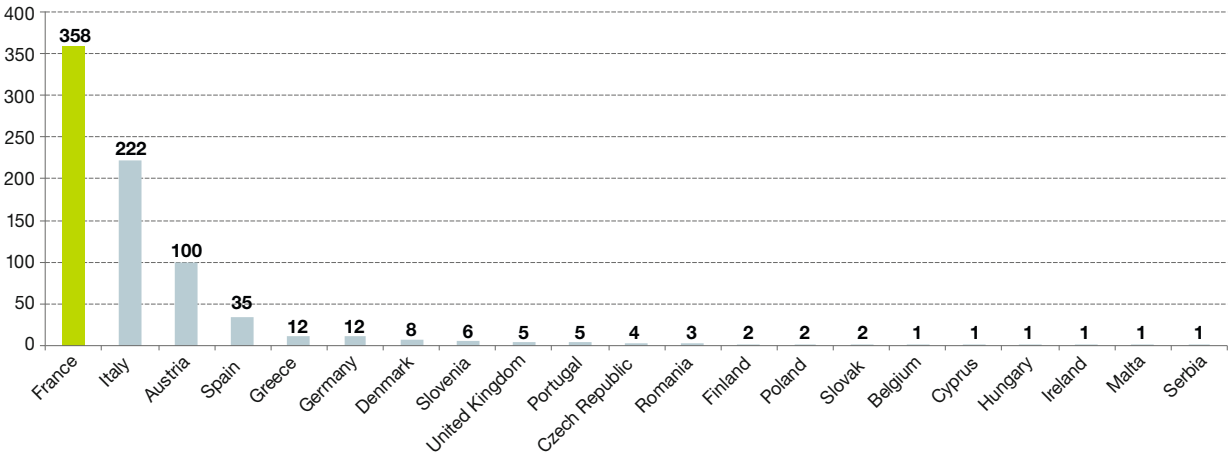


Notes: list of tourist establishments holding an Ecolabel, updated in April 2016; in the bars, the number of establishments per 1,000 municipalities.
Sources: *AFNOR; Insee (population census); Insee-DGE. Statistical processing: SOeS, 2016*

At the European level, France has the largest number of tourist establishments holding the European Ecolabel, ahead of Italy (222 holders), Austria (100 holders) and Spain (35 holders) *(Figure 23)*. Overall, in April 2016, 782 establishments held this label, i.e. 0.14% of all European tourist accommodation[30].

Figure 23: International comparisons of tourism establishments holding the European "Tourist accommodation service" Ecolabel in 2016

In number of establishments



Note: Tourist Accommodation Services and campsites.
Source: *EEA, according to European Commission, 2016*

The Grand Site de France label, created by the French State in 2002, includes territories with remarkable landscapes, classified by the law of 2 May 1930 to ensure their protection, with high numbers of tourist visits, engaged in a process aimed at reconciling flows of visitors and safeguarding these landscapes. It recognises the quality of the preservation and management of these sites.

In 2017, the most visited Grand Site is the Bay of Somme, with 2 million visitors per year, representing 80 times the resident population of the relevant municipalities *(Table 4)*. In Cantal, the annual number of visitors to the Puy Mary reaches 500,000 visitors, or 235 times the resident population.

Table 4: the frequentation of the Grands Sites de France

	Year of labelling	**Department**	**Classified land area** (in ha)	**Classified marine area** (in ha)	**Population**	**Number of visitors** (in number of visitors/year)	**Ratio** (in number of visitors/ population)
Aven d'Orgnac	2004, 2017	Ardèche	390	0	783	153,000	**195**
Bay of Somme	2011	Somme	5,327	6,693	23,869	2,000,000	**84**
Bibracte – Mont Beuvray	2007, 2014	Nièvre, Saône-et-Loire	1,478	0	885	80,000	**90**
Camargue gardoise	2014	Gard	4,822	400	30,000	1,600,000	**53**
Cirque de Navacelles	2017	Gard, Hérault	1,274	0	1,671	250,000	**150**
Deux Caps Blanc-Nez Gris-Nez	2011	Pas-de-Calais	2,791	2,500	17,162	1,200,000	**70**
Marais poitevin	2010	Charente-Maritime, Deux-Sèvres, Vendée	18,616	0	86,502	500,000	**6**
Massif du Canigó	2012	Pyrénées-Orientales	23,212	0	26,577	400,000	**15**
Pointe du Raz en Cap Sizun	2004, 2012	Finistère	472	0	3,990	800,000	**201**
Pont du Gard	2004, 2011	Gard	165	0	5,639	1,255,000	**223**
Puy de Dôme	2008, 2014	Puy-de-Dôme	989	0	4,024	400,000	**99**
Puy Mary, volcan du Cantal	2012	Cantal	8,535	0	2,125	500,000	**235**
Sainte-Victoire	2004, 2011	Bouches-du-Rhône	23,476	0	180,913	1,300,000	**7**
Saint-Guilhem-le-Désert, Gorges de l'Hérault	2010	Hérault	3,643	0	6,348	700,000	**110**
Solutré Pouilly Vergisson	2013	Saône-et-Loire	582	0	10,522	200,000	**19**

Note: data not available for the two new GSF labels awarded in March 2017 (Patrimonio-Conca d'Oro-Saint-Florent and Îles sanguinaire-Pointe de la Parata).
Sources: *Meem; Grands Sites de France, January 2017*

Created in 1985, the Blue Flag label is awarded to municipalities and recreational harbours which have a sustainable tourism development policy. The Blue Flag beaches have water and waste management and monitoring facilities (such as sewage treatment and bathing water quality, and waste sorting bins for three materials and clean beaches). Recognised recreational harbours must comply with criteria for waste sorting (such as selective collection) and environmental management (such as no direct wastewater discharge into the harbour, recovery and treatment of sewage from boats). The municipalities involved,

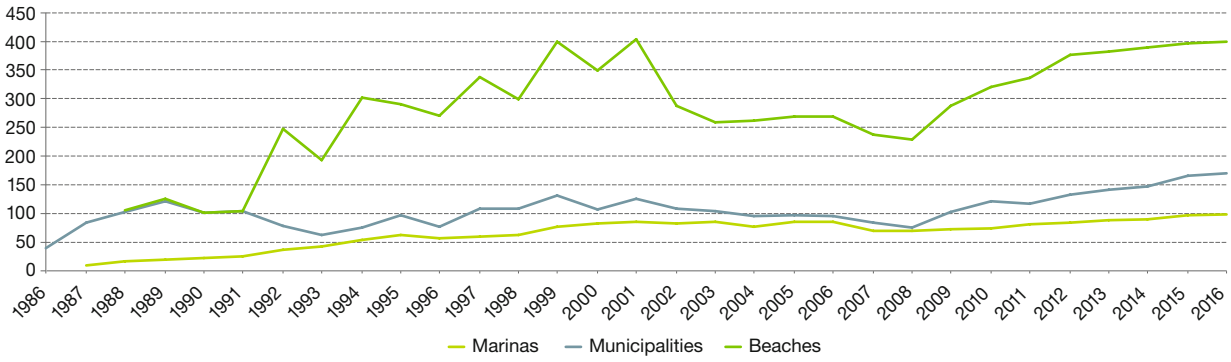
as well as the recreational harbours, also organise activities throughout the year to raise awareness on the environment and its fragility.

The number of committed municipalities and recreational harbours has progressively increased every year since 2008 *(Figure 24)*. In 2016, the Blue Flag label was awarded to 400 beaches, representing 170 municipalities, and 98 ports (out of 1,029 recreational harbours counted, including 473 seaports and 556 river ports[31]). The Provence-Alpes-Côte d'Azur region holds the largest number of laureates (55), ahead of the Occitania region (53).

At the international level, in 2016, France held the second largest number of Blue Flags, behind Spain, and ahead of Greece, Turkey and Italy *(Figure 25)*.

Figure 24: Number of municipalities, beaches and marinas awarded the Blue Flag label

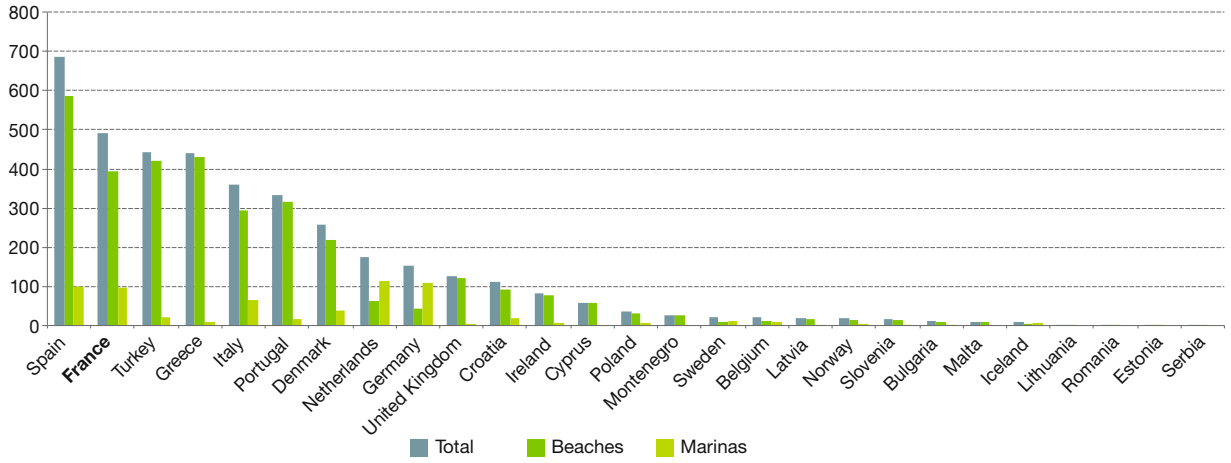
In number of laureates



Note: application procedure for labelling modified in 2001 (application for labelling is now subject to a fee).
Source: *Blue Flag. Statistical processing: SOeS*

Figure 25: International comparisons of sites awarded the Blue Flag label in 2016

In number of sites

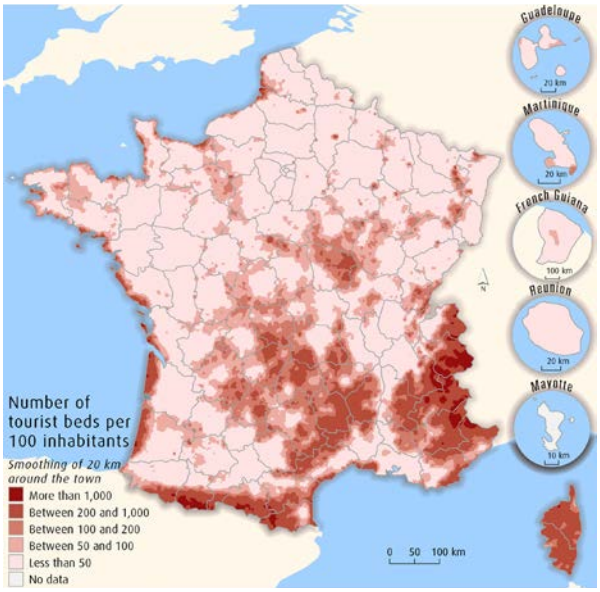


Source: *EEA, according to www.blueflag.org, 2016*

Key data

21 million tourist beds in France

Tourism intensity rate in 2016



Sources: *Insee, DGE, tourist accommodation capacity files, 2016; Insee, 2012 population census (second homes). Statistical processing: SOeS, 2016*

6,000 municipalities
have a tourism intensity rate ranging from 100 to more than 1,000 beds per 100 inhabitants.

6% of the population resides there.

They contain **60%** of the tourist beds in France.

Selection of tourism and environmental indicators, according to the tourism intensity rate of municipalities

	1 (Less than 50)	2 (Between 50 and 100)	3 (Between 100 and 200)	4 (Between 200 and 1,000)	5 (More than 1,000)
Number of municipalities	25,495	5,010	3,275	2,667	235
Number of inhabitants *(in millions)*	58.4	3.3	1.9	1.8	0.16
Accommodation capacity in 2016 *(in millions of tourist beds)*	6.2	2.3	2.7	7.2	2.7
Accommodation capacity per municipality in 2016 *(in tourist beds)*	244	451	813	2,695	11,433
Tourism intensity rate in 2016 *(in number of tourist beds per 100 inhabitants)*	11	69	138	397	1,629
Tourist density in 2016 *(in number of tourist beds per km²)*	15	25	46	115	300
Volume of drinking water extracted per capita in 2013 *(in m³)*	77	136	153	151	264
Average electricity consumption per capita in 2014 *(in MWh)*	3.4	3.9	4.1	5.0	10.4
Average gas consumption per capita in 2014 *(in MWh)*	2.2	0.9	0.9	1.4	1.1
Share of protected areas in relation to the area of municipalities in 2016 *(in %)*	26	34	45	61	59
Share of tourism establishments holding an Ecolabel in 2016 *(in %)*	45	9	13	28	4

Sources: *Meem (BDRU); Onema (BNPE); ELD/GRD; French National Museum of National History (MNHN), Natura 2000; French Federation of Natural Areas Protection Agencies; AFNOR; Insee (RP); Insee-DGE*

part 5

Appendices

Tourist profile of departments in 2016

Code	Department	Accommodation capacity *(in thousands)*	Tourism intensity rate *(for 100 inhabitants)*	Tourist density *(per km²)*	Code	Department	Accommodation capacity *(in thousands)*	Tourism intensity rate *(for 100 inhabitants)*	Tourist density *(per km²)*
01	Ain	117	19	20	50	Manche	259	52	43
02	Aisne	63	12	8	51	Marne	49	9	6
03	Allier	91	26	12	52	Haute-Marne	46	25	7
04	Alpes-de-Haute-Provence	248	153	35	53	Mayenne	45	15	9
05	Hautes-Alpes	381	274	67	54	Meurthe-et-Moselle	37	5	7
06	Alpes-Maritimes	997	92	232	55	Meuse	31	16	5
07	Ardèche	261	81	47	56	Morbihan	514	70	75
08	Ardennes	35	12	7	57	Moselle	84	8	13
09	Ariège	154	101	31	58	Nièvre	120	56	18
10	Aube	44	14	7	59	Nord	128	5	22
11	Aude	371	102	58	60	Oise	62	8	10
12	Aveyron	197	71	22	61	Orne	94	33	15
13	Bouches-du-Rhône	274	14	54	62	Pas-de-Calais	313	21	47
14	Calvados	430	62	77	63	Puy-de-Dôme	237	37	30
15	Cantal	126	85	22	64	Pyrénées-Atlantiques	331	50	43
16	Charente	68	19	11	65	Hautes-Pyrénées	257	112	57
17	Charente-Maritime	636	100	92	66	Pyrénées-Orientales	616	133	148
18	Cher	77	25	11	67	Bas-Rhin	108	10	23
19	Corrèze	142	59	24	68	Haut-Rhin	86	11	24
21	Côte-d'Or	99	19	11	69	Rhône	145	8	44
22	Côtes-d'Armor	338	57	48	70	Haute-Saône	47	20	9
23	Creuse	96	79	17	71	Saône-et-Loire	139	25	16
24	Dordogne	251	60	27	72	Sarthe	85	15	14
25	Doubs	78	15	15	73	Savoie	805	190	129
26	Drôme	148	30	23	74	Haute-Savoie	680	88	148
27	Eure	116	19	19	75	Paris	664	30	6,297
28	Eure-et-Loir	77	18	13	76	Seine-Maritime	147	12	23
29	Finistère	461	51	68	77	Seine-et-Marne	148	11	25
2A	Corse-du-Sud	276	185	68	78	Yvelines	93	7	40
2B	Haute-Corse	269	158	57	79	Deux-Sèvres	55	15	9
30	Gard	344	47	58	80	Somme	173	30	28
31	Haute-Garonne	173	13	27	81	Tarn	89	23	15
32	Gers	67	35	11	82	Tarn-et-Garonne	46	19	12
33	Gironde	488	32	48	83	Var	1,098	107	182
34	Hérault	821	75	132	84	Vaucluse	153	28	43
35	Ille-et-Vilaine	218	21	32	85	Vendée	690	105	102
36	Indre	81	35	12	86	Vienne	85	20	12
37	Indre-et-Loire	99	16	16	87	Haute-Vienne	99	26	18
38	Isère	327	26	42	88	Vosges	125	33	21
39	Jura	105	40	21	89	Yonne	125	37	17
40	Landes	407	102	44	90	Territoire de Belfort	7	5	12
41	Loir-et-Cher	100	30	16	91	Essonne	59	5	33
42	Loire	100	13	21	92	Hauts-de-Seine	143	9	814
43	Haute-Loire	139	61	28	93	Seine-Saint-Denis	51	3	215
44	Loire-Atlantique	452	34	66	94	Val-de-Marne	61	5	251
45	Loiret	103	16	15	95	Val-d'Oise	51	4	41
46	Lot	140	80	27	971	Guadeloupe	81	20	50
47	Lot-et-Garonne	70	21	13	972	Martinique	53	14	48
48	Lozère	120	157	23	973	French Guiana	11	4	0
49	Maine-et-Loire	80	10	11	974	Reunion	40	5	16

Scope: France including overseas departments (excluding Mayotte).
Source: *DGE-Insee. Statistical processing: SOeS, 2016*

Methodological notes and definitions

Methodological notes

Due to the lack of data available at the local level, indicators on the evolution of water abstraction for the drinking water supply and on the production and treatment of household and similar wastes were studied at the departmental level. The tourism intensity rates were then divided into three classes instead of the five classes developed at the municipal level:

- **Class 1: tourism intensity rate less than 50 beds per 100 inhabitants;**
- **Class 2: tourism intensity rate between 50 and 100 beds per 100 inhabitants;**
- **Class 3: tourism intensity rate greater than 100 beds per 100 inhabitants.**

The whole publication is analysed in terms of the 2016 tourism intensity rate of municipalities. However, due to data availability issues, some indicators relate to previous years (for example, the year 2013 for drinking water abstractions and the year 2012 for land use). In order to maintain overall coherence and not generate bias in the analysis, the calculations for each class were carried out on the basis of the municipality tourism intensity rate for 2016, regardless of the year of the indicator with which it was placed.

Municipalities classified according to the Coastline Act: the Coastline Act, passed on 3 January 1986, applies to the mainland and overseas coasts, salt ponds and inland water bodies of more than 1,000 hectares.

Domestic tourism consumption: consumption in euros of French and foreign visitors (tourists and day trippers) during or in preparation of travel in France or from French territory.

Household and similar waste: household waste collected in a mixed or separate collection from door-to-door or drop-off recycling (for example, dumps).

Tourist density: ratio between the tourist accommodation capacity of municipalities (number of tourist beds) and their area.

Ecotourism: in this study, ecotourism is understood as defined by the French Department of Foreign Affairs and International Development. It refers to the forms of tourism centred on gentle roaming and prioritising accommodation that allows a closeness with nature and the inhabitants of the territories visited.

According to the Québec Declaration on Ecotourism (2002), ecotourism embraces the principles of sustainable tourism, concerning the economic, social and environmental impacts of tourism. It also embraces the following specific principles which distinguish it from the wider concept of sustainable tourism:

- it contributes actively to the conservation of natural and cultural heritage;
- it includes local and indigenous communities in its planning, development and operation, and contributes to their well-being;
- it interprets the natural and cultural heritage of the destination to visitors, and it lends itself better to independent travellers, as well as to organised tours for small size groups.

Protected natural areas: the study takes into account the territories covered by the following protections:

- protections of a regulatory nature: based on the enactment of decrees or regulations prohibiting or restricting certain human activities, they are among the strongest protections: core national parks, national nature reserves, nature reserves of the Corsican local authorities, regional nature reserves, prefectoral biotope protection orders, biological reserves, national hunting and wildlife reserves;
- land-use control: land acquisition implemented by the Conservatoire du Littoral and natural areas protection agencies in order, in particular, to protect remarkable natural spaces from urbanisation;
- protection and contractual management: combining the preservation of natural heritage and local development on the basis of the voluntary adhesion of communities and private or public owners. The areas of adhesion concern national parks, marine natural parks and regional natural parks, as well as some sites of natural areas protection agencies;
- European Natura 2000: it applies only to mainland France and includes special protection areas under the “Birds” Directive and special areas of conservation under the “Habitats, Wildlife and Flora” Directive.

Tourist beds: cumulative number of beds in hotels, campsites, holiday villages, tourist residences, youth hostels, sports centres and second homes. Rentals between private individuals are not taken into account.
The number of tourist beds accounted for varies according to the type of accommodation:

- hotels = 2 beds per room;
- campsites = 3 beds per pitch;
- second homes = 5 beds per residence.

To calculate the 1999 to 2016 changes in tourist density and accommodation capacity, only accommodation in hotels, campsites and second homes were used due to the lack of data available in 1999.

Non-compliance of wastewater treatment plants (WWTPs): a wastewater treatment plant has compliant equipment provided that it has all the equipment necessary to reach the level(s) of treatment

required under the Urban Wastewater Directive (DERU), maturing for the current year. It must be able to treat, up to the reference flow, the water generated by the municipality's sanitation network at the minimum level(s) of treatment required by the Urban Wastewater Directive.
A wastewater treatment plant is compliant with overall performance over the current year provided that it has achieved the necessary allowances on each of the parameters prescribed under the Urban Wastewater Directive for the current year. Performance non-compliance may be caused by poor performance, an exceptional event that has permanently damaged the station, under-sizing of the equipment, or insufficient self-monitoring.

Drinking water abstractions: annual volumes directly drawn from water resources, resulting from the management of fees by water agencies and offices. The place of extraction does not necessarily correspond to the place of consumption, since the abstractions may be used to supply drinking water to neighbouring municipalities, or even departments.

Tourist visitation balance: the difference between the volume of tourists received in a territory (receiving region) and the volume of tourists arriving from this territory (source region).

Tourism intensity rate (or tourism intensity): the ratio of tourist accommodation capacity (number of tourist beds) to the resident population.

Tourist: a visitor who spends at least one night (and less than one year) out of his or her home, as defined by the French statistical monitoring system.

Sustainable tourism: tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities, as defined by the World Tourism Organization (WTO)[32].

Mountain areas: the classification of municipalities in mountain areas is based on the provisions of Council Regulation No. 1257/1999 of 17 May 1999 on support for rural development, and in particular Article 18 thereof for mountain areas, and Council Directive 76/401/EEC of 6 April 1976 (precise criteria for classifying mountain areas in France). A mountain area is defined by Article 18 of Regulation 1257/99 as characterised by disadvantages linked to altitude, slope, and/or climate, which have the effect of considerably restricting the possibilities of land use and generally increasing the cost of all works[33].

Find out more

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www.statistiques.developpement-durable.gouv.fr
Accueil > Environnement > Tourisme

French National Observatory of the Sea and the Coast (ONML)
http://www.onml.fr/accueil/

Enterprise Directorate-General (DGE)
http://www.entreprises.gouv.fr/tourisme

The French National Institute of Statistics and Economic Studies (Insee)
http://www.insee.fr/

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[14] The wastewater treatment database (Roseau) does not process all of the wastewater treatment plants because of the unreliability of data on wastewater treatment plants below the 2,000 population equivalent. An analysis of wastewater treatment plant compliance in tourist municipalities could not be carried out in this publication.
[15] 2012-2018 Action Plan "For a sanitation policy that contributes to the quality objectives of aquatic environments", the Ministry of Ecology, Sustainable Development, Transport and Housing, September 2011, http://assainissement.developpement-durable.gouv.fr/
[16] Total consumption in low voltage for a power less than or equal to 36 kVA.
[17] Source: EDF (Electricity of France), www.lenergieenquestions.fr
[18] Mixed household waste collected.
[19] *Quels sont les déterminants de la production de déchets municipaux ? (What are the determinants of municipal waste production?)* CGDD/SEEIDD, *Studies & documents*, No. 112, September 2014, p. 40
[20] Persistent solid materials of human origin, processed or manufactured, lost, discarded or abandoned voluntarily in nature and ending up in the aquatic environment. They are made of plastic, wood, metal, glass, rubber, textiles or paper.
[21] *Les déchets solides en mer et sur le littoral (Solid waste at sea and on the coast)*, Ifremer, *the French National Observatory of the Sea and the Coast (ONML) thematic fact sheets*, February 2015.
[22] *Guide pour la gestion des déchets en montagne (Guide to mountain waste management)*, European Commission, The Publications Office of the European Union, 2000
[23] Decree No. 2016-811 of 17 June 2016 on the regional plan for the prevention and management of waste.
[24] http://sdt.unwto.org/fr/content/definition
[25] These data include, without double counting, regulatory protections (cores of national parks, nature reserves, etc.), land management (such as acquisitions of the Conservatoire du Littoral), protection and contract management, and the Natura 2000 network. See appendix "*Definitions*".
[26] www.diplomatie.gouv.fr, section "the French Department of Foreign Affairs and International Development's action in promoting tourism".
[27] *Baromètre 2015 du tourisme à vélo en France (2015 Cycling Tourism Barometer in France)*, DGE.
[28] *Le sentier du littoral : un parcours privilégié pour découvrir le bord de mer et ses enjeux (The Coastal Trail: a special route to discover the seaside and what is at stake)*, CGDD/SOeS, *Le point sur*, No. 204, June 2015, p. 4
[29] *Analyse de la fréquentation et de l'impact économique de la Loire à Vélo (2015) (Analysis of the number of visits and economic impact of the Loire à Vélo cycle route (2015))*, Centre-Val de Loire Regional Tourism Committee and the Pays de la Loire Regional Public Company.
[30] Of a total of 570,268 establishments accounted for. Sources: European Commission and European Environment Agency.
[31] Observatoire des ports de plaisance (Recreational Harbours Observatory); 2015 Report, comprehensive basic count.
[32] http://sdt.unwto.org/fr/content/definition
[33] Source: Observatory of territories, the French Comission for Equality of Territories (CGET).

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In 2015, France, the world's largest destination, welcomed more than 84 million tourists. Concentrated in both time and space, this massive influx, and the demographic variation it entails, inevitably exert pressure on the environment.

However, the quality of the environment and the preservation of natural areas contribute to the attractiveness of tourist sites.

Initiatives are therefore being developed to move towards sustainable and balanced tourism management.

Tourism intensity at a local level: environmental pressure or preservation factor?

General Commission for Sustainable Development

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