the Reports

Observatory on public water and sanitation services

Overview of services and of their performance

eaufrance

Public water-information system

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SERVICES

CONTEXT

Initiated in 2009, the observatory on water and sanitation services offers national online access (www.services.eaufrance.fr) to public data on the organisation, management and performance of services. These elements are used to evaluate the economic, technical, social and environmental quality of services on an objective, recognised basis, shared by all stakeholders in the water sector. In the long term, the observatory will thus go beyond simple reasoning in terms of the price of water and cover all the technical and financial issues related to services.
Using the observatory's data, this initial overview offers markers on the organisation, quality and price of water services and collective sanitation. It also clarifies the sustainable assets management issues facing services.

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ABSTRACT

Key figures of the first overview of services and their performance

More than 31,000 water and collective sanitation services: 14,217 drinking water and 17,228 collective sanitation services; 4,500 intermunicipal groups in charge of water and/or sanitation services.

Average price of water and of collective sanitation: €3.62 incl. VAT/m^3

Sum of solidarity actions: €0.0045/m^3 for water services and €0.0038/m^3 for collective sanitation services.

Unpaid bills rate: 0.7% for water services and 1.47% for collective sanitation services.

Compliance rate of samples taken from distributed water: 98% for microbiology and 97% for physico-chemical content.

Occurrence rate of unscheduled service interruptions (for 1,000 customers): 4.43

Complaint rate (for 1,000 customers): 7 for water services and 4.3 for collective sanitation services.

Asset knowledge and management index (out of 100 points): 57 for water services and 56 for collective sanitation services.

Average rate of network renewal: 0.61 for water services and 0.71 for collective sanitation services.

Efficiency of the drinking water distribution network: 76%.

Leakage index: 3.9m^3/day/linear km of network.

Water resource protection improvement index (out of 100 points): 76

Effluent overflow rate in consumers' premises (for 1,000 inhabitants): 0.17

Number of collection network points requiring frequent dredging (per 100 km of network): 13

Rate of sludge from sewage treatment plants evacuated according to compliant processes: 98%.

Index of knowledge on discharge into the natural environment by wastewater collection networks (out of 120 points): 95.

- CONTENTS

1. Introduction

In France, all public water and sanitation services are public and fall within the responsibility of municipal authorities. These may, however, transfer their responsibility to intermunicipal cooperation bodies. The municipal authority or intermunicipal body is free to choose its method for managing the service: direct management or delegated management. Whatever method is chosen, the public authority remains responsible for the quality, smooth operation and sustainability of its service. 36,600 municipal authorities and 4,500 intermunicipal bodies thus manage more than 31,000 public collective sanitation or water services in France.

Governance of water and sanitation services relies on regulation through the promotion of service performance and best practices. This system mainly revolves around the definition and monitoring of performance indicators designed as steering tools and targeting results. These good governance instruments should enable operators to achieve a certain quality of service and guarantee consumer satisfaction. The Ministerial Order and Decree dated 2 May 2007 define a list of 29 statutory performance indicators to be calculated annually by each collective or non-collective sanitation and water service. The observatory on public water and sanitation services aims to collect and bring together data and information relating to these statutory performance indicators.

Initiated in November 2009 by the French National Agency for Water and Aquatic Environments (Onema), the observatory on public water and sanitation services is a tool for local authorities and service operators to help them steer their services, monitor changes year-on-year and assess general performance of their service. It is also a means of informing consumers and citizens who want to be able to access transparent information on the price and quality of the water and sanitation service.

The observatory is backed up by a national database that brings together information on the performance of public water and sanitation services. Municipal authorities and intermunicipal bodies report performance indicators and contextual data to input the database. Public and private operators, which contributed to the definition of these indicators, produced data to calculate them. In each department (or county), Territorial and Marine Services (DDTMs) support local authorities in the input of data and monitoring of their consistency.

Data collected concern the features of the service (management method, type of water resources, billing details, pricing terms, etc.) and offer a technical and economic description (economic indicators, number of inhabitants supplied with drinking water, connected to a wastewater collection system or non-collective sanitation system, etc.) These first two types of data are used to characterise the service and group together the same types of service in order to compare them. Other indicators complete this description to analyse service performance: compliance of distributed water, performance of sewage treatment plants, estimated leakage, etc. In the long term, this base will offer a complete overview of the French situation, through inter-annual monitoring of indicators.

To summarise, the observatory offers consumers a versatile tool for:

- steering services within the framework of governance through performance;
- calculating indicators and preparing the annual report on the price and quality of services;
- distributing transparent information on services to consumers.

This report is the first inventory on the quality and performance of water and sanitation services following the processing and interpretation of the observatory's data.

Every year, the observatory's database is structured around a reference repository listing all French public water and sanitation services and specifying their competence, their management method, location and population. This repository therefore provides a precise mapping of the organisation and management of services in France. Once the repository has been completed, services enter their performance indicators and variables into the database. This report highlights the exhaustive information of the 2009 repository and performance data for a sample of services.

The observatory's work is approved by the French National Water Committee’s commission on financing of water and sanitation services, which brings together all the stakeholders involved in public water and sanitation service management.

2. Representativeness of performance indicators collected in 2009

In 2009, the observatory's reference repository identifies 31,445 public water or collective sanitation services (14,217 in drinking water and 17,228 in collective sanitation). Among these services, 74% are directly managed by the competent authority (69% for drinking water and 77% for collective sanitation). Out of all the services listed in the repository, 4,214 drinking water services (i.e. 70% of the population supplied) and 4,281 collective sanitation services (i.e. 59% of the connected population) registered their performance data in the observatory's database.

Facts and data concerning non-collective sanitation are not included in this report as the information gathered to date does not seem dependable and complete enough for use.

The performance indicators presented in this report are defined in appendix 1.

When a service is available to inhabitants in several departments (i.e. counties), the service is located in the department in which its head office is located. This processing method produces results on the level of the department. However, three services, owing to their large size, receive specific processing. For geographical reporting, data of the SIAAP (Paris conurbation sanitation service) and the SEDIF (Greater Paris water service) are presented at the department level for the relevant departments in the outer suburbs of Paris and are grouped together for the inner suburbs of Paris. For the SIDEN (intermunicipal water service for Northern France), the population has been divided up in real proportions between the three departments covered by the service.

Following this processing, the representativeness of the "performance indicator database" sample with respect to the exhaustive repository was tested using the Khi Deux statistical method. Representativeness was checked at the national and department level in terms of population and according to service management methods. However, it should be noted that the analyses describing the general organisation of public water and sanitation services are expressed both in terms of population and services as they are based on the observatory's repository which is exhaustive.

Moreover, the quality of performance indicator input was also appraised.

2.1. Representativeness of the performance indicator database in terms of number of services

Representativeness of "water" and "collective sanitation" samples was tested in terms of the number of services using the Khi Deux method.

KHI DEUX METHOD

The Khi Deux method is a statistical method allowing the comparison of the correlation and representativeness of a sample with a total reference population. To conduct this statistical test, the data observed and those describing the reference population are broken down into categories. The test's number of degrees of freedom is defined according to the number of categories created. The algebraic distance between sets of information to be compared is then calculated. If this distance is lower than the one featured in the Khi Deux table, it is possible, with an error margin of 5%, to conclude that the sample is representative of the reference population.

The results of these tests are summarised in both tables below.

Table 1 : Representativness of drinking water sample in terms of services

Drinking water	2009 repository	2009 sample	Proportion
Total number of services	14,217	4,214	30%
Of which in delegated management	*4,409*	*2,097*	*48%*
Of which in direct management	*9,808*	*2,117*	*22%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

The test concludes that the representativeness of the "drinking water" sample is not satisfactory.

Table 2 : Representativness of collective sanitation sample in terms of services

Collective sanitation	2009 repository	2009 sample	Proportion
Total number of services	17,228	4,281	25%
Of which in delegated management	*3,908*	*1,870*	*48%*
Of which in direct management	*13,320*	*2,411*	*18%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

The test concludes that the representativeness of the "collective sanitation" sample is not satisfactory.

In view of these results concerning the representativeness of samples in terms of services, it was decided that the analyses on performance indicators presented in this report will not be expressed in terms of number of services. The representativeness of "water" and "collective sanitation" samples was then tested in terms of population.

2.2. Representativeness of the performance indicator database in terms of population

The representativeness of "water" and "collective sanitation" samples in terms of population underwent several Khi Deux tests. The first tests looked at the national population supplied with drinking water and collective sanitation services.

Table 3 : Representativness of drinking water sample in terms of population

Drinking water	2009 repository	2009 sample	Proportion
Total population	60,878,689	42,468,914	70%
Of the population in delegated management	*36,100,897*	*26,845,928*	*74%*
Of the population in direct management	*24,777,792*	*15,622,986*	*63%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

In the observatory's repository, the population supplied with drinking water was estimated to be 60.9 million inhabitants and therefore does not cover the whole French population. Several factors explain this difference. Firstly, the repositories of certain overseas departments (Guadeloupe, French Guiana and Mayotte) are not recorded in the database. 1.3 million inhabitants are therefore not covered by the observatory. Secondly, the "population" item is not completed for 1,123 municipalities featured in the repository. Thirdly, 73 municipalities in the repository, covering around 400,000 inhabitants, are not linked to a public water or sanitation service.

The test on the population supplied with drinking water concludes that the sample is representative of the total population. The same applies to the population connected to a collective sanitation service.

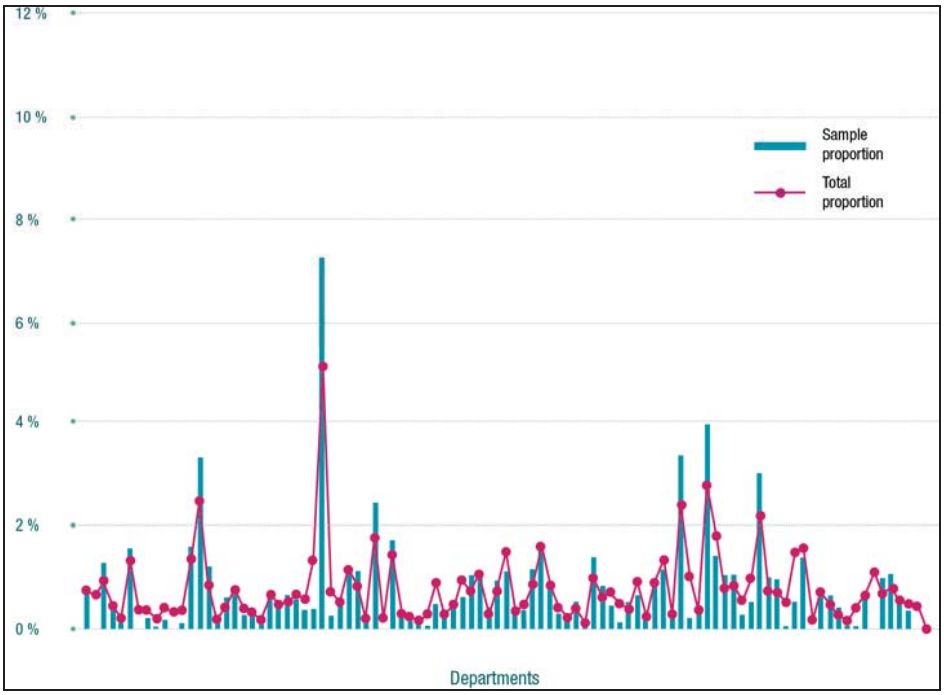
Table 4 : Representativness of collective sanitation sample in terms of population

Collective sanitation	2009 repository	2009 sample	Proportion
Total population	57,325,484	33,897,687	59%
Of the population in delegated management	*24,128,676*	*14,435,480*	*60%*
Of the population in direct management	*33,196,808*	*19,462,207*	*59%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

The representativeness of the sample was then tested according to the department’s population and not only the national population. The test on the department’s population supplied with drinking water concludes that the sample is representative of the total population. The graph below presents variations between the sample (blue histogram - "sample proportion") and the ideal sample that would perfectly represent the exhaustive repository (red line - "total proportion"). The variations between the two are minor: the sample is representative.

Figure 1 : Representativness of drinking water sample in terms of population per department

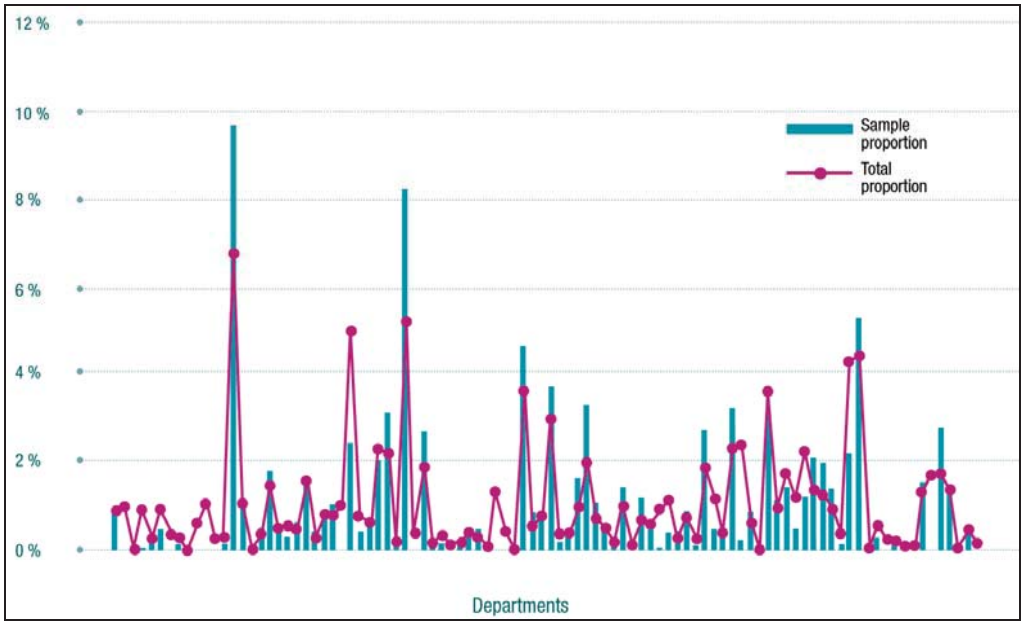


Datasource: SISPEA (Onema) – DDT(M) – 2009

The test on the department's population connected to a collective sanitation service is also conclusive.

Representativeness was then tested according to the department's population and the service management method. The test on the department's population supplied with drinking water through direct management concludes that the sample is representative of the total population. The result is identical to the one on the department's population supplied with drinking water by a public service through delegated management. The test on the department's population connected to a collective sanitation service through direct management concludes that the sample is representative of the total population. The test on the department's population connected to a collective sanitation service through delegated management concludes that the sample is representative of the total population (see graph below).

Figure 2 : Representativness of collective sanitation services in delegated managment in terms of population per department

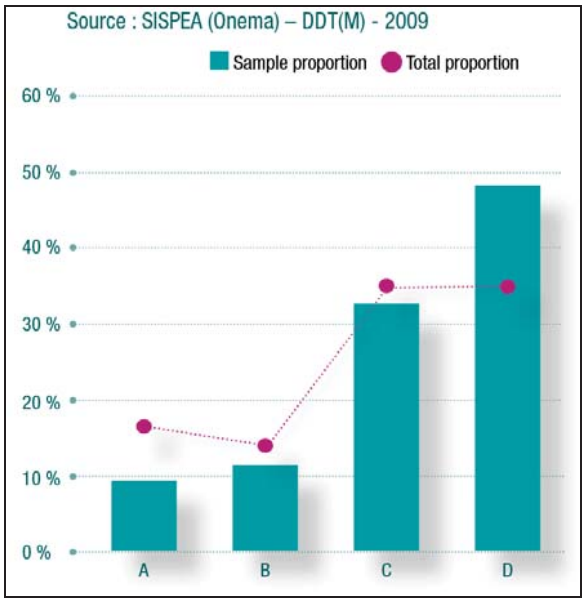


Datasource: SISPEA (Onema) – DDT(M) – 2009

To hone representativeness tests further, the sample was studied by creating population categories. Services were grouped into four population segments: "fewer than 3,500 inhabitants", "3,500 to 10,000 inhabitants", "10,000 to 100,000 inhabitants" and "more than 100,000 inhabitants". The test concludes

that the sample is representative of the population per segment. However, in the graph below, an over-representation of services to more than 100,000 inhabitants (category D) and an under-representation of services to fewer than 3,500 inhabitants (class A) can be observed.

Figure 3 : Representativness of sample in terms of population categories



Datasource: SISPEA (Onema) – DDT(M) – 2009

For the record, the sample of the 2008 SOeS survey, based on municipalities and not on services, brought together all municipalities with more than 10,000 inhabitants, 4,030 municipalities with 400 to 10,000 inhabitants and 260 municipalities with fewer than 400 inhabitants. Compared with the sample of the service observatory, the SOeS sample shows a more distinct over-representation of municipalities with more than 10,000 inhabitants (and therefore larger sized services) and more under-representation of municipalities with fewer than 10,000 inhabitants (and therefore smaller sized services).

The same test per population segment was conducted for drinking water and for sanitation samples. Similar results to those described above for the whole water and sanitation population were obtained.

The observatory on water and sanitation services and the SOeS survey

The observatory database gathers information on public water and sanitation services. The database from the statistics and observation service (SOeS) survey is build upon a sample of municipalities. Hence these two databases are not conceived upon the same scale. This difference makes any comparison between those two samples very difficult. This partly accounts for the gaps between the results from the observatory and those from the SOeS survey led in 2008.

Moreover, the sample from the SOeS survey shows a stronger over-representation of services supplying more than 10,000 inhabitants, than the sample from the observatory.

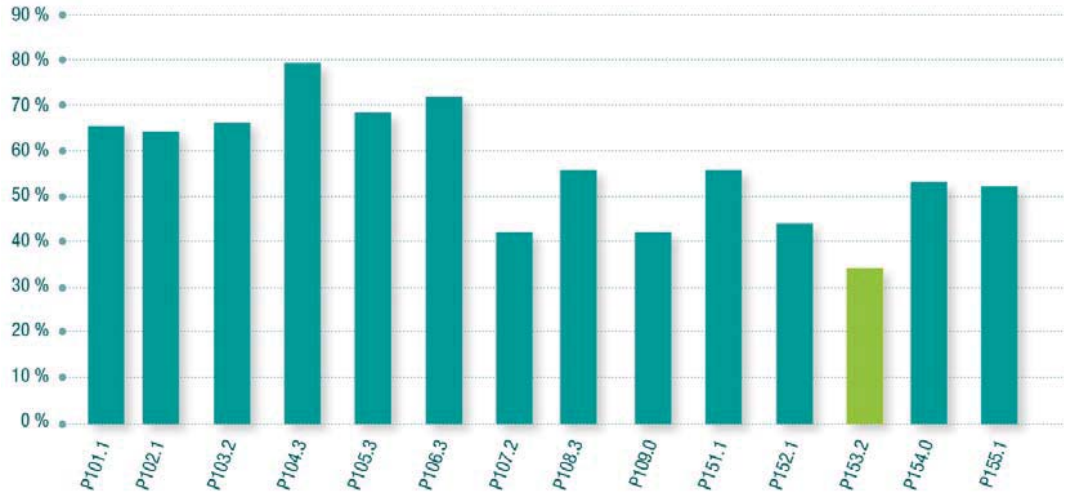
Finally, regarding the drinking water price, SOeS survey imputes pollution duty payable to the water agency to the price of the sanitation service, and not to the water service. When correcting this improper imputation and affecting correctly the pollution duty, the drinking water price calculated in the SOeS survey amounts to €1.92 incl. VAT/m3 (and not €1.59 incl.VAT/m3). This value matches the one from the observatory.

2.3. The performance indicator availability rate

Having ensured the representativeness of the sample of services which completed the performance indicator database, the availability rate of the latter was assessed for drinking water and for collective sanitation.

The graph below presents the availability rate of performance indicators for drinking water services. It was decided to use all indicators with an availability rate in excess of 30% to ensure satisfactory representativeness of the information. The "debt extinguishment period" performance indicator (P153.2) was unable to be used, despite an availability rate of 33%. To include this indicator, it would have been necessary to have the "annual gross savings" performance variable (VP183) which is only entered for 4% of services.

Figure 4 : Performance indicator availability rate for drinking water services



Datasource: SISPEA (Onema) – DDT(M) – 2009

For the record, the list of statutory performance indicators for the drinking water service is recalled in the table below :

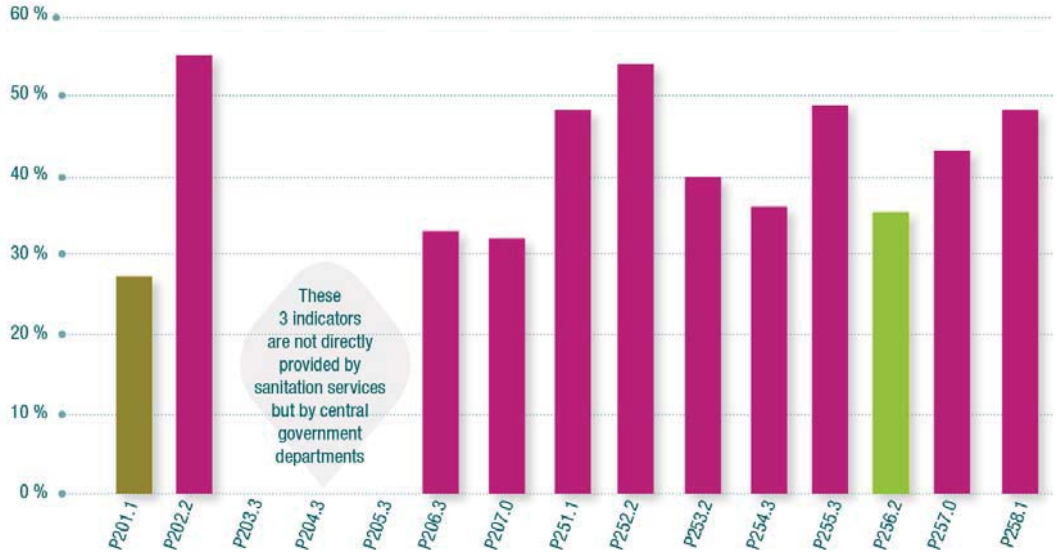
Table 5 : Statutory performance indicators - Drinking water services

Code	Indicator's name
P101.1	Microbiological compliance rate of samples on distributed water
P102.1	Physico-chemical compliance rate of samples on distributed water
P103.2	Asset knowledge and management and knowledge index of drinking water networks
P104.3	Efficiency of the distribution network
P105.3	Linear index of unaccounted volumes
P106.3	Leakage index
P107.2	Average rate of drinking water network renewal
P108.3	Water resource protection improvement index
P109.0	Sum of debt waivers or payments to a solidarity fund
P151.1	Occurrence rate of unscheduled service interruptions
P152.1	Compliance rate of new customer maximum connection times
P153.2	Length of the local authority's debt extinguishment
P154.0	Rate of unpaid water bills the previous year
P155.1	Complaint rate

Source : Based on the Ministerial Order and Decree dated 2 May 2007 on the annual report on the Price and Quality of water and sanitation services.

The graph below presents the availability rate of performance indicators for sanitation services. The same 30% availability rate was applied for descriptive and performance indicators of collective sanitation services. Consequently, the descriptive "service rate by collection networks" indicator (P201.1) was not able to be used owing to its low fill-up rate (27%) and because its representativeness was considered too random. The "debt extinguishment period" performance indicator (P153.2) was unable to be used, despite an availability rate of 35%. To include this indicator, it would have been necessary to have the "annual gross savings" performance variable (VP183) which is only entered for 6% of services.

Figure 5 : Performance indicator availability rate for collective sanitation services



Datasource: SISPEA (Onema) – DDT(M) – 2009

The list of statutory performance indicators for the collective sanitation service is recalled in the table below :

Table 6 : Statutory performance indicators - Collective sanitation services

Code	Indicator's name
P201.1	Service rate by wastewater collection networks
P202.2	Asset knowledge and management index of wastewater collection networks
P203.3	Compliance of effluent collection with the provisions defined in Decree 94-469 dated 3 June 1994, amended by the Decree dated 2 May 2006
P204.3	Compliance of sewage treatment equipment with the provisions defined in Decree 94-469 dated 3 June 1994, amended by the Decree dated 2 May 2006
P205.3	Compliance of sewage treatment plants with the provisions defined in Decree 94-469 dated 3 June 1994, amended by the Decree dated 2 May 2006
P206.3	Rate of sludge produced by sewage treatment plants and evacuated according to compliant processes
P207.0	Sum of debt waivers or payments to a solidarity fund
P251.1	Effluent overflow rate in consumers' premises
P252.2	Number of collection network points requiring frequent dredging per 100km of network
P253.2	Average renewal rate of wastewater collection networks
P254.3	Compliance of sewage treatment equipment performance with the provisions of the individual act enforcing water regulations
P255.3	Index of knowledge on discharge into the natural environment by wastewater collection networks
P256.2	Length of the local authority's debt extinguishment

P257.0	Rate of unpaid sanitation bills the previous year
P258.1	Complaint rate

Source : Based on the Ministerial Order and Decree dated 2 May 2007 on the annual report on the Price and Quality of water and sanitation services.

3. Descriptive analysis of public water and sanitation services

In France, public water and sanitation fall under the responsibility of municipal authorities and their groups which, pursuant to the French Act on Water and Aquatic Environments (LEMA) No. 2006-1772 dated 30 December 2006, are granted exclusive rights in these domains. The municipal authority or intermunicipal body is free to choose its service management method: direct management or delegated management. 36,600 municipal authorities and 4,500 intermunicipal bodies thus manage more than 31,000 public collective water or sanitation services in France.

3.1. Overview of the organisation and management of drinking water services

3.1.1. Limited functional fragmentation of services but major geographic fragmentation

Drinking water services comprise a number of steps: production, transport if applicable, storage and distribution. Public service water that runs from taps is taken in its unprocessed form from a watercourse or groundwater. It can also be taken from a spring. It undergoes appropriate treatment to make it drinkable, according to its quality, and is then transported and distributed to households.

In 2009, 14,217 public drinking water services produced and/or transported and/or distributed drinking water to almost 61 million people.

Table 7 : Distribution of public water services in 2009 according to their missions

	Production and/or Transport	Distribution, Production & Distribution or Transport & Distribution	Production, transport & distribution	**Total**
Number of services	354	1,374	12,489	**14,217**
Breakdown as %	*2.5%*	*9.7%*	*87.8%*	
Population (M inhab.)	3.1	2.6	55.2	**60.9**
Breakdown as %	*5.1%*	*4.3%*	*90.6%*	

Datasource: SISPEA (Onema) – DDT(M) – 2009

In the observatory's repository, the population supplied with drinking water was estimated to be 60.9 million inhabitants and therefore does not cover the whole French population. Several factors explain this difference. Firstly, the repositories of certain overseas departments (Guadeloupe, French Guiana and Mayotte) are not recorded in the database. 1.3 million inhabitants are therefore not covered by the observatory. Secondly, the "population" item is not completed for 1,123 municipalities featured in the repository. Thirdly, 73 municipalities in the repository, covering around 400,000 inhabitants, are not linked to a public water or sanitation service.

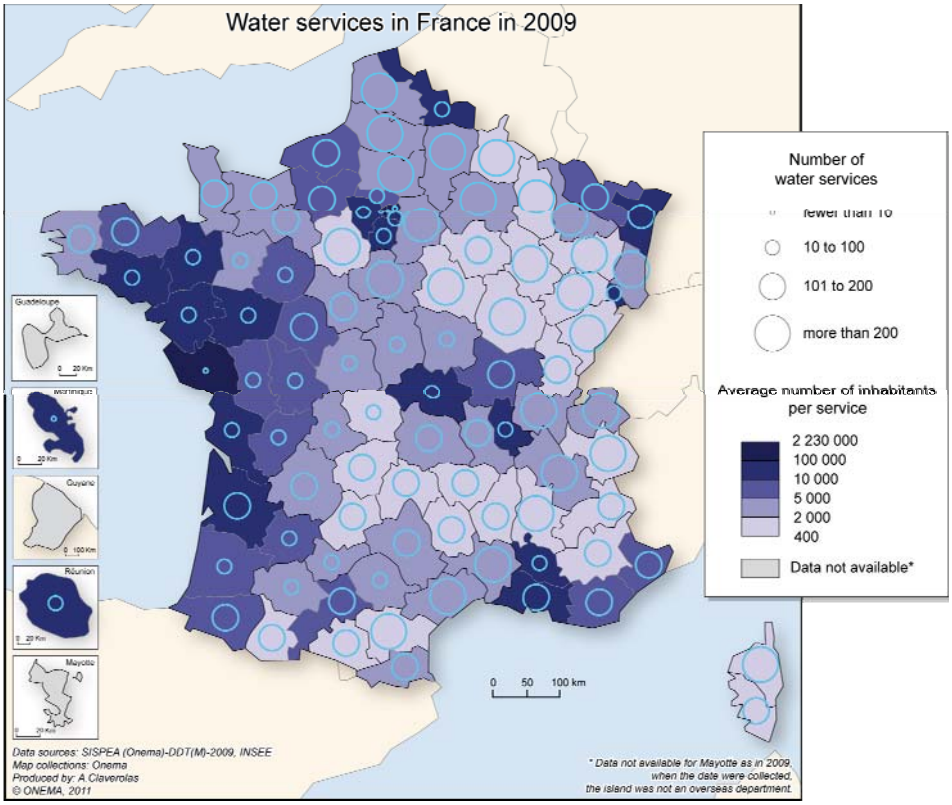
Around 88% of public drinking water services cover the whole drinking water supply cycle (from production to distribution). Functional fragmentation of drinking water competence is therefore relatively limited. For over 90% of the French population, consumers deal with a single operator for all stages, from production to the distribution of drinking water.

However, the geographic fragmentation of drinking water services seems much greater. The map below presents the number of drinking water public services per department as well as the average population per drinking water service per department in 2009.

The situation can be very different between departments as the number of drinking water services per department can vary in a proportion of 1 in Paris to 402 in Aude. More than 40% of French departments comprise 50 to 150 drinking water services.

The average size of services varies greatly as the average population per service varies from 479 in Lozère to more than two million in Paris, the national average being 4,460 inhabitants per drinking water service.

Figure 6 : Spatial distribution of public water services in 2009 in terms of inhabitants supplied



Datasource: SISPEA (Onema) – DDT(M) – 2009

Departments with the highest number of drinking water services are located in the eastern half of mainland France. Logically, departments with a high average population supplied by a drinking water service are located in the western half of the country.

3.1.2. Two-thirds of the French population are supplied by an intermunicipal water agency

Municipal authorities may transfer their drinking water responsibilities to intermunicipal cooperation bodies (ECPIs). They can take the form of a syndicat or an EPCI with a specific tax system.

Syndicats can have a single purpose (SIVU) or may be multi-purpose (SIVOM). Some are said to be mixtes when they comprise both municipalities and EPCIs.

There are three types of EPCIs with their specific tax system, introduced by the Act dated 12 July 1999, bearing on the reinforcement and simplification of intermunicipal cooperation: communauté des communes (community of municipalities), communauté d'agglomération (urban area community) and communauté urbaine (urban community). To this list should be added syndicats d'agglomération nouvelle (new urban area bodies) which are also EPCIs with their specific tax system, as well as the metropole, introduced by Act no.2010-1563 dated 16 December 2010.

In 2009, there were 3,481 EPCIs with responsibility for drinking water. The table below presents the proportion of these EPCIs between syndicats and intermunicipal structures with their specific tax system, in terms of the number of services and population supplied.

Table 8 : Intermunicipal water services in 2009

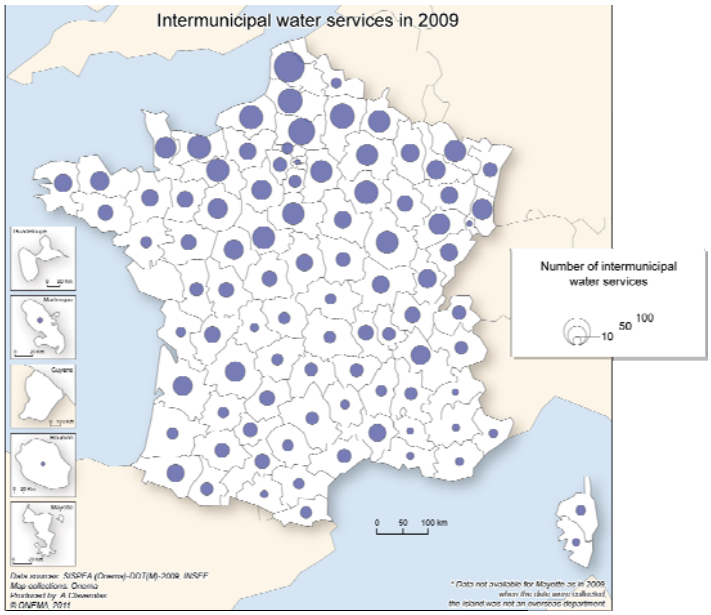
	Number of services	Proportion	Population (M inhab.)	Proportion
EPCIs with specific tax system	234	7%	14	35%
Syndicats	3,247	93%	26.2	65%
Total	3,481		40.2	

Datasource: SISPEA (Onema) – DDT(M) – 2009

It is interesting to note that two-thirds of the French population are supplied by a drinking water service organised through the intermunicipal system. However, there are relatively few intermunicipal water services as they only represent a quarter of all public drinking water services in France. Moreover, there is a clear predominance of syndicats over EPCIs with specific tax systems in terms of the number of services (93%). This predominance is less striking if considered in terms of population (65%). Consequently, the average size of these two types of intermunicipal structure varies considerably: an EPCI with a specific tax system supplies on average around 60,000 inhabitants whereas a syndicat supplies an average of 8,000 inhabitants.

The maps below show the number of intermunicipal water services and the relevant population at department level.

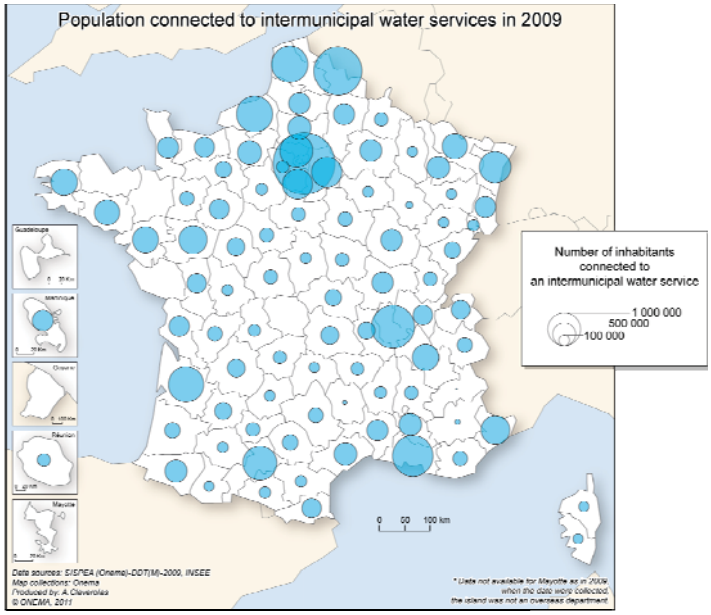
Figure 7 : Spatial distribution of intermunicipal water services in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The number of intermunicipal water services is higher in the departments located to the north of the Loire river. However, EPCIs supplying the largest population are mainly found in departments with the largest conurbations in the country.

Figure 8 : Spatial distribution of intermunicipal water services in 2009 in terms of inhabitants supplied



Datasource: SISPEA (Onema) – DDT(M) – 2009

As the table below illustrates, almost 85% of intermunicipal water public services cover the whole drinking water supply cycle (from production to distribution). This result confirms the above observations: the functional fragmentation of responsibilities in terms of drinking water is reduced as, for almost 90% of the population supplied by intermunicipal water services, consumers deal with a single point of contact for all stages, from production to distribution of drinking water.

Table 9 : Distribution of intermunicipal water services in 2009 according to their missions

	Production and/or Transport	Distribution, Production & Distribution or Transport & Distribution	Production, transport and distribution	TOTAL
Services	309	218	2,954	3,481
proportion	*8.9%*	*6.3%*	*84.8%*	*100%*
Population	2.8	1.4	36	40.2
proportion	*6.9%*	*3.5%*	*89.6%*	*100%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

3.1.3. Services mainly managed directly by the competent local authority but the majority of the population supplied by a delegated operator

There are two major management methods for drinking water and sanitation services.

The local authority can directly manage the service for which it is responsible. In this case, the local authority uses its own resources and personnel to produce and distribute drinking water, manage and invoice customers, repair networks, etc. The local authority may, however, contract with private operators for specific aspects of the service (e.g. customer management).

The local authority may decide to contractually transfer management of the service to a private company or mixed economy company that will run the service at its own risk. This is called the delegation of public service. The delegating authority signs an agreement with a delegated operator which can take the form of a public service concession, concession or farming out contract. In all cases, the local authority remains the organising and governing authority over the service.

To be more precise, delegated management of public drinking water services groups together farming out[1] (4,320 services), concessions[2] (80 services) and public service concessions[3] (8 services). The direct management mode of public drinking water services brings together public work contracting (9,674 services of which 415 with service provision) and stewardship[4] (135 services).

The breakdown of public drinking water service management systems is described in the table below:

Table 10 : Distribution of public water services in 2009 according to the management methods

	Delegated management	Direct management	TOTAL
Services	4,408	9,809	14,217
as a percentage	*31%*	*69%*	*100%*
Population (M inhab.)	36.1	24.8	60.9
as a percentage	*59%*	*41%*	*100%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

It is interesting to note that almost 70% of public drinking water services are directly managed by the local authority with drinking water competence. However, in terms of population, the ratio is reversed as almost 60% of the French population is supplied in drinking water by a service managed by a delegated operator.

[1] Farming out is a public service delegation contract whereby the delegated operator is in charge of operating the service at its own risk. It invoices customers and maintains equipment transferred to it by the delegating authority.

[2] A concession is a public service delegation contract whereby the concessionary operator invests in the equipment needed to provide the service and operates it at its own risk. It also invoices customers.

[3] A public service concession is a public service delegation contract whereby the delegated operator is remunerated according to a profit-sharing scheme.

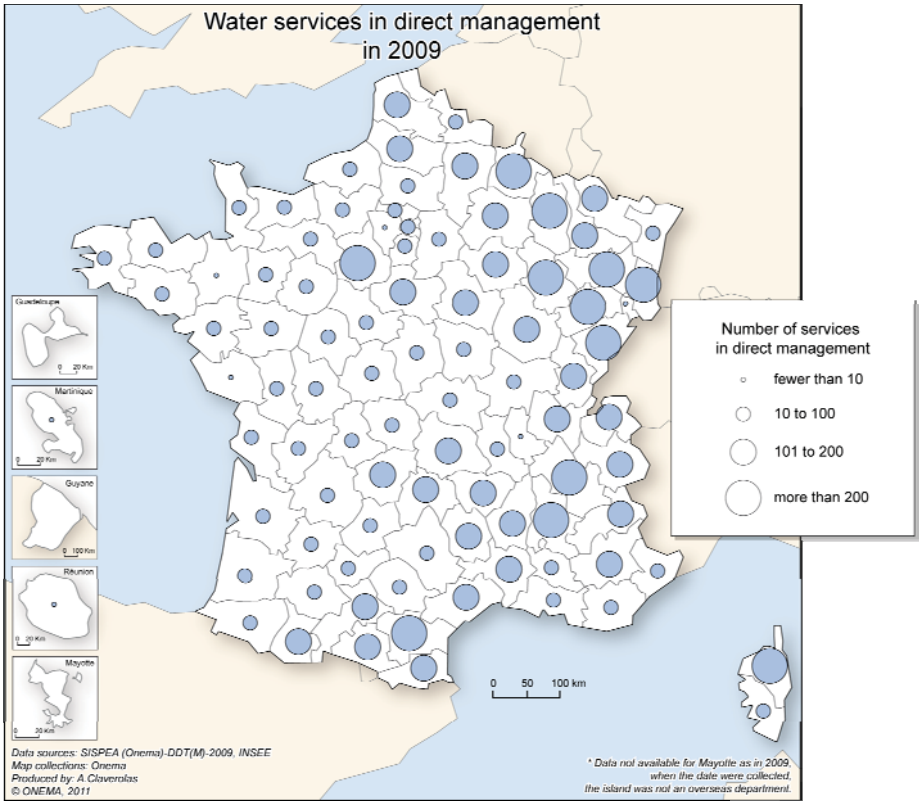
[4] Stewardship is an operating contract whereby the operator is remunerated on an all-in basis, without any profit-sharing. It is therefore a public procurement contract (like service provision) and not a public service delegation contract. That is why stewardship has been placed in the "direct management" sub-group, contrary to what was done in several other surveys.

Figure 9 : Distribution of public water services in 2009 according to their missions

Datasource: SISPEA (Onema) – DDT(M) – 2009

These results underline the fact that small drinking water services (supplying fewer than 3,000 inhabitants) tend to be managed directly by the public authority. On the contrary, large drinking water services tend to opt more often for the delegation of public service.

Figure 10 : Spatial distribution of public water services in direct management in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

More direct management drinking water services are found in the eastern part of France. As water services in eastern France tend to be small in size, this observation confirms that the larger services tend to opt for the delegation of public service.

Table 11 : Distribution of intermunicipal water services in 2009 according to the management methods

	Delegated management	Direct management	TOTAL
Services	1,747	1,816	3,563[5]
proportion	*49%*	*51%*	*100%*
Population	26.8	13.4	40.2
proportion	*67%*	*33%*	*100%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

The situation is quite balanced when considering the number of intermunicipal water services. Half of them are in fact directly managed by EPCIs themselves, the other half by a private operator. However, the results are more contrasted when taken in terms of population, as more than two-thirds of the population under the intermunicipal system is supplied by a water service managed as a public service delegation.

Therefore the same conclusions as above may be drawn: large intermunicipal groups tend to opt more often for public service delegation.

Figure 11 : Distribution of intermunicipal water services in 2009 according to the management methods

Datasource: SISPEA (Onema) – DDT(M) – 2009

3.1.4. An average drinking water price of €1.90 /m³ and a continuous drop in consumption

3.1.4.1. Price of drinking water: €1.90 euros incl. VAT/m³

The average price[6] of drinking water in 2009 was €1.90 incl. VAT/m3, i.e. an annual bill of €228 on the basis of annual consumption of 120m³. This price is broken down as follows: €1.55 /m³ for the water service (i.e. 82%) and €0.35 /m³ for taxes and duties (i.e. 18%) payable to Water agencies (or Water offices in overseas departments) and to Voies Navigables de France.

[5] The number 3,563 is higher than the total number of EPCIs (3,481) as different management methods can co-exist within the perimeter of the same intermunicipal group.

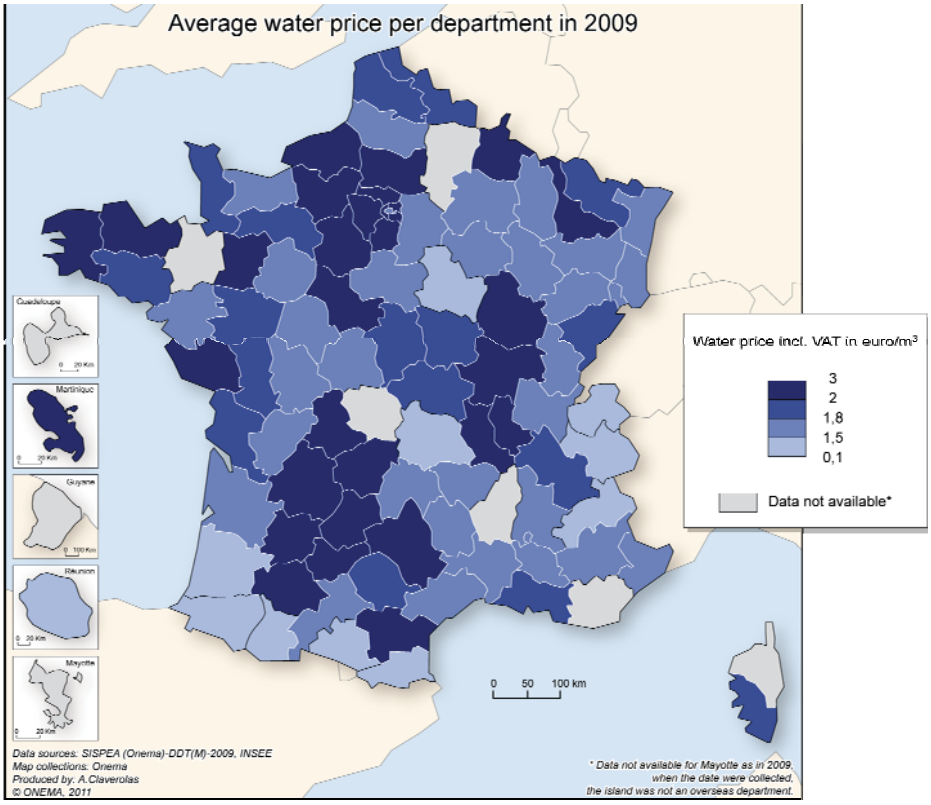
[6] This price is an average weighted by the number of inhabitants supplied by the service and calculated on the basis of a sample of approximately 3,200 drinking water services representing 62% of the population. The difference observed between the price of drinking water reported by the observatory and the price determined by the SOeS 2008 surveys is mainly explained by the improper imputation of pollution duties to the sanitation service price in the SOeS survey. When correcting this imputation and affecting correctly the pollution duties to the water service price, the drinking water price from SOeS survey amounts to €1.92 incl. VAT/m³ (see paragraph 2.2 of this document).

WATER AGENCIES AND VOIES NAVIGABLES DE FRANCE

In mainland France, the six Water Agencies redistribute the duties collected through the water and sanitation bills to support investment by local authorities, industry and farmers. They fund water and aquatic environment conservation and restoration actions as well as coordination and information actions and the monitoring of water quality. Since the 1960s, the Water Agency funding system has contributed to improving public drinking water and sanitation service networks and equipment by pooling together financial resources within river basins. The funds collected by Voies Navigables de France allow this organisation to manage, operate and develop the French network of navigable waterways consisting of 6,200 km of canals and rivers, more than 3,000 structures and 40,000 hectares of rivers falling within the public domain.

Water pricing should include a variable share calculated according to the volume of water consumed by the customer. Pricing can also include a set rate (subscription), paid regardless of the amount consumed. The sum of this set rate should not exceed a ceiling defined at 30% or 40% of the total annual invoice of 120 m³ (these ceilings do not apply in the case of tourist towns[7]). In 2009, the average sum of the set rate observed represented 21% of the annual bill (incl. VAT) for drinking water (base = 120m³) and amounted to €45.58. It should be noted that 30% of the French population does not pay a set rate on their water bills. It shows major geographic disparities. The lowest price is observed in the department of Pyrénées Orientales with €0.53 incl. VAT/m³. The highest price is found in Martinique: €2.90 incl. VAT/m³.

Figure 12 : Spatial distribution of average water price in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Several factors explain the disparities observed on the map:

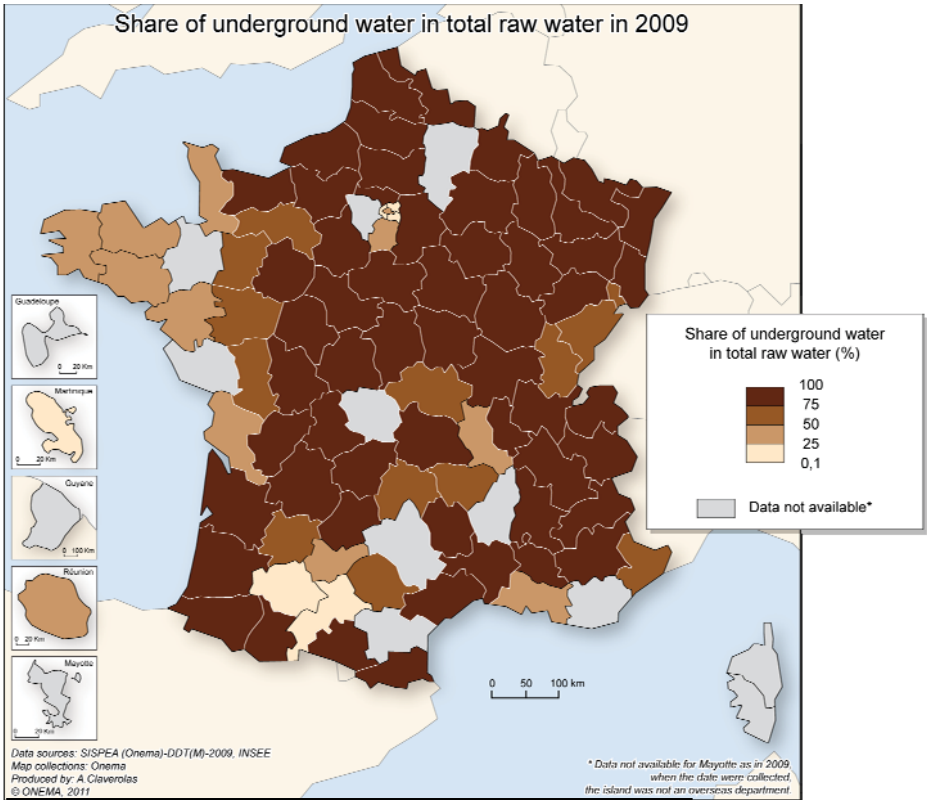
- the geographic context : the further the resource and treatment points are from the municipality, the higher the investments needed to transport water (pipes, pumps, etc);
- the dispersion of homes (e.g., departments of Burgundy, Limousin, Midi-Pyrénées) The transportation of water in rural areas, where homes are scattered, requires higher investments than in towns;
- tourist activity (e.g. the coastline) : additional investment may be needed to meet the temporary increase in water demand, for example during periods when tourists are present;

[7] Order dated 6 August 2007 bearing on the definition of calculation of the share of the water invoice not proportional to the volume consumed.

- the quality of untreated water : depending on the quality of water found in its natural state, the service provided can vary in view of the complexity of treatment processes needed to make it drinkable.

The map below shows that the high price of drinking water observed in Brittany or Martinique can be partially explained by the use of surface water which is more costly to treat than groundwater.

Figure 13 : Spatial distribution of underground water in total raw water in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Moreover, it shows that the average price of drinking water is 10% higher when the service is intermunicipal as it amounts to €1.97 incl. VAT/m³ (as opposed to €1.76 incl. VAT/m³ for municipal water services). This result can be explained by the higher dispersion of homes in the case of an intermunicipal system than in the case of a municipality alone. This "home dispersion" effect thus counterbalances any expected "economies of scale". Furthermore, municipalities tend to group together when production and distribution of water are difficult (owing to the topography for example) and complex (owing to the poor quality of the water resource) and therefore costly. The intermunicipal system thus seems to make drinking water supply more affordable by pooling together resources and means.

The average price of drinking water is also about 15% higher when management of the service is delegated to an operator, as illustrated in the table below. However, average prices vary tremendously whether the service is provided through delegated or direct management.

Table 12 : Water price in 2009 according to the management methods

Price of water € incl. VAT/m^3	Delegated management	Direct management
	2.0024	1.7179

Datasource: SISPEA (Onema) – DDT(M) – 2009

A number of factors may explain this situation. For example, local governments often delegate the public service when the production of drinking water or wastewater treatment are more difficult and complex due to the poor quality of untreated water (e.g. pesticides or abstractions from surface waters) or regulations impose major environmental constraints (e.g. the European directive on the quality of bathing water). In addition, private companies have specific expenses (corporation tax, R&D costs) that services under direct management do not incur.

3.1.4.2. Analysis of the price of drinking water according to services' geophysical features

In the French context, customers pay a price in exchange for a service provided. It is the result of several factors:

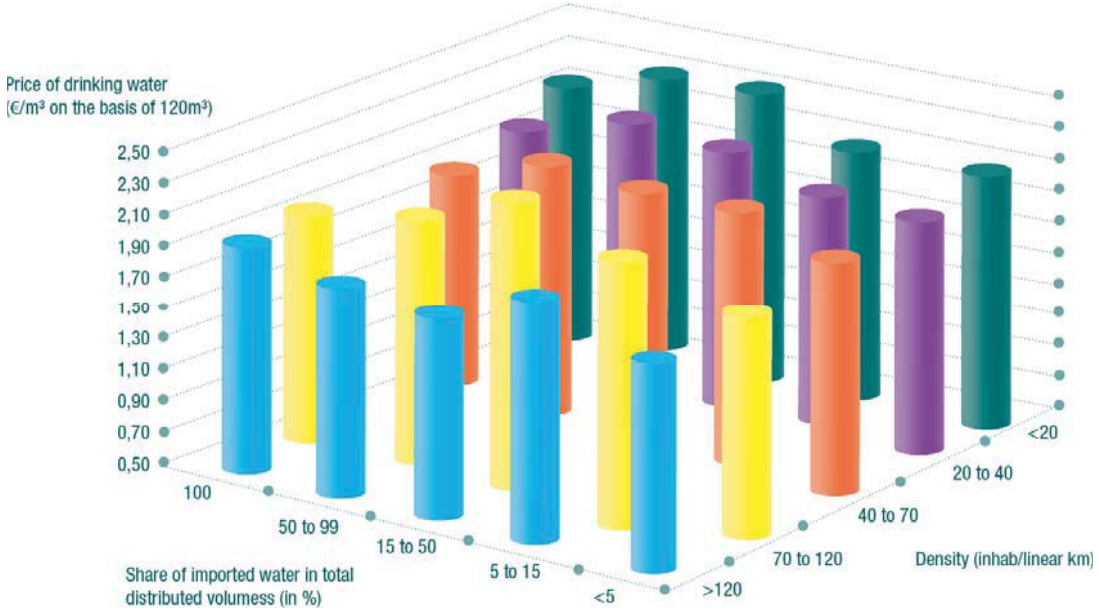
- geophysical: mobilisation context of the water resource, spatial breakdown features of the supplied habitat, topography of the perimeter, etc.;
- managing organisations: level of service provided, management system, organisation of the local authority, etc.;
- economic and financial: level of revenue, trend dynamics of the invoicing base, investment subsidy rate, funding strategy (loan vs. self-financing), VAT terms, intervention intensity of the general budget (for services supplying fewer than 3,000 inhabitants), etc.

To better understand how the price of drinking water is structured, a more precise analysis of the price was conducted taking into account the service's geophysical features, i.e. population density and the share of imports in available volumes. For this, only those services covering at least the distribution function (if applicable, the services in the sample can also cover production and/or transport competences) have been taken into account. The work sample consists of 4,282 services from the initial base.

The following graph illustrates, in 3D, the influence of these two factors:

- the prices are higher for rural services than for urban services (population density criterion);
- prices are lower for producing services (which import no or very little water) than for services that significantly or exclusively import water.

Figure 14 : Water price according to population density and the proportion of water imported in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The influence of the density criterion shows the central economic weight of infrastructure involved in distributing water to customers. As an illustration, the most rural services (density lower than 20 inhabitants/km) deploy on average 83 metres of piping to supply one inhabitant, whereas ultra-urban services (density higher than 200) use only 4 metres.

The second criterion (weight of imports in volumes supplied) indirectly illustrates the quantitative or qualitative availability of the resource in the service perimeter. Services importing little water use occasional importation as a simple complement to supply remote zones or those with unfavourable topography.

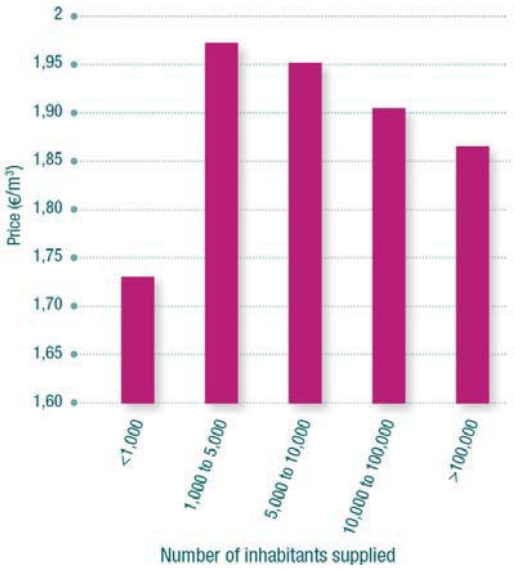
Services that import a lot of water are territories where the processing of the resources requires significant production scales for economic reasons (controlling the unit production cost, especially in the case of use of surface water), owing to quantitative or qualitative issues, or to optimally manage water resources.

The general trend in prices observed according to these two criteria is not linear and continuous. Jumps in the graph show, for certain groups, a statistical effect owing to the small size of the sample (specific cases can have an impact on the average value) but also and above all owing to the impact of other factors influencing the price level.

Complementary to this, the observation of the price according to the size of the service (population supplied) shows two realities:

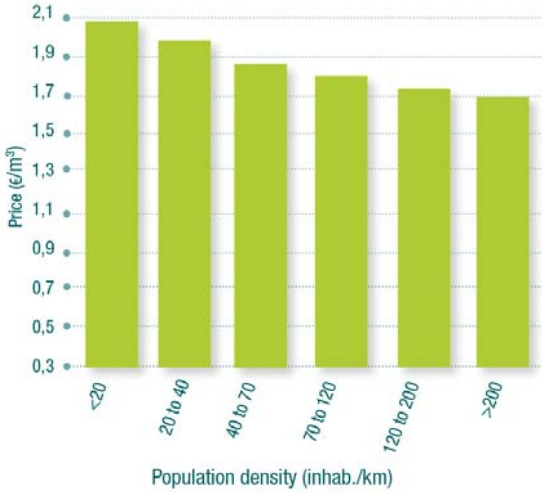
- services supplying less than 1,000 inhabitants show an average price that is clearly lower than the others. They are often services showing low technical complexity. Possible financing from the local authority's general budget can also be cited, as well as application terms of VAT on customers' water bills (water services supplying fewer than 3,000 inhabitants and in direct management can opt in or out of VAT). Moreover, the pollution duty was not applicable to services with fewer than 400 inhabitants until 2007. In 2009, only a small share of the pollution duty is paid by those small services. It will only be in 2012 that the whole pollution duty will have to be paid. This could lead to a price increase;
- for other services, a sliding scale is observed as the size increases, illustrating the effect of economy of scale.

Figure 15 : Price of drinking water according to the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Figure 16 : Price of drinking water according to the population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Finally, the type of water resource (ground/surface) does not provide a major insight. Besides services exclusively using ground resources – less expensive than others (explained by a lower production cost in comparison with raw surface water) – no clear trends emerge.

3.1.4.3. Consumption

In 2009, average annual consumption per inhabitant amounted to 54.7m3, i.e.150 litres per day. This represents a budget of €198 incl. VAT per inhabitant, i.e. a little more than €0.50 incl. VAT per day.

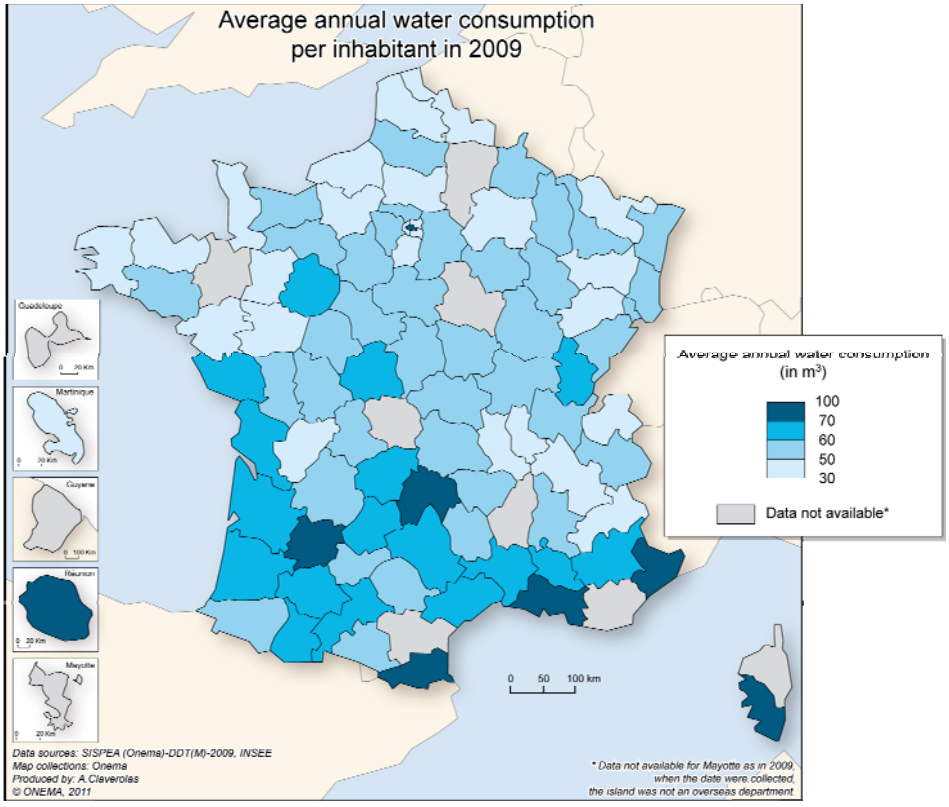
These results confirm the continued reduction of domestic consumption started some ten years ago. There are several reasons to explain this continuous fall:

- the rise of the service industry and de-industrialisation in large cities;
- efforts made by housing, office and public building managers to cut costs;
- technical progress and technological innovation reducing water consumption of electrical household appliances and the gradual phasing out of collective lost-water air-conditioning;
- increases in the price of water;
- eco-citizen behaviour and the fight against waste.

This average consumption hides strong geographic disparities in particular due to the climate in relevant zones, the strong presence of individual homes, the existence of swimming pools and gardens or high local tourist activity. Minimum average consumption is observed in Loire Atlantique with 31 m³/inhabitant/year. Maximum consumption is found on Reunion Island with 91.3 m³/inhabitant/year.

Total domestic consumption, excluding leakage, amounts to 3.4 billion m³.

Figure 17 : Spatial distribution of annual water consumption per inhabitant in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

3.2. Overview of the organisation and management of collective sanitation services

3.2.1. Geographic fragmentation of collective sanitation services is stronger than for drinking water

Collective sanitation is organised around several missions:

- collection: the public sanitation network collects domestic wastewater and professional wastewater (produced by artisans, restaurants, authorised industry, etc.). Wastewater networks can also collect rainwater – in this case, it is called a combined sewer system;
- in some cases, transport through pipes to the sewage treatment plant;
- treatment in a sewage treatment plant. Organic materials that form sludge and pollutants are removed from wastewater.

The cleaned water obtained after this process is discharged into the aquatic environment and sludge is evacuated towards other activities: agricultural use (spreading, compost) or incineration.

In 2009, 17,228 public collective sanitation services collected and/or transported and/or treated wastewater. There are therefore more collective sanitation services than drinking water services on the national territory.

Table 13 : Distribution of public collective sanitation services in 2009 according to their missions

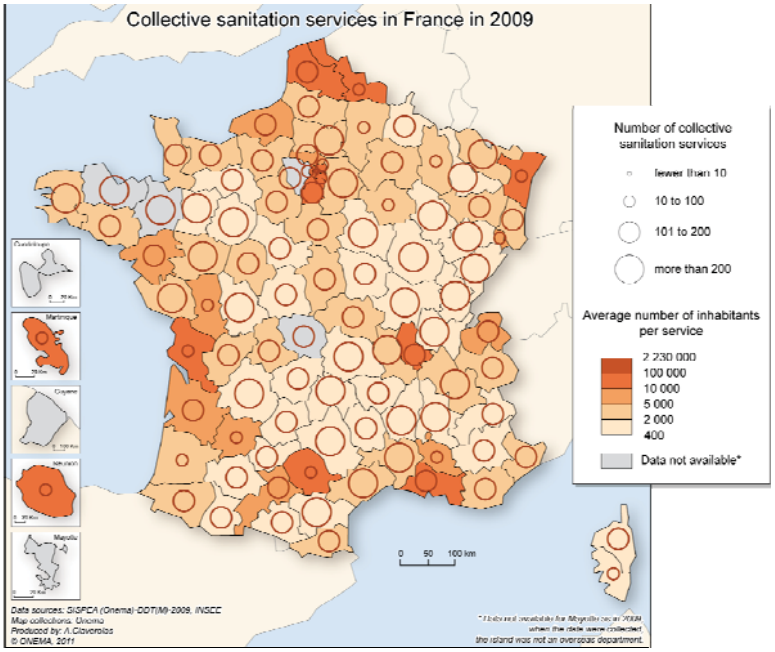
	Collection, Transport, Collection & Transport	Transport & sewage treatment	Collection & sewage treatment Collection, transport & sewage treatment	Sewage treatment alone	**Total**
Number of services	3,260	216	13,631	121	**17,228**
Breakdown as %	*18.9%*	*1.3%*	*79.1%*	*0.7%*	
Population (M inhab.)	11.1	4.6	40.2	1.4	**57.3**
Breakdown as %	*19.4%*	*8%*	*70.1%*	*2.5%*	

Datasource: SISPEA (Onema) – DDT(M) – 2009

Almost 80% of collective sanitation services cover all the sanitation stages (from sewage collection to treatment). This means that 70% of the French population using the public collective sanitation service deals with a single operator; less than a third of customers have different operators for sewage collection and treatment.

The map below presents the number of public collective sanitation services per department as well as the average population per service for each department. Situations vary from one department to the next. In Paris, there are only two services in charge of collective sanitation. In Haute-Saône however, there are 478. More than half of French departments comprise 100 to 200 collective sanitation services. Geographic fragmentation is therefore stronger for collective sanitation services than for drinking water services. The average size of services varies greatly as the average population per service varies from 479 in Haute-Saône to more than two million in Paris, the national average being 3,130 inhabitants per collective sanitation service.

Figure 18 : Spatial distribution of public collective sanitation services in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Departments with the lowest number of collective sanitation services are in the Nord, Alsace, Poitou-Charentes, Aquitaine regions and in the inner suburbs of Paris. Logically, the average population per service is lower in rural areas (Limousin, Auvergne, Franche-Comté, Burgundy).

3.2.2. There are few intermunicipal collective sanitation services but they supply two-thirds of the connected population

In 2009, there were 1,780 EPCIs in charge of collective sanitation. The table below presents the proportion of these EPCIs between syndicats and intermunicipal structures with their specific tax system, in terms of the number of services and population supplied.

Table 14 : Intermunicipal collective sanitation services in 2009

	Number of services	Proportion	Population (M inhab.)	Proportion
EPCIs with specific tax system	483	27%	20.5	60%
Syndicats	1,297	73%	13.4	40%
Total	1,780[8]		33.9	

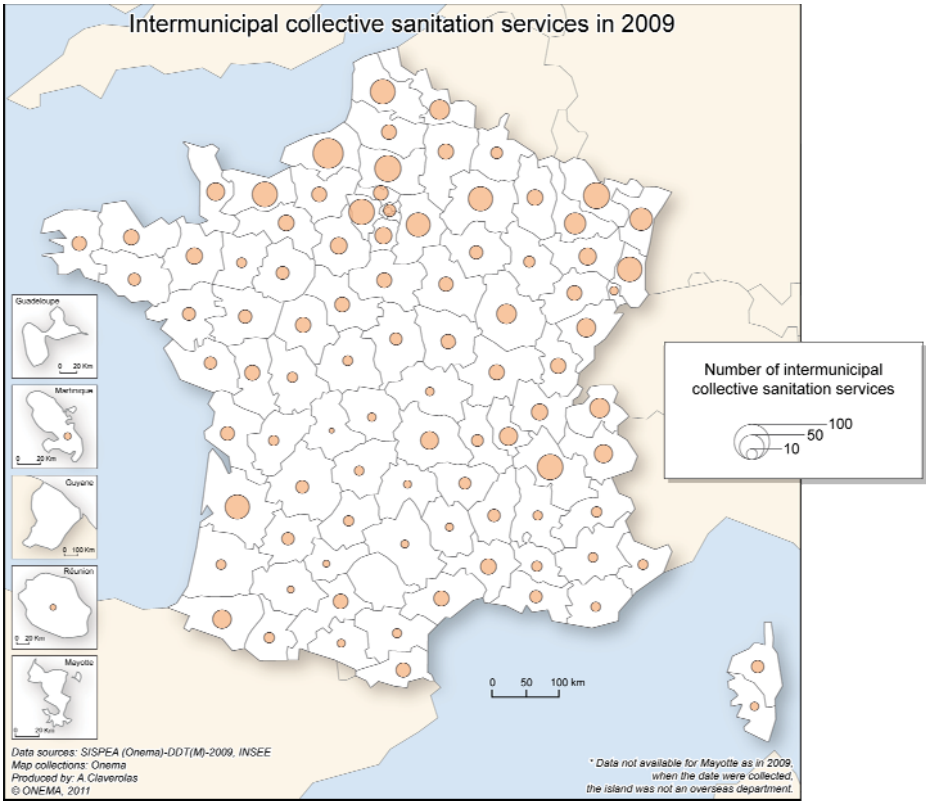
Datasource: SISPEA (Onema) – DDT(M) – 2009

Two thirds of the French population connected to a collective sanitation service are supplied by an intermunicipal service. However, there are relatively few intermunicipal collective sanitation services as they only represent 10% of all public collective sanitation services in France. Moreover, there is a clear predominance of syndicat structures over EPCIs with specific tax systems in the number of services (73%) but this proportion is reversed in terms of population supplied (40%). Consequently, the average size of these two types of intermunicipal structure varies in a proportion of one to four: an EPCI with a specific tax system supplies on average around 42,500 inhabitants whereas a syndicat supplies an average 10,300 inhabitants.

The maps below show a representation of the number of intermunicipal collective sanitation services and the relevant population at department level.

[8] There are 3481 EPCIs in charge of water services and 1780 EPCIs in charge of sanitation services. But some EPCIs are both in charge of water & sanitation services. Hence, without double counting, there are 4595 EPCIs in charge of water and sanitation services in France.

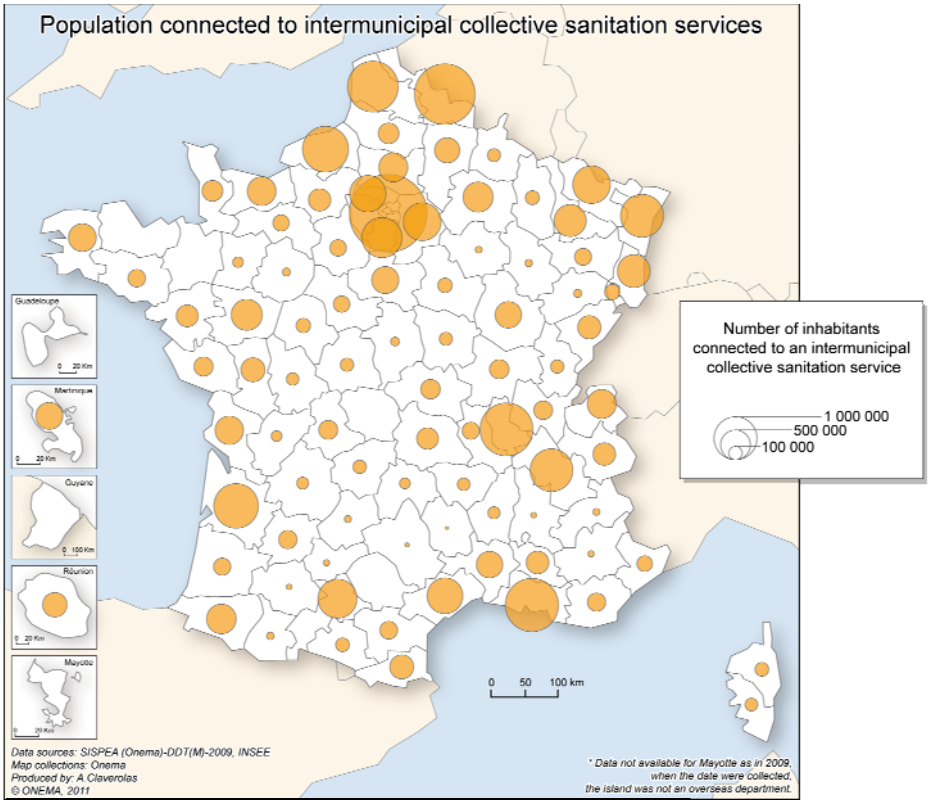
Figure 19 : Spatial distribution of intermunicipal collective sanitation services in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The number of intermunicipal sanitation services is higher in the departments located in northern and eastern France. However, EPCIs supplying the largest population are mainly found in departments with the largest conurbations in the country.

Figure 20 : Spatial distribution of public collective sanitation services in 2009 in terms of inhabitants connected



Datasource: SISPEA (Onema) – DDT(M) – 2009

As illustrated in the table below, three-quarters of intermunicipal collective sanitation services cover all the sanitation stages (from sewage collection to treatment). This result confirms the previous observations: the functional fragmentation of responsibilities in terms of collective sanitation is limited as, for almost three-quarters of the population connected to intermunicipal sanitation services, consumers deal with a single point of contact for all stages, from sewage collection to treatment.

Table 15 : Distribution of intermunicipal collective sanitation services in 2009 according to their missions

	Collection and/or Transport	Transport & sewage treatment	Collection & sewage treatment, Collection, transport & sewage treatment	Sewage treatment alone	TOTAL
Services	164	198	1,334	84	1,780
proportion	*9%*	*11%*	*75%*	*5%*	*100%*
Population	3.3	4.6	25	1	33.9
proportion	*10%*	*13%*	*74%*	*3%*	*100%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

3.2.3. Predominance of direct management

The breakdown of public collective sanitation service management methods is described in the table below:

Table 16 : Distribution of public collective sanitation services in 2009 according to the management methods

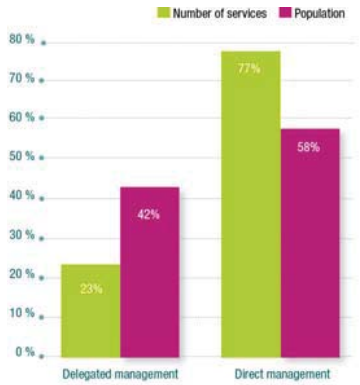
	Delegated management	Direct management	TOTAL
Services	3,908	13,320	17,228
as a percentage	*23%*	*77%*	*100%*
Population	24.1	33.2	57.3
as a percentage	*42%*	*58%*	*100.0%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

To be more precise, delegated management of public collective sanitation services groups together farming out (3,856 services), concessions (47 services) and public service concessions (5 services). The direct management mode of collective sanitation services brings together public work contracting (13,238 services of which 552 with service provision) and stewardship (82 services).

In terms of population, the situation is more balanced. More than half the population connected to collective sanitation is supplied by a service directly managed by the relevant local authority. Delegated management is therefore less common for collective sanitation services than for drinking water services.

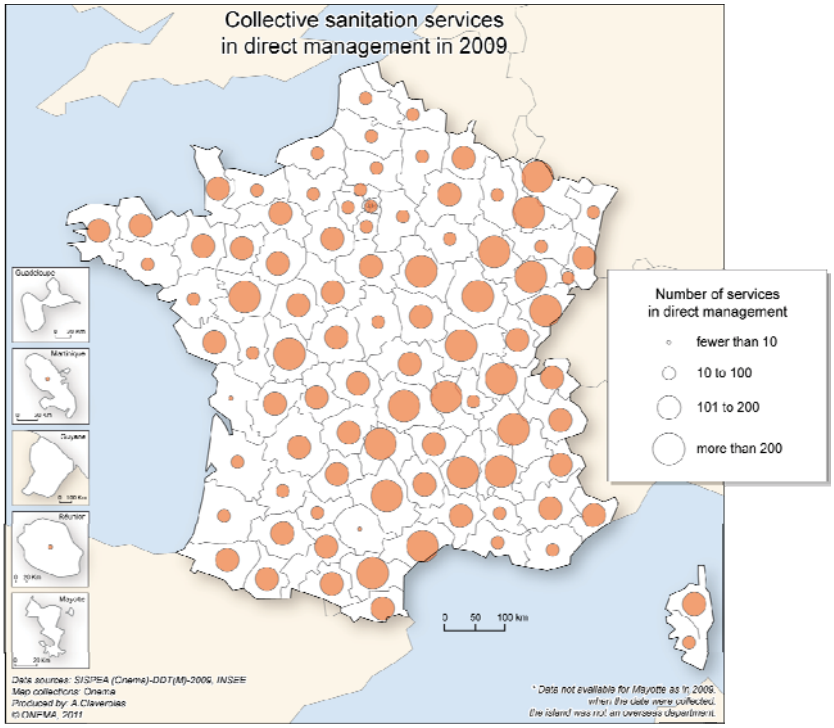
Figure 21 : Distribution of public collective sanitation services in 2009 according to the management methods



Datasource: SISPEA (Onema) – DDT(M) – 2009

The map below shows a representation of the number of direct management collective sanitation services at department level. There are a large number of collective sanitation services in direct management in rural areas of mainland France where services are small in size.

Figure 22 : Spatial distribution of public collective sanitation services in direct management in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The breakdown of intermunicipal collective sanitation service management systems is described in the table below:

Table 17 : Distribution of intermunicipal collective sanitation services in 2009 according to the management methods

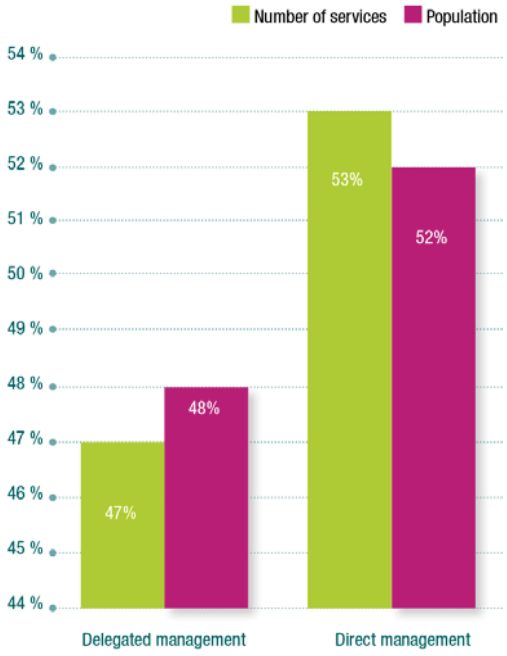
	Delegated management	Direct management	TOTAL
Services	835	958	1,793[9]
proportion	*47%*	*53%*	*100%*
Population	16.2	17.7	33.9
proportion	*48%*	*52%*	*100%*

Datasource: SISPEA (Onema) – DDT(M) – 2009

More than half of intermunicipal collective sanitation services are managed directly by the EPCI. This result is similar both in terms of number of services and population.

[9] The total of 1,793 is higher than the total number of EPCIs, as different management methods can co-exist within the perimeter of the same inter-municipal group.

Figure 23 : Distribution of intermunicipal collective sanitation services in 2009 according to the management methods



Datasource: SISPEA (Onema) – DDT(M) – 2009

3.2.4. Price of collective sanitation

3.2.4.1. Price of collective sanitation: €1.72 incl. VAT /m³

The average price[10] of collective sanitation in 2009 was €1.72 incl. VAT/m³, i.e. an annual bill of €206.40 on the basis of annual consumption of 120m³. This price is broken down as follows: €1.54/m³ for the collective sanitation service (i.e. 90%) and €0.18/m³ (i.e. 10%) for taxes and duties payable to Water agencies.

AVERAGE PRICE OF WATER AND OF COLLECTIVE SANITATION

In total, the average price[11] of water and sanitation amounts to €3.62 incl. VAT/m³. This represents an average annual bill of €434.40 incl. VAT for consumption of 120 m³, i.e. monthly expenditure of €36.20 incl. VAT per household. However, this average price hides large disparities as the total price is comprised between less than €1 to more than €6 incl. VAT/m³. The "water and sanitation" spending item thus represents 1.25% of a household's average disposable income and 3% for 10% of the more deprived households. As a comparison, the average mobile phone bill amounts to €320.40/year and €426/year[12] for landlines.

As with drinking water, collective sanitation pricing should include a variable share calculated according to the volume of water consumed by the customer and may also include a set rate (subscription), paid regardless of the consumption level. The sum of this set rate should not exceed a ceiling defined at 30% or 40% of the total annual invoice of 120 m³ (these ceilings do not apply in the case of tourist towns). In 2009, the average sum of the set rate observed represented 21% of the annual bill (incl. VAT) for collective sanitation (base = 120m³) and amounted to €42.66. It should be noted that only 35% of the population connected to a collective sanitation service pays a set rate on their sanitation bills.

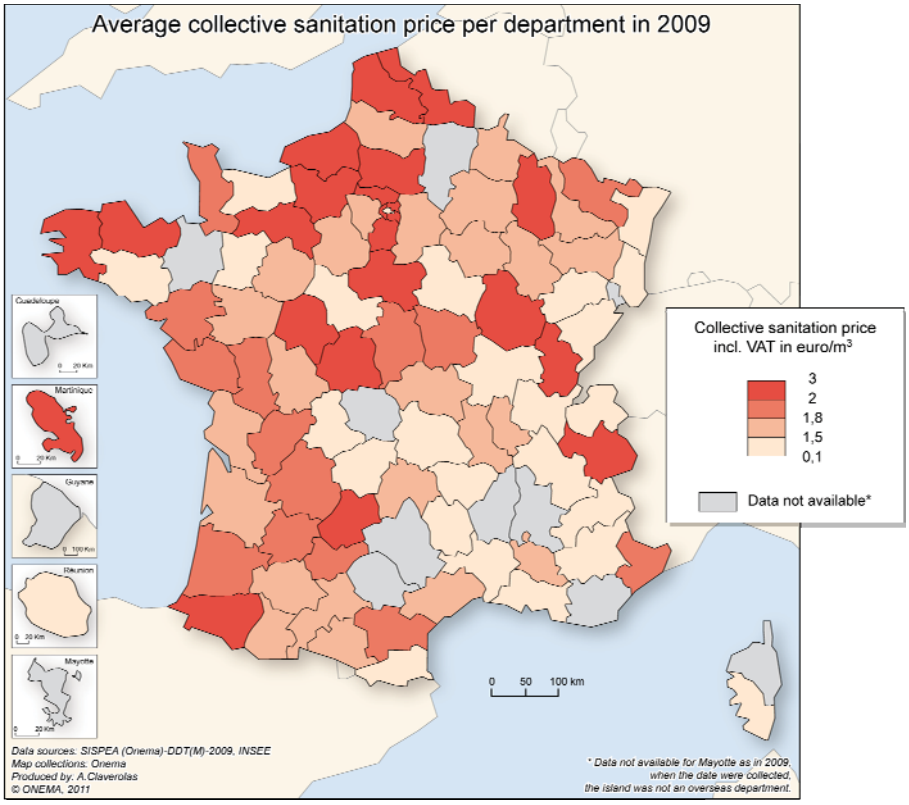
The map below presents the average price of collective sanitation at department level. It shows major geographic disparities. The lowest price is observed on Reunion Island with €0.40 incl. VAT/m³. The highest price is found in Seine Maritime: €2.74 incl. VAT/m³.

[10] The gap between the average sanitation price from the observatory and the one from SOeS survey is mainly due to the stronger over-representation of large services in SOeS survey. Indeed, this over-representation of large services results in a less expensive average price because of economies of scale.

[11] This price is an average weighted by the population supplied with the service, calculated on the basis of a sample of approximately 3,200 services, representing 62% of the drinking water population and 41% of the population connected to collective sanitation.

[12] Data from the Telecom market observatory, January 2011.

Figure 24 : Spatial distribution of average collective sanitation price in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The degree of complexity of sewage treatment facilities and the level of service equipment partly explain these variations. Statutory environmental requirements also explain these differences. According to the fragility of the environment receiving treated wastewater, treatment processes can be more sophisticated and therefore more costly. This is the case, for instance, for municipalities on the coast where the bathing water Directive[13] imposes tertiary treatment. The same applies to municipalities concerned by the urban waste water Directive[14].

Moreover, the management method of the service has a limited impact on the price of collective sanitation. It is observed that the average price is slightly higher when the service is in delegated management, as shown in the table below.

Table 18 : Collective sanitation price in 2009 according to the management method

Price of collective sanitation € incl. VAT/m^3	Direct management	Direct management
	1.7571	1.6955

Datasource: SISPEA (Onema) – DDT(M) – 2009

This may be explained in various ways: Local authorities often tend to delegate the public service when sewage treatment is complicated by restrictive regulatory requirements. Furthermore, private operators have specific costs (corporation tax, R&D expenses) not applicable to direct management services.

It is interesting to note that the price of collective sanitation for intermunicipal services is the same as the average price observed in all services, regardless of their management methods.

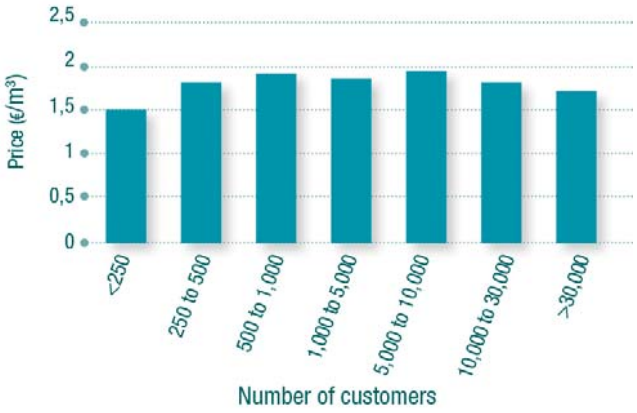
[13] Directive 76/160/CEE, December 8th 1975.
[14] Directive 91/271/CEE, May 21st 991.

3.2.4.2. Analysis of the price of collective sanitation services according to the geophysical features of the service

The observation of the price according to the size of the service (number of customers supplied) shows two trends:

- a price increase up to 10,000 customers;
- a price decrease in excess of 10,000 customers.

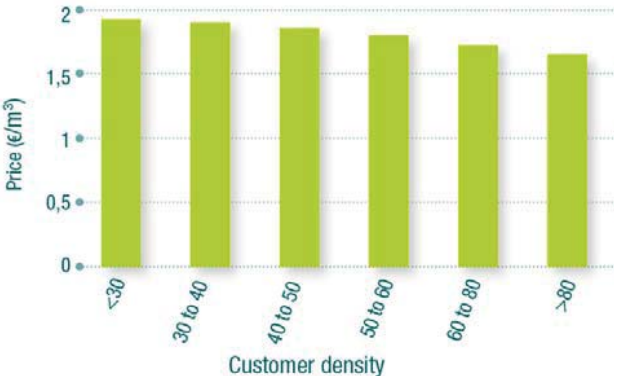
Figure 25 : Price of collective sanitation according to the number of customers in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

In its present state, the content of the database does not provide definitive explanations but hypotheses can be made: less complex sewage treatment facilities for smaller services, possibility of financing from the local authority's general budget (for services to fewer than 3,000 inhabitants), economy of scale for large services (in particular the impact of collective housing), effect of the network duty which was not paid by services with fewer than 400 inhabitants until 2007. In 2009, only a small share of the network duty is paid by those small services. It will only be in 2012 that the whole network duty will have to be paid. This could lead to a price increase.

Figure 26 : Price of collective sanitation according to customer density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

As with drinking water services, the price decreases as customer density rises.

4. Analysis of performance indicators for water and collective sanitation services

In order to complete the descriptive overview of the organisation and management of services, their general performance has been analysed using statutory performance indicators. On the basis of a typology, a more precise study has been conducted to compare descriptive elements of the service and performance indicators with a view to showing the influence of the former on the latter.

4.1. Public drinking water service typology

4.1.1. Principle of the approach and methodology

The construction of a typology aims to identify, objectively and without preconceptions, the factors characterising public drinking water services. The goal is to determine categories of water service which may share features (intra-category homogeneity) and have different features (inter-category heterogeneity).

The database on which the work was based is that of the 2009 Observatory of Public Water and Sanitation Services. Initially, relevance and consistency tests were conducted to detect obviously incorrect or inconsistent data in order to neutralise them. A sample of services was then put together to create the typology. This sample brings together water services for which all performance indicators have been recorded. The services kept in the sample must distribute water (which is the case of 99.1% of services present in the database). It was agreed to set aside local authorities that only produce and/or transfer water owing to their specific features. This selection work leads to a final sample of 864 services, i.e. around 20% of the initial sample.

The identification of correlations between the different data imposed choices to be made between available descriptive indicators so as not to over-represent certain characteristics and bias the results. For example, the "population supplied" criterion was chosen to characterise the size of the service instead of other variables (number of customers, product volume, network length, etc.) owing to its very high input rate (96.8%).

The descriptive criteria chosen are as follows:

- management mode;
- population supplied;
- share of groundwater in the available volume;
- population density (population supplied per kilometre of main network);
- share of domestic volumes invoiced per inhabitant;
- share of volumes imported in available volumes (produced volume + imported volume).

The statistical method used is the factorial analysis with multiple components.

4.1.2. Results of the classification

4.1.2.1. Intra-category characterisation

Five categories of services were identified and characterised as follows:

Category no.1: this category groups together all drinking water services with an imported water share below 5%. These services exclusively process groundwater sources and have an intermediate population density (30 to 200,000 inhabitants/linear km). 60% of services in this category opted for a farming-out management system and 38% for public work contracting (which is similar to proportions observed in the sample of 864 services).

Category no.2: 78% of services in this category import little water (under 5% of available volumes). Practically all services having chosen direct management with service provision are classified in this category (94.4%). 89% of services in this category process at least one third of groundwater.

Category no.3: this category groups together all drinking water services that import 30 to 50% of available volume of water. 78% of services in this category process groundwater resources in a proportion of 50 to 80%.

Category no.4: 57% of this category's services mainly process imported water. These services tend to be importers rather than producers. 50% of this category's water services have a strong rural profile (population density lower than 20 inhabitants/linear km). 42% supply fewer than 1,000 inhabitants. Customers of this category's services are exclusively supplied from groundwater.

Category no.5: it groups together all water services with population densities higher than 200 inhabitants/linear km (ultra-urban services) and all services supplying more than 100,000 inhabitants. 58% of this category's services exclusively process groundwater resources. Other services process complementary surface water resources.

This rapid description reveals that similar criteria are used to define the different categories. For example, all services with a population density higher than 200 inhabitants/linear km are grouped into category no.5 but not all the services in this category have the same characteristic. Likewise, 78% of services that import less than 5% of available volumes are present in category no.1. The remainder features in other categories. This is explained by the fact that the classification takes into consideration all the features of a service. Services belonging to the same category are therefore similar in terms of their general features but not necessary identical.

4.1.2.2. Inter-category characterisation

Classification is also used to identify and prioritise the main differentiating factors between the five categories (characterisation of factorial axes). This interpretation work establishes the following discriminating criteria, listed in decreasing order of influence:

- population density (urban/rural service);
- the weight of volumes imported within available volumes (producing/importing service);
- the share of groundwater volumes within available volumes.

It appears that the differences between classifications of service are mainly explained by geophysical characteristics. These are exogenous factors over which services have little control: density of the habitat supplied, proportion of the available quantity of water from the service's productive assets, proportion of untreated groundwater.

The classification work also shows that the management mode is not one of the main factors discriminating water services. It does not mean, however, that the choice of management method is neutral and does not have its implications. It is simply not one of the top three criteria characterising services.

It is necessary to recall that the prioritisation of the three criteria is provisional and tied to the processed database. The later addition of complementary descriptive criteria could enrich the approach and contribute to the improved stabilisation of factorial axes (the three criteria only explain 20% of differences between categories). The more discriminating the complementary criteria, the greater their impact on the results.

4.2. Performance analysis of public drinking water services

4.2.1. Asset management and knowledge: a major challenge for water services

At a time when drinking water consumption is falling (1% per year on average since 2000), national and European health and environmental regulations are becoming ever more demanding and service infrastructures are ageing, asset knowledge and management are now central to the public water and sanitation services policy.

The asset knowledge and management index, which assesses the networks' knowledge level and quality of asset management, shows that there is still progress to be made. Indeed, the average index gives 57 out of 100 for all drinking water services and shows little variation between service management methods.

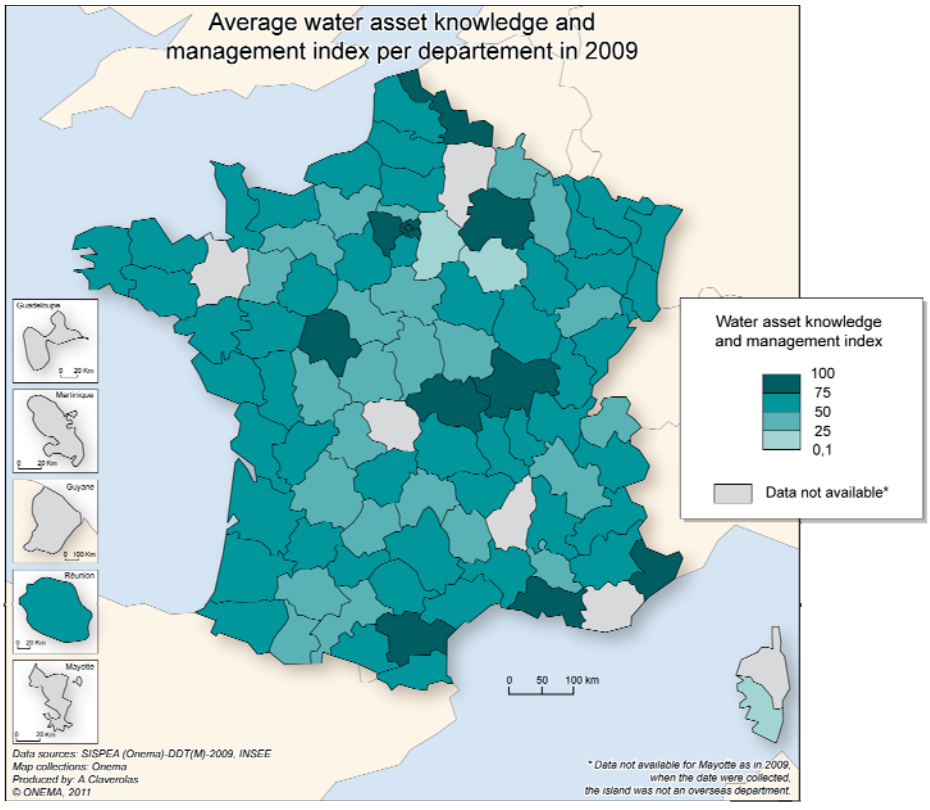
Table 19 : Asset knowledge and management index – drinking water services depending on the method of service management in 2009

All drinking water services	Drinking water services under delegated management	Drinking water services under direct management
57	57	58

Datasource: SISPEA (Onema) – DDT(M) – 2009

The map below shows the average asset knowledge and management index per department.

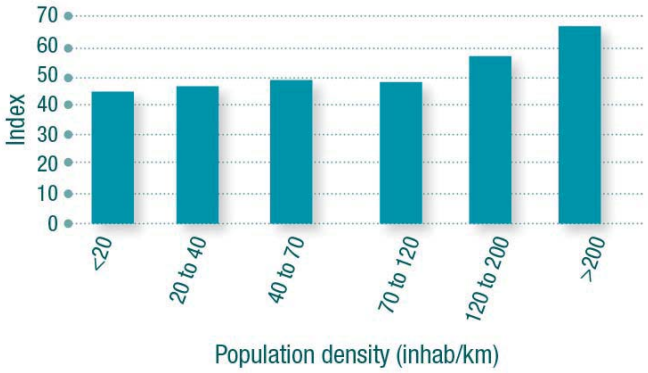
Figure 27 : Spatial distribution of average asset knowledge and management index in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

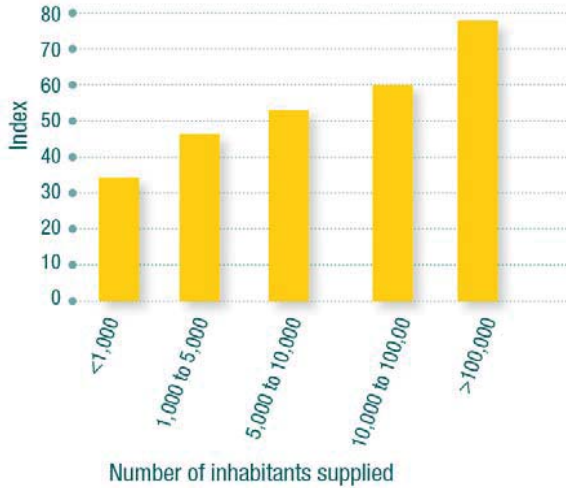
The distribution network generally accounts for the majority of service assets (around 70%, excluding any special context). By extension, the indicator can therefore illustrate the asset approach to the service (save for exceptions).

Figure 28 : Distribution of asset knowledge and management index in 2009 according to the population density



Datasource: SISPEA (Onema) – DDT(M) – 2009

Figure 29 : Distribution of asset knowledge and management index in 2009 according to the number of inhabitants supplied



Datasource: SISPEA (Onema) – DDT(M) – 2009

There are marked differences between the values obtained by the indicator based on the groups of services defined by density and size:

- rural services have a much lower grasp of network asset knowledge and management than urban services;
- the size criterion is even more discriminating: very small services barely scrape more than 30 points on average (existence of a plan with structural indication for each section), while large services are allocated 77 points on average. Microstructures achieve a minimum level of asset knowledge, while large services tend to have a fully-fledged, proactive management policy in place for their infrastructures. With the size criterion, the financial resources of the service can be linked to the extent to which an asset policy is established.

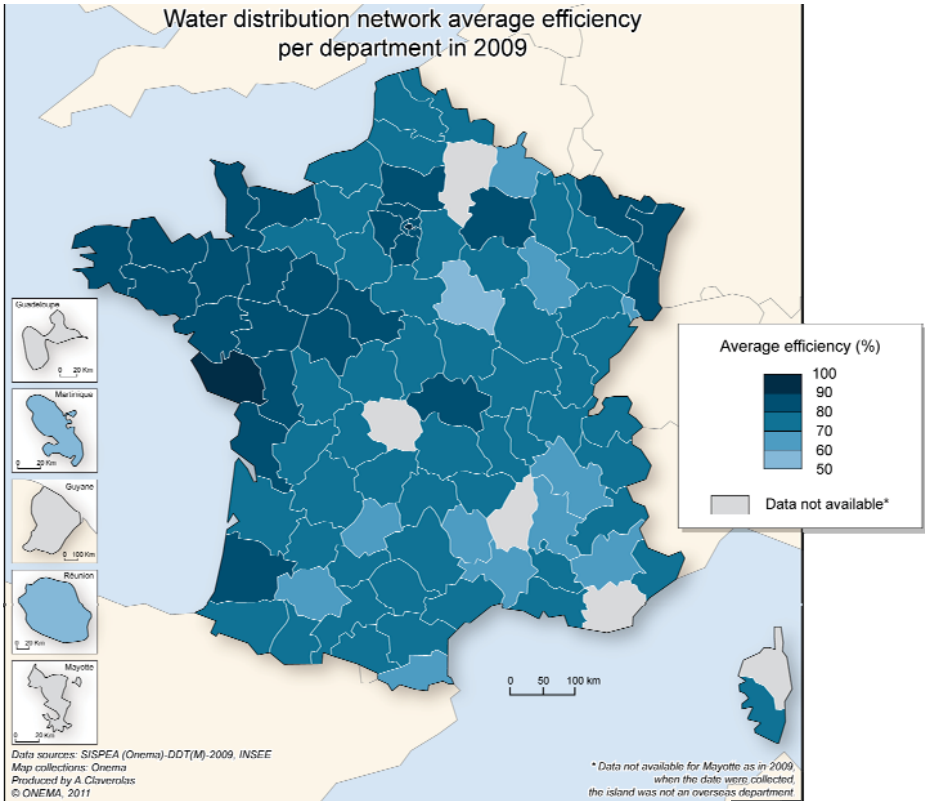
According to the data of the observatory of public water and sanitation services, the average efficiency of the water distribution network, covering 850,000 km of piping, amounts to 76%. This means that the volume of water loss is put at 24%, or one in four litres of water released into the distribution network. The average efficiency of rural services is lower (75%) than the level observed for urban services (79%).

Leaks from these networks are due to a wide variety of causes:

- pipe corrosion (rust), by the water passing through or by the ground in which the pipes are laid;
- subsidence, vibrations and deformations endured by the ground;
- ageing of the seals between pipes;
- fragility of individual branch connection points on the public network.

The map below gives a breakdown per department of the average efficiency of water distribution networks. It shows a higher efficiency in the West of France and the Parisian region where drinking water mainly comes from surface water, and as such requires costly purification treatment. Leak reduction is therefore an economic requirement. Hence, efficiency is slightly better when the water being distributed has been taken from surface sources than when it comes from groundwater (80% versus 75%).

Figure 30 : Spatial distribution of average water distribution network efficiency in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

These findings need viewing in the context of the requirements of the Act dated 12 July 2010 that a detailed inventory of networks be drawn up by the end of 2013. Local authorities will also have to define action plans for improving the efficiency of their network as soon as the leak rate exceeds the 15% limit set by decree.

The service management method and organisation seem to influence the network efficiency level little, as demonstrated by the data in this table:

Table 20 : Average network efficiency depending on the service management method and organisation in 2009

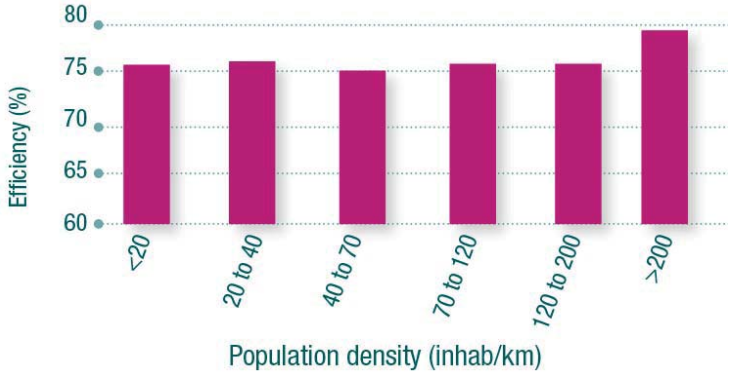
All drinking water services	Drinking water services under delegated management	Drinking water services under direct management	Inter-municipal drinking water services
76%	77%[15]	74%	76%

Datasource: SISPEA (Onema) – DDT(M) – 2009

The findings according to population density also reveal a certain invariance of the efficiency value (between 75% and 76%), except as regards services for densely populated areas, for which the performance level is higher (79.4%). The analysis of values according to size shows a better performance for services supplying more than 100,000 inhabitants (81%) than the other categories (between 75 and 76.5%).

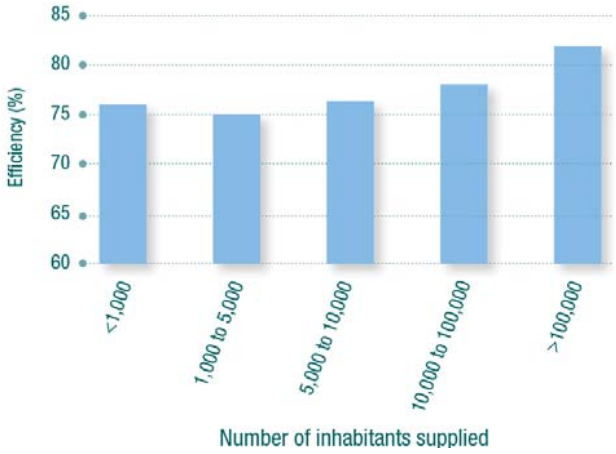
[15] In BIPE-FP2E 2010 survey, the efficiency rate for delegated management services amounts to 82%. But this rate is calculated for services supplying more than 10.000 inhabitants whereas the observatory rate takes into account all delegated management services regardless of their size.

Figure 31 : Efficiency depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

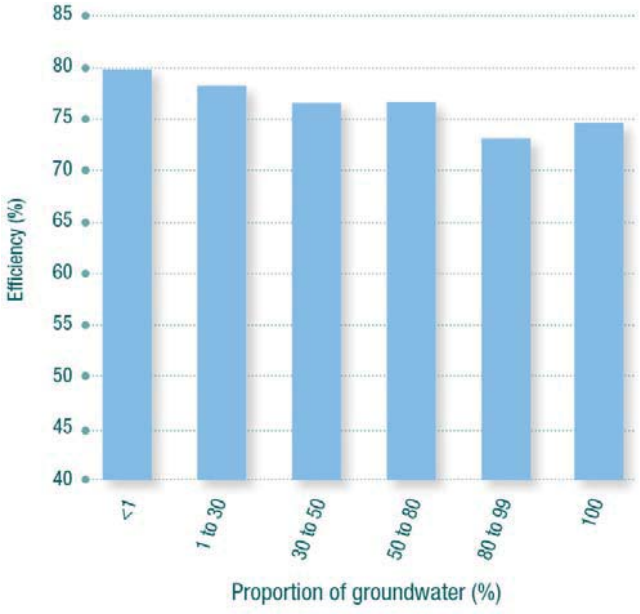
Figure 32 : Efficiency depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The better performance of services for densely populated areas and large services can be explained by a higher supply to collective residential areas than for other services (which improves the intrinsic value of the ratio). A higher network renewal rate and the implementation of an effective asset policy further explain this better performance.

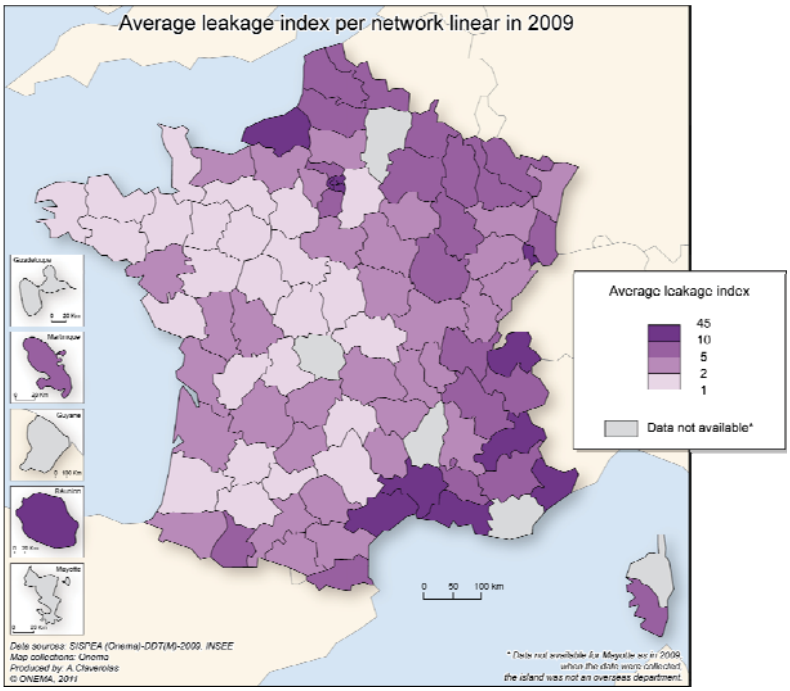
Figure 33 : Efficiency depending on the proportion of groundwater in the volumes distributed in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Efficiency is influenced by two parameters: consumption trends and non-distributed volumes. Accordingly, it cannot be the only indicator of network management quality and performance, and should be compared with the leakage index which tells us the water loss per km of piping. The average index is 3.9 m³/km/d. The value and evolution over time of this indicator reflect the network renewal and maintenance policy aimed at preventing network water leaks. The leakage index increases with the network density, i.e. with the number of inhabitants per km of piping. These different physical and technical characteristics provide explanations for the differences observed between services' average leakage index results.

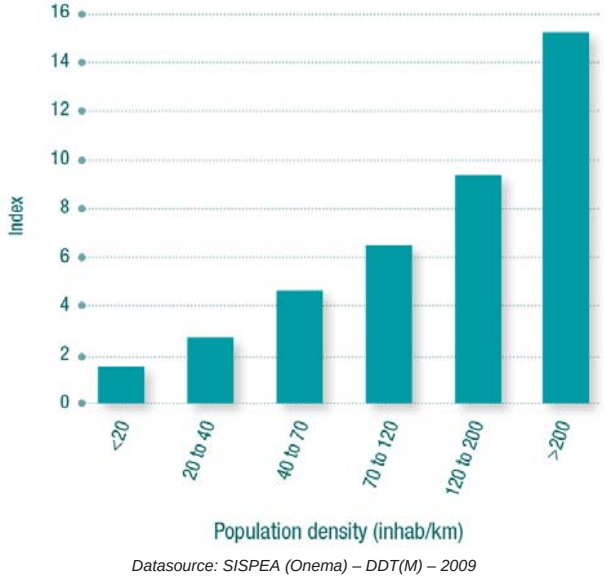
Figure 34 : Spatial distribution of average leakage index in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The value of the leakage index rises with the size or density of service. This is a known fact and cannot be interpreted as a poor performance of very large services or services for densely populated areas as attested by the aforementioned efficiency values. This is because of the very definition of the index: ratio of non-consumed volumes on the network line. This produces a concentration phenomenon of leaks on a reduced line for urban services, and a dilution one for rural services. The trend observed is therefore inherent in the way the index is calculated. Interpretation of the levels of water loss from the network calls for a more expert approach.

Figure 35 : Leakage index depending on population density in 2009

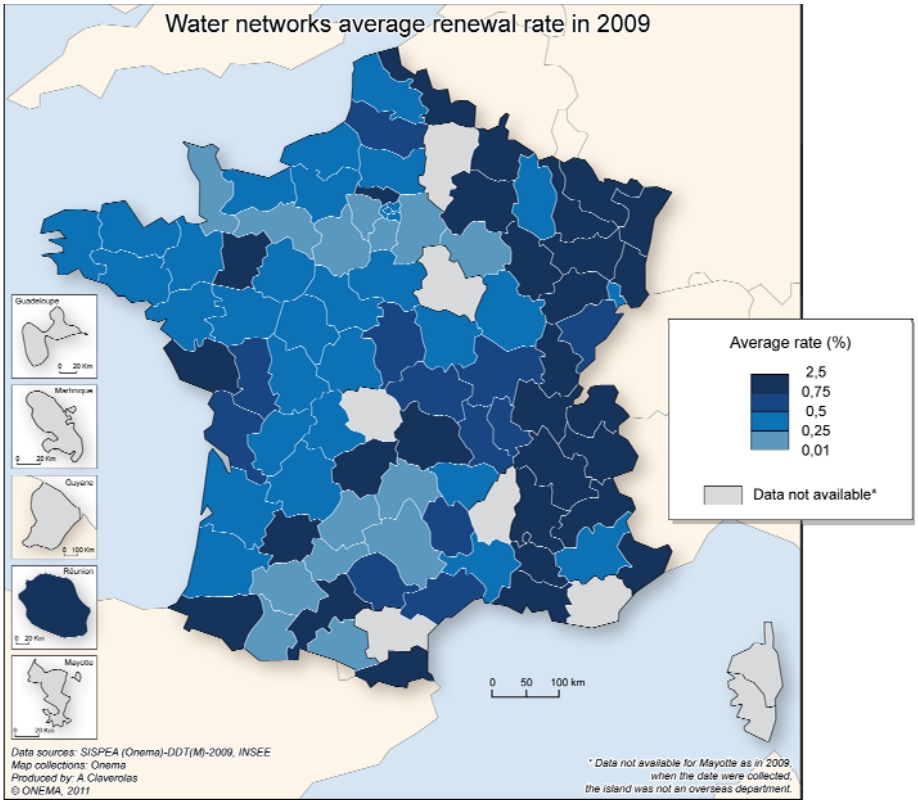


Datasource: SISPEA (Onema) – DDT(M) – 2009

The linear index values for unaccounted volumes present the same trends as those described for the leakage index.

The maintenance and replacement of the network must also be considered alongside the improvement of its performances. The average renewal rate of networks over the past five years is estimated to be 0.61% for drinking water services. If efforts remain constant, this would mean renewal of the entire drinking water network would take 160 years. This rate is an average and it does not reflect all situations. The map below shows the average renewal rate per department. Renewal efforts seem to be greater in the East of France.

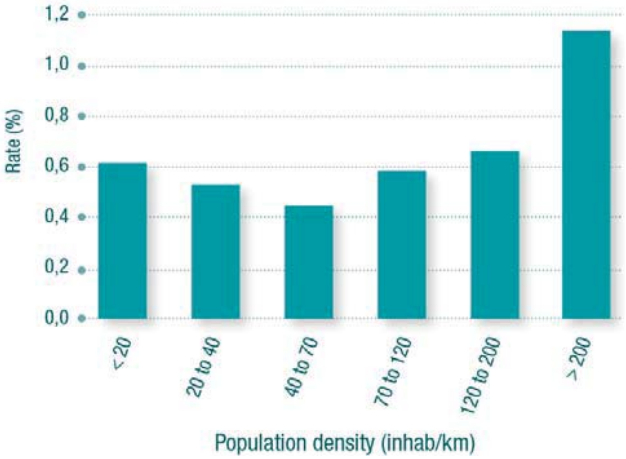
Figure 36 : Spatial distribution of water networks average renewal rate in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

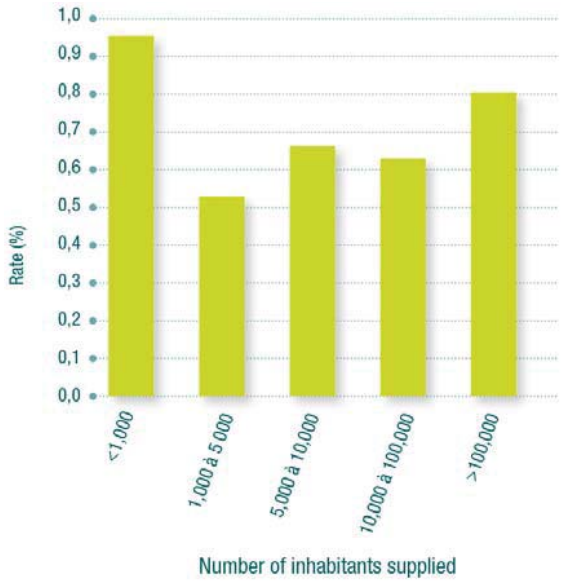
Services for densely populated areas (over 200 inhabitants/km of network) are clearly committed to renewal of their infrastructures with an average annual rate of 1.13%. They stand head and shoulders above the other categories. This observation is consistent with the findings regarding asset knowledge and management.

Figure 37 : Network renewal rate depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Figure 38 : Network renewal rate depending on the number of inhabitants supplied in 2009

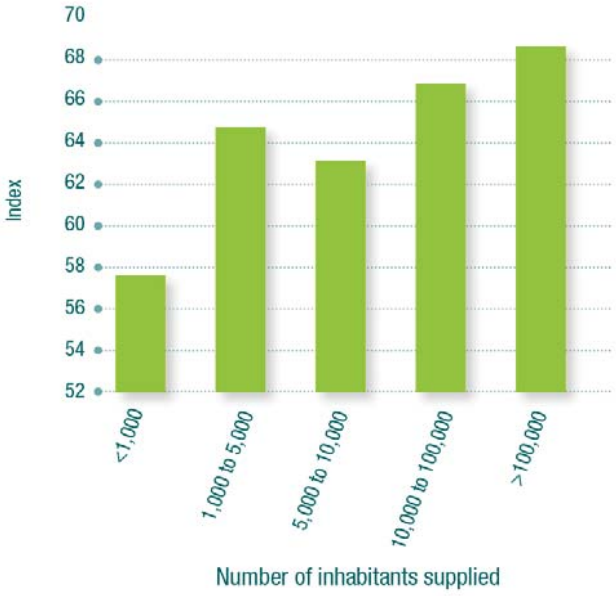


Datasource: SISPEA (Onema) – DDT(M) – 2009

For the service size criterion, very small services appear to be much more active than others. This can perhaps be explained by very minor network assets for which any renewal action produces a significant percentage. Outside of this group, the opposite can be observed – where the activity level increases with the number of inhabitants supplied.

Lastly, the average water resource protection improvement index stands at 76 out of 100. This index characterises the improvement level of the operational and administrative policy to protect one or more intake points in the natural environment. The value of this index does not present any particular trend depending on the population density.

Figure 39 : Resource protection improvement index depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

That said, the segmentation of the sample according to size clearly reveals an increase in the improvement of resource protection as the number of inhabitants rises. For large services, the trend can illustrate a marked environmental concern and health matters taken more seriously given the size of the populations being supplied. On the other hand, small services may use water resources that are less sensitive by nature (88% is drawn from groundwater, compared with 62% for over 100,000 inhabitants), which explains a moderated degree of average improvement.

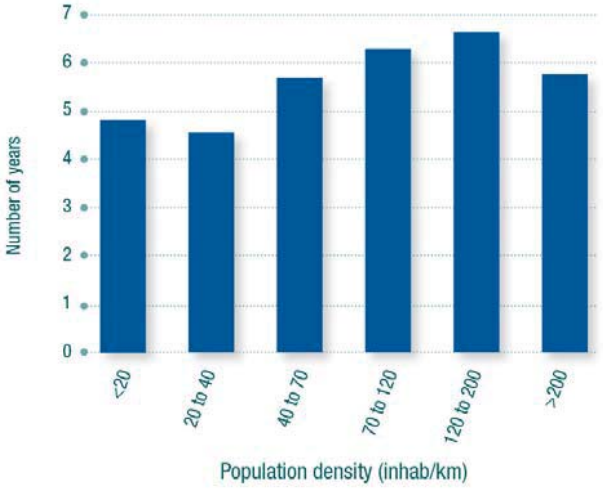
4.2.2. Financial management of services: a measured indebtedness for long-term infrastructures

The debt extinguishment period represents the time – expressed in number of fiscal years – it would take the service to reimburse all of its ongoing loans entirely through gross self-financing. This ratio thus compares the level of indebtedness with the "purchasing power" generated by the operating activity to increase the investment section of the budget.

The figures presented below are averages calculated on the basis of the services used for typology, i.e. a sample of 864 services. Hence they are not national representative averages.

The average ratio comes out at 5.5 years, thus indicating a measured indebtedness of the studied water services. To sum up, this is a medium-term indebtedness, whereas the service life of the infrastructures financed by the loan is longer-term. The segmentation of the sample according to the population density reveals a trend marked by an increase in indebtedness as the density increases.

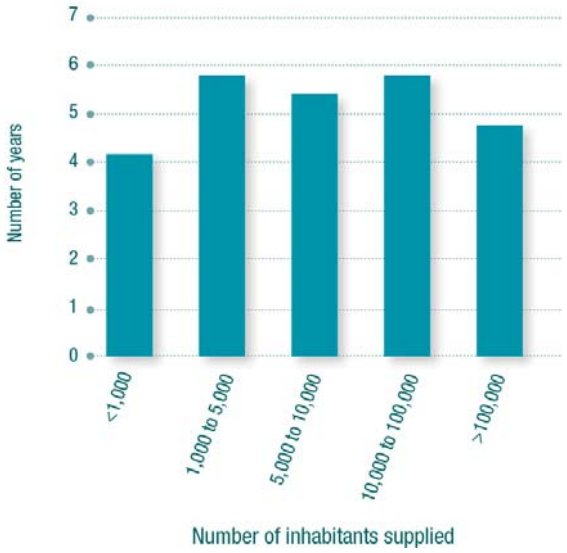
Figure 40 : Debt extinguishment period depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The breakdown of the sample according to service size reveals a low level of indebtedness (4.1 years) for very modestly sized services (less than 1,000 inhabitants supplied) and large services (4.7 years). Between these two categories, the level of indebtedness is slightly higher (between 5.5 and 5.8 years).

Figure 41 : Debt extinguishment period depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

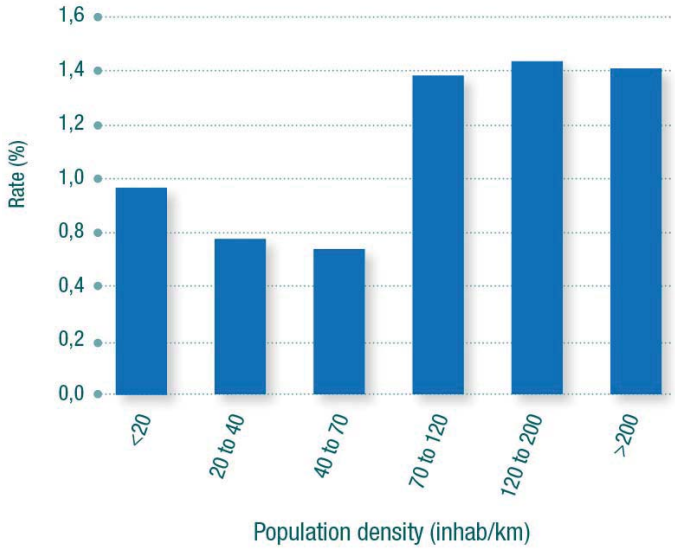
An explanation for such observations is not easily forthcoming, for the service's level of investment as well as its financing methods (loan/self-financing/grants) would have to be considered.

It should be noted that this indicator calls for a better grasp by services in view of the high number of outliers detected in the database.

It is important to bear in mind that the characterisation of the indebtedness only includes loans taken out by the service. In cases where all or part of the production is carried out by a separate competent authority, a fraction of the debt may be considered “outsourced”. This means that a local authority importing all of the water distributed from a production syndicat to which it belongs will – where applicable – have outsourced the water production-related debt. A more measured apparent level of indebtedness is potentially implied in this instance. These situations need to be factored into the assessment of each service’s results.

The average rate of unpaid drinking water bills is fairly low, at 0.7%. Two categories appear on the graph: mainly rural services (less than 70 inhabitants/km) with a 0.83% rate, and urban services which present an average rate of 1.42%.

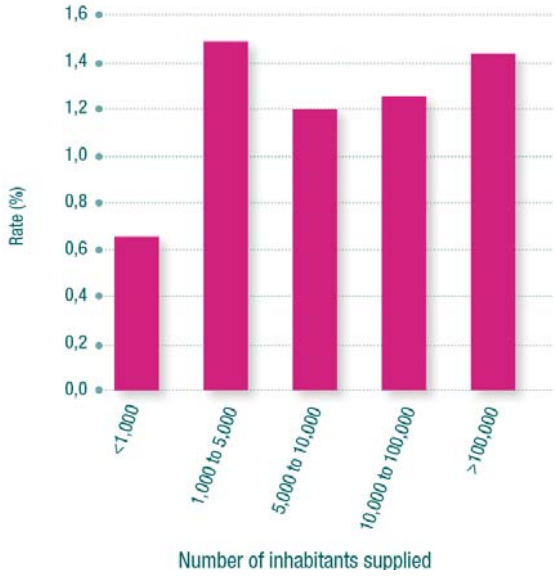
Figure 42 : Rate of unpaid bills depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The rate of unpaid bills according to the service size sets the category of services for less than 1,000 inhabitants (0.63% of unpaid bills) clearly apart from the other groups (1.35%).

Figure 43 : Rate of unpaid bills depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Sociological parameters can also affect the value obtained by this ratio: inhabitants in rural environments tend to know their neighbours – and hence their circumstances – better, which perhaps explains a lower rate of unpaid bills.

4.2.3. High-quality services for consumers

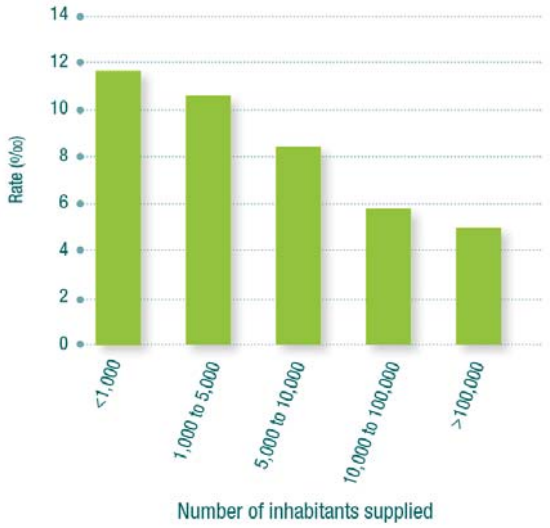
The quality of the service provided to consumers is assessed using several performance indicators.

The average complaint rate is 7 for 1,000 customers. This indicator includes written complaints (i.e. received in the form of letters, emails or faxes by the local authority or operator) on all matters to do with the water service, except those bearing on the water price. Systems for recording and following up complaints are more elaborate in larger services which more commonly have access to the IT and human resources needed to carry out this follow-up.

In a segmentation according to service size, a downward variation of the complaint rate is clearly apparent as the size of community increases.

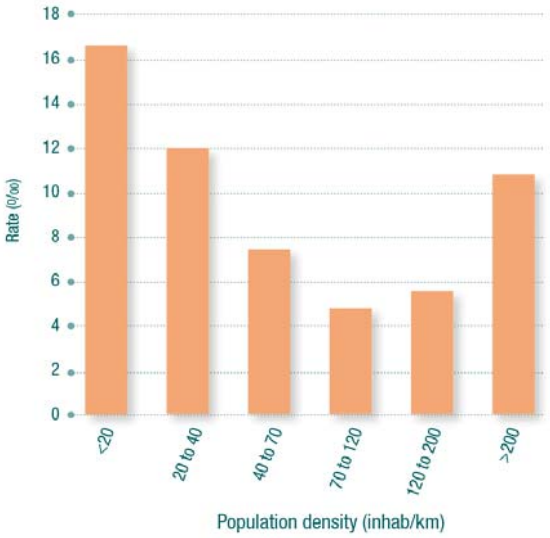
The relation between the complaint rate and population density follows a V-shaped curve: the complaint rate goes down from ultra-rural services to services of intermediate density. A rising curve can then be observed for services supplying a densely populated area. Overall, rural services have a higher written complaint rate than urban services.

Figure 44 : Complaint rate (for 1,000 customers) depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Figure 45 : Complaint rate (for 1,000 customers) depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

These findings must nevertheless be interpreted with care. Firstly, because of the number of outliers that has been removed from the sample – proof that a method for setting the indicator value is not yet fully developed. This is because the failure to take account of complaints made over the phone

introduces significant bias. Moreover, a certain number of outliers had to be removed from the database, which indicates that the characterisation and recording of this indicator are still not fully effective. Under such conditions, the relation between service performance and the complaint rate cannot be clearly determined for now.

The sum of solidarity actions is 0.0045€/m³ on average, or 0.2% of the price of water. These actions include both social debt waivers and payments made to the Fonds de Solidarité Logement (Housing Solidarity Funds/FSLs). There are however differences as regards the amounts allocated to such actions depending on the service management and organization methods, as illustrated in the table below:

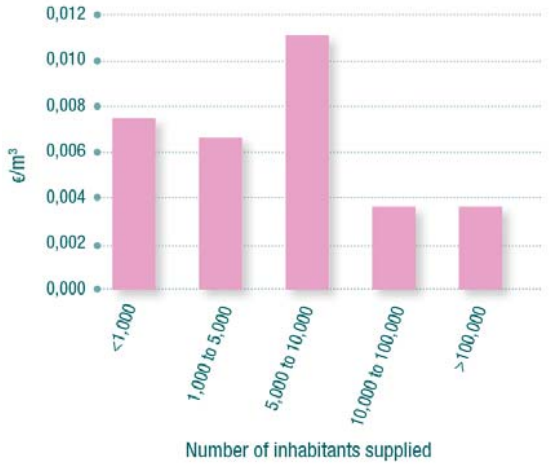
Table 21 : Distribution of solidarity actions in 2009 according to organization and management methods

Sum of solidarity actions	Services under delegated management	Services under direct management	Inter-municipal services
€0.0045/m^3	€0.0037/m^3	€0.0055/m^3	€0.0034/m^3

Datasource: SISPEA (Onema) – DDT(M) – 2009

When looking at the sums of these actions depending on service size, the funds devoted to solidarity actions are slightly higher for small and medium-sized services (between €0.006/m³ and €0.011/m³) than for large services (around €0.004/m³).

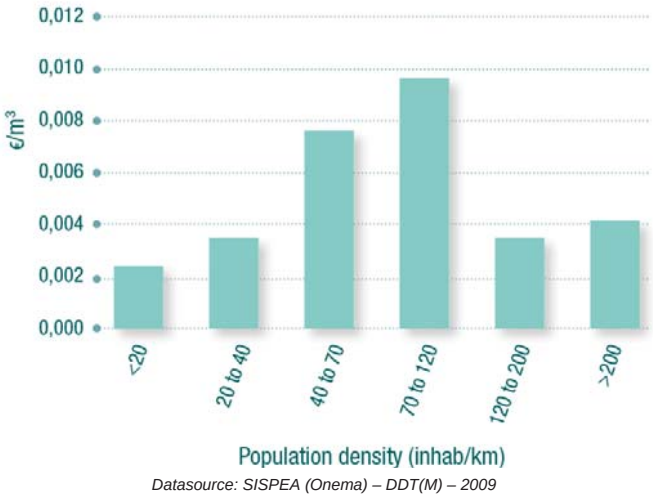
Figure 46 : Sum of solidarity actions depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

By dividing up the sample on the basis of population density, the amounts increase with density (€0.002/m³ to €0.010/m³) up to 120 inhabitants/km. For services in densely populated areas, the amounts drop significantly (€0.004/m³).

Figure 47 : Sum of solidarity actions depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The smaller amounts for large services and services in densely populated areas can probably be explained by the supply of residential blocks of flats for which the water bill is usually included in the co-ownership charges, and any unpaid water bills covered by the managing agent. In these cases, the unpaid bills are not factored into the calculation of the indicator.

Furthermore, Act no. 2011-156 dated 7 February 2011 on solidarity in the water supply and sanitation sectors will surely lead to a closer eye being kept on services' solidarity actions in the future. The suitability of water for drinking is defined according to a whole series of parameters:

- microbiological: bacteria indicating faecal contamination (faecal streptococci and coliforms, etc.);
- chemical: lead, mercury, chlorine, nitrates, pesticides, etc.;
- radioactivity indicators;
- organoleptic: odour, colour, taste.

Limits are set for each of these parameters. In France, water is considered suitable for drinking if it complies with the regulations in force, namely the requirements of articles R1321.1 to R1321.5 of the French Public Health Code and those of the corresponding implementing orders. These regulations translate the obligations of a European text from 1998, the previous version of which dates back to 1980. Indeed, the notion of suitability for drinking has evolved to take account of new scientific and technical facts coming to light.

The microbiological conformity rate of tap water is 98%. Almost 138,000 microbiological samples have been taken – only 2,800 of which did not conform.

The physico-chemical conformity rate of tap water is 97%. Almost 155,000 physico-chemical samples have been taken – some 6,000 of which did not conform. The most striking differences – and even this still concerns low scales – pertain to microbiological parameters for which increasing values are observed as density increases. We might suppose that the quality of the water falls with the length of time it stays in rural networks, due to low or very low population densities supplied.

Table 22 : Microbiological quality of water distributed according to population density in 2009

Population density (inhab/km)	Microbiological quality of the water distributed (%)
< 20	97.9
20 to 40	97.7
40 to 70	98.2
70 to 120	98.9
120 to 200	98.7
> 200	99.8

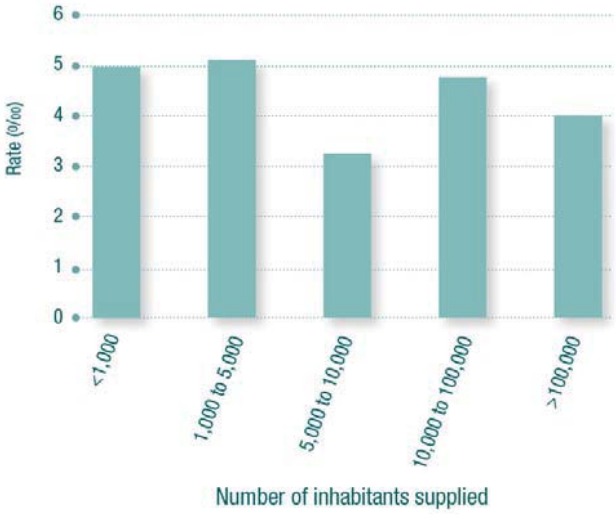
Datasource: SISPEA (Onema) – DDT(M) – 2009

The compliance rate of new customer maximum connection times is excellent, at 98.5%. According to the population density criterion, the average values of this indicator range from 97.9% and 98.5%, and from 97.9% and 99.1% depending on size – illustrating a high performance level for all services.

The occurrence rate of unscheduled service interruptions is estimated to be 4.43 for 1,000 customers. This indicator lists the number of water supply cuts associated with public network functioning – about which the customers concerned are not warned in advance.

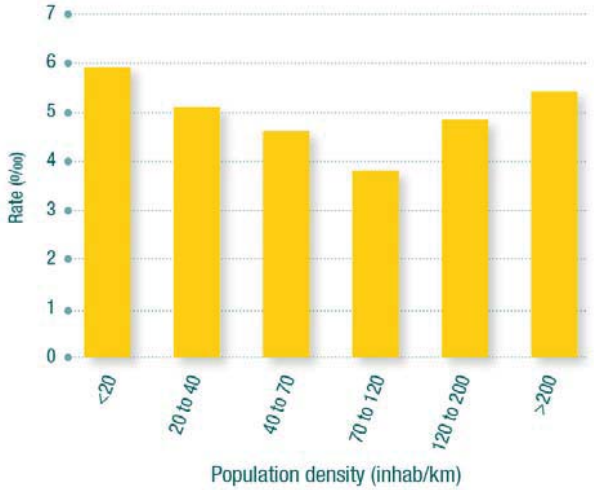
The average values (expressed in number of interruptions per thousand customers) of this indicator depending on service size do not reveal any particular trends. However, by dividing up the sample according to population density, a V-shaped trend emerges: fall in interruption rates from the most rural services to services of medium density, and then an increase for services for very densely populated areas. Since the database does not include the number of leaks repaired annually on the network, a correlation cannot be drawn as it stands with the number of unscheduled interruptions occurring on the network. It may well be worth collecting such information in the long-term.

Figure 48 : Service interruption rate (for 1,000 customers) depending on the number of inhabitants supplied in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

Figure 49 : Service interruption rate (for 1,000 customers) depending on population density in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

4.3. Performance analysis of public collective sanitation service

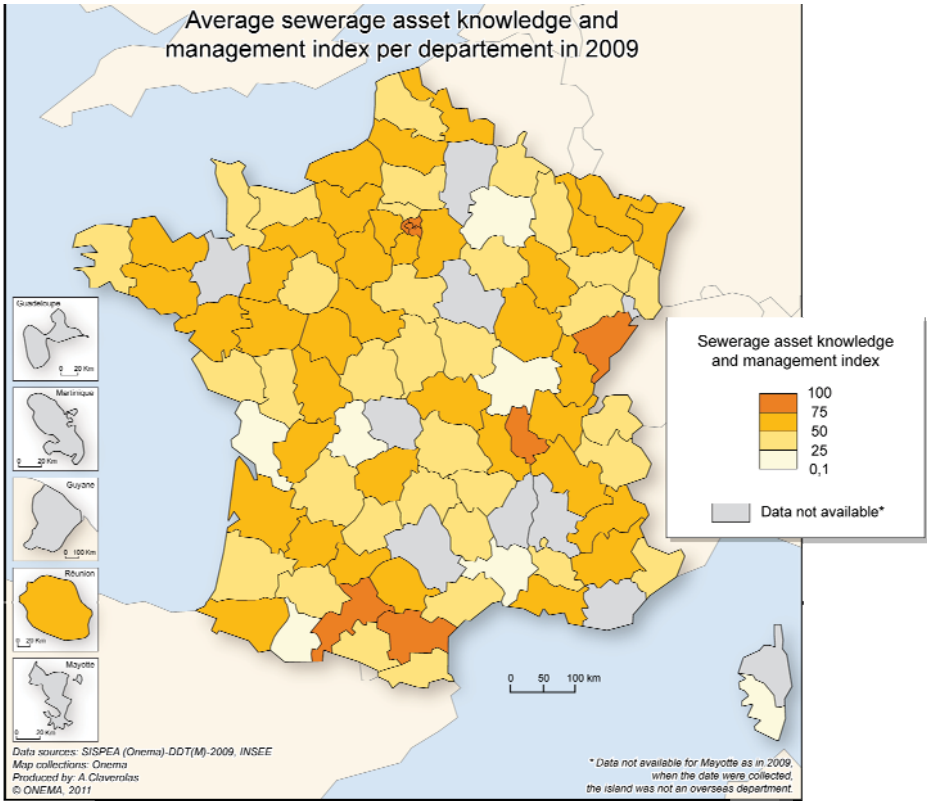
Given the lower availability rate of performance indicators and geophysical descriptive data, the analysis on the collective sanitation competence is more succinct than for drinking water. As a result, a typology could not be drawn up. In this part, we will therefore present the overall performance of collective sanitation services as well as the performance of services depending on their size and density when the data availability and reliability make it possible.

To characterise the size of public collective sanitation services and the density of the population being supplied, the “number of customers” criterion has been selected (instead of the number of inhabitants supplied as was the case for drinking water). The customer density is expressed in number of customers supplied, reduced to the line of collectors excluding connections. This decision is justified by the availability and reliability of data.

4.3.1. Collective sanitation: know what your assets are to manage them better

The average asset knowledge and management index for sanitation networks is similar to the same index for water networks. It comes to 56 for all collective sanitation services. The map below shows the average asset knowledge and management index per department.

Figure 50 : Spatial distribution of average sewerage asset knowledge and management index in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

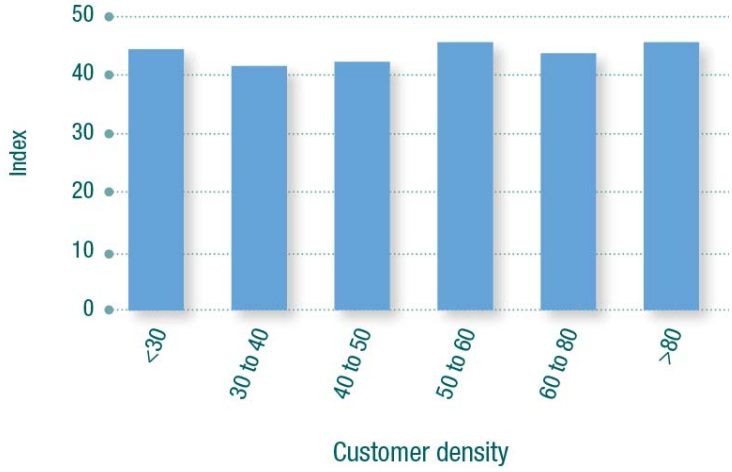
Almost invariant whatever the density of customers, the value of the asset knowledge and management index gets much better as the number of service customers increases.

Figure 51 : Asset knowledge and management index depending on the number of customers in 2009

Datasource: SISPEA (Onema) – DDT(M) – 2009

The financial potential – and therefore the material and human resources mobilised – seems to form the main criterion for implementing asset management policies (networks).

Figure 52 : Asset knowledge and management index depending on the density of customers in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The performance and maintenance quality of wastewater networks are ascertained through several indicators.

The overflow rate describes the quality and continuity of the service for the consumer. It is estimated from the number of compensation requests made by third parties – who may or may not use the service – who have suffered damage to their premises as a result of effluent overflow caused by a malfunction of the public service. It is low, estimated to be 0.17 for 1,000 customers.

The number of network points requiring dredging, meanwhile, show the condition and performance of service installations. This number has been put at 13/100km of network on average.

The average renewal rate of networks over the past five years is estimated to be 0.71% for sanitation services. If efforts remain constant, this would mean renewal of the sanitation network would take 150 years. However this rate is an average which does not reflect all situations.

The data on the collection network renewal rates depending on service size or density is too unreliable to be effectively processed.

The index of knowledge on discharge by wastewater collection networks into the natural environment is 95 out of 120. This index measures the service's level of efforts in knowing about the discharge into the natural environment by its sanitation networks – in dry and wet weather.

A little over one million tons of sludge was produced by treatment plants in 2009, and 98% of this sludge was evacuated according to compliant processes – namely agricultural recovery, composting, accredited release or incineration.

4.3.2. Quality of the service for the consumer and financial management

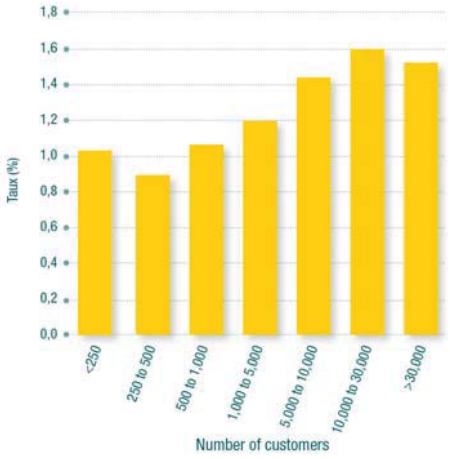
The quality of the service provided to the consumer is assessed on the basis of several performance indicators.

The average complaint rate comes to 4.3 for 1,000 customers. This indicator includes written complaints (i.e. received in the form of letters, emails, faxes, etc. by the local authority or operator) on all matters to do with the collective sanitation service, except those relating to price.

The rate of unpaid collective sanitation bills is twice as high as for the drinking water service as it stands at 1.47%. This result is partly due to the fact that fewer solidarity actions are taken for collective sanitation than for drinking water. Their sum is estimated to be €0.0038/m3, or 16% less than for drinking water. It nevertheless accounts for 0.2% of the average price of collective sanitation.

The rate of unpaid bills increases as the service size increases.

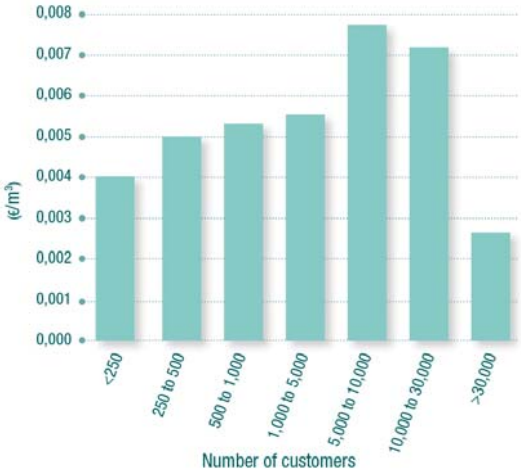
Figure 53 : Rate of unpaid bills depending on the number of customers in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

The amount earmarked by collective sanitation services for people in financial difficulty, reduced to the volume invoiced, increases with the service size.

Figure 54 : Sum of solidarity actions depending on the number of customers in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

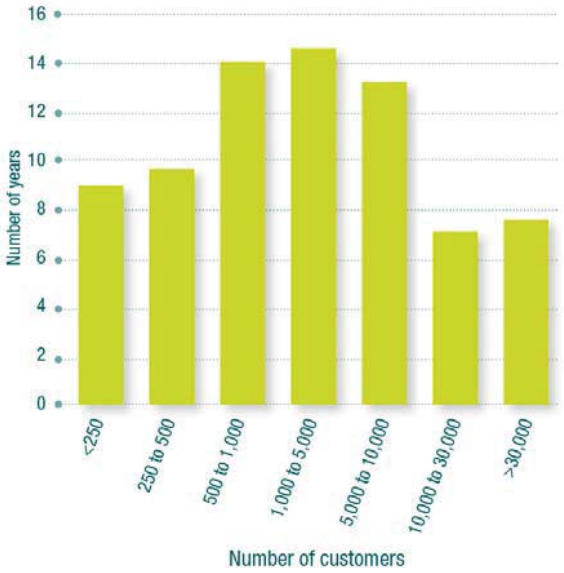
The service category of over 30,000 customers is an exception here, since the proportion of customers who live in collective housing results in a diluting effect on this ratio.

The debt extinguishment period of collective sanitation services was calculated using a very small sample of sanitation services. Hence the figures presented below can not be considered as representative of a national average. The debt extinguishment period of collective sanitation services is 11.25 years on average, which is higher than for drinking water. This can be explained by the efforts to modernise existing infrastructures, set up new services from scratch or extend supply networks. This value needs confirming given its fairly low completion rate. The characterisations below should therefore be taken with a pinch of salt.

Analysis of the indebtedness level according to service size reveals two trends:

- very small services (less than 500 customers) and large services (over 10,000 customers) have debt extinguishment periods of between 8 and 9 years;
- the other services (between 500 and 10,000 customers) have a much higher ratio (of around 14 years).

Figure 55 : Debt extinguishment period depending on the number of customers in 2009



Datasource: SISPEA (Onema) – DDT(M) – 2009

5. Prospects

This initial overview of water and sanitation services – based on the processing and interpretation of 2009 data collected for the Observatory's database – has described the organisation, management and performances of services at national and department level. By constructing an initial typology of services, it has been possible to study services with comparable geophysical constraints. The findings go further than simple description thanks to the analysis of both the characteristics and performances of these services. The aim is to repeat this exercise with a view to carrying out an inter-annual follow-up of services and their indicators, making the Observatory an operational governance tool for services through performance. To ensure maximum effectiveness, this innovative scheme – both at national and European level – should be taken fully on board by those authorities in charge of public water and sanitation services. They may choose a small number of indicators corresponding to their specific local situation and set annual targets for each of the indicators they select.

- **GLOSSARY**

Concession: Management method of a public service involving contracting out the management of the service and the construction of infrastructures to an authorised dealer acting at its own risk and remunerated by billing the drinking water or sanitation service consumers.

Drinking Water Supply: All of the equipment, services and operations that go into producing water – from an untreated water source in compliance with the current regulations governing the suitability of water for drinking – and distributing it to consumers. There are five separate stages in this supply process: intake, abstraction, treatment to make the water drinkable, conveyance (transport and storage) and distribution to consumers.

Farming out: Contract by which the contracting party commits to managing a public service at its own risk in return for remuneration paid by the service customers.

Inter-municipal cooperation body (EPCI): A body grouping together municipalities tasked with coming up with “joint development projects within the scope of solidarity”. They are subject to common, uniform regulations that are comparable to those applying to local authorities. *Communautés urbaines, communautés de communes, syndicats d'agglomération nouvelle, syndicats de communes* and *syndicats mixtes* are all EPCIs.

Public service delegation: Contract through which a public legal entity entrusts management of the public service for which it is responsible to a public or private delegate, whose remuneration depends substantially on the results of the service operation. The delegate may possibly be tasked with building structures or acquiring the necessary property for the service. The main difference between a public procurement contract and a public service delegation lies in the remuneration method adopted. For the former, payment is made by the public purchaser; for the latter, payment stems from the operation of the service, which is carried out at the delegate’s risk.

Sanitation: All of the techniques for collecting, transporting and treating wastewater and rain water from an urban area (collective sanitation) or a private plot of land (independent sanitation) before discharging it into the natural environment. Elimination of sludge from the treatment facilities is also part of the sanitation process.

Sewage sludge: Mixture of water and solid matter separated by biological or physical processes from the diverse types of water containing them.

Untreated water: Surface or groundwater as it is found in the natural environment, before undergoing treatment for a particular use.

Wastewater: Water that has been used by people. A distinction is generally made between domestic, industrial and agricultural wastewater. This water is released into the natural environment either directly or via a collection system – with or without treatment.

ACRONYMS & ABBREVIATIONS

CCSPL: Advisory Commission of Local Public Services

DDTM: Territorial and Marine services at department level

DOM: overseas department

EPCI: inter-municipal cooperation body

FSL: Housing Solidarity Fund

LEMA: French Act on Water and Aquatic Environments

ONEMA: French National Agency for Water and Aquatic Environments

RPQS: Annual Report on Service Price and Quality

SEDIF: Greater Paris water service

SIAAP: Paris conurbation sanitation service

SIDEN: inter-municipal water service for Northern France

SISPEA: Information System on Public Water and Sanitation Services

SIVOM: multi-purpose intermunicipal body

SIVU: single-purpose intermunicipal body

VAT: value-added tax

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APPENDIX 1: DEFINITION OF THE PERFORMANCE INDICATORS QUOTED IN THE REPORT

Based on the Ministerial Order and Decree dated 2 May 2007 on the annual report on the Price and Quality of water and sanitation services.

DRINKING WATER

Conformity rate of microbiological regulatory analyses

For services supplying over 5,000 inhabitants or producing more than 1,000 m³/d: percentage of samples for microbiological analysis compliant with the regulations in force.

Conformity rate of physico-chemical regulatory analyses

For services supplying over 5,000 inhabitants or producing more than 1,000 m³/d: percentage of samples for physico-chemical analysis compliant with the regulations in force.

Occurrence rate of unscheduled service interruptions

Number of water supply cuts due to the operation of the public network – about which the customers concerned were not warned in advance; in thousands of customers.

Complaint rate (number/1,000 customers)

This indicator counts the written complaints on any matter to do with the water service, except those regarding price. They particularly take account of regulatory complaints, including those associated with service regulation. The number of complaints is related to the number of customers divided by 1,000.

Asset knowledge and management index

Index from 0 to 100 points attributed for the quality of information available on the network. From 0 to 60, the information looked at concerns knowledge of the network (inventory) and from 70 to 100 management of the network.

Leakage index

Ratio between the volume of losses, which is the difference between the volume distributed and the authorised consumed volume, and the supply network line.

Average rate of network renewal (%)

Quotient of the average line of supply network renewed over the past five years by the total length of the supply network.

Water resource protection improvement index (%)

Improvement level (expressed in %) of the administrative and operational policy to protect one or more withdrawal points in the natural environment from which the drinking water distributed is taken.

Network efficiency (%)

Ratio between the authorised consumed volume increased by the volumes sold wholesale to other public drinking water services on the one hand, and the volume produced increased by the volumes bought wholesale by other public drinking water services on the other.

Service price per m³ for 120 m³ (€/m³)

Price of the drinking water service, incl. VAT, for 120 m³.

Debt extinguishment period (year)

Theoretical period of time needed to reimburse the drinking water service debt if the local authority devotes all of the self-financing created by the service to this reimbursement.

Unpaid bills rate over the year (n-1)

Unpaid bills rate as at 31/12 of year N for bills issued in year N-1.

Sum of debt waivers and payment to a solidarity fund

Annual debt waivers and sums paid to a solidarity fund, divided by the volume invoiced.

Compliance rate of new customer maximum connection times

Percentage of the number of connections made within the time to which the customer service department committed.

COLLECTIVE SANITATION

Effluent overflow rate in consumers' premises

The indicator is estimated from the number of compensation requests sent by third parties – who may or may not use the service – and who suffered damage to their premises as a result of effluent overflow caused by a malfunction of the public service. This number of compensation requests is divided by the number of inhabitants supplied.

Complaint rate (number/1,000 customers)

This indicator counts the written complaints on any matter to do with the collective sanitation service, except those regarding price. They particularly take account of regulatory complaints, including those associated with service regulation. The number of complaints is related to the number of customers divided by 1,000.

Asset knowledge and management index

Index from 0 to 100 points attributed for the quality of information available on the wastewater collection network. From 0 to 60, the information looked at concerns knowledge of the network (inventory) and from 70 to 100 management of the network.

Number of collection network black spots requiring frequent dredging per 100km of network

The indicator shows the number of black spots for 100 km of the wastewater collection network, excluding connections. A black spot is a structurally sensitive point of the network requiring at least two interventions a year (preventive or curative) – irrespective of the problem (counter-slope, roots, abnormal overflow in dry weather, odours, poor flow, etc.) and the type of intervention required (dredging, washing, securing, etc.).

Average rate of network renewal (%)

Quotient of the average line of collection network excluding connections renewed over the past five years by the total length of the collection network excluding connections.

Rate of sludge evacuated according to compliant processes

Percentage of sewage treatment plants sludge evacuated according to compliant processes. By-products and dredging sludge are not taken into account in this indicator.

Service price per m³ for 120 m³ (€/m³)

Price of the collective sanitation service, incl. VAT, for 120 m³.

Debt extinguishment period of the local authority (year)

Theoretical period of time needed to reimburse the collective sanitation service debt if the local authority devotes all of the self-financing created by the service to this reimbursement.

Unpaid bills rate over the year (n-1)

Same definition as for drinking water.

Sum of debt waivers and payment to a solidarity fund

Same definition as for drinking water.

Index of knowledge on discharge into the natural environment by wastewater collection networks

Index from 0 to 120 points attributed according to the knowledge on discharge into the natural environment by sanitation networks pursuant to the Order dated 22 June 2007 on the collection, transport and treatment of wastewater from sanitation urban areas.

• APPENDIX 2: AVERAGE ANNUAL CONSUMPTION

DEPARTMENTS	Average annual consumption per inhabitant (in m^3)
AIN (01)	58.8
ALLIER (03)	50.7
ALPES-DE-HAUTE-PROVENCE (04)	60.1
ALPES-MARITIMES (06)	85.4
ARDENNES (08)	53.9
ARIEGE (09)	58.9
AUBE (10)	57.8
AVEYRON (12)	64.9
BAS-RHIN (67)	52.0
BOUCHES-DU-RHONE (13)	72.9
CALVADOS (14)	53.5
CANTAL (15)	77.8
CHARENTE (16)	40.0
CHARENTE-MARITIME (17)	63.5
CHER (18)	52.5
CORREZE (19)	60.1
CORSE-DU-SUD (2A)	79.3
COTE-D'OR (21)	55.1
COTES-D'ARMOR (22)	36.3
DEUX-SEVRES (79)	52.1
DORDOGNE (24)	59.5
DOUBS (25)	53.8
DROME (26)	50.5
ESSONNE (91)	46.3
HAUTS-DE-SEINE (92), SEINE-SAINT-DENIS (93), VAL-DE-MARNE (94)	48.1
EURE (27)	47.3
EURE-ET-LOIR (28)	50.7
FINISTERE (29)	46.2
GARD (30)	69.4
GERS (32)	61.2
GIRONDE (33)	60.6
HAUTE-GARONNE (31)	68.9
HAUTE-LOIRE (43)	54.3
HAUTE-MARNE (52)	51.7
HAUTES-ALPES (05)	37.9
HAUTE-SAONE (70)	46.3
HAUTE-SAVOIE (74)	45.7
HAUTES-PYRENEES (65)	68.4
HAUTE-VIENNE (87)	51.3
HAUT-RHIN (68)	53.2
HERAULT (34)	61.8
INDRE (36)	60.8
INDRE-ET-LOIRE (37)	52.3
ISERE (38)	37.4
JURA (39)	62.3
LANDES (40)	61.0
LOIRE (42)	37.2
LOIRE-ATLANTIQUE (44)	31.1
LOIRET (45)	52.7
LOIR-ET-CHER (41)	56.0

LOT (46)	67.7
LOT-ET-GARONNE (47)	73.0
LOZERE (48)	51.2
MAINE-ET-LOIRE (49)	44.7
MANCHE (50)	45.8
MARNE (51)	42.0
MARTINIQUE (972)	47.5
MAYENNE (53)	44.3
MEURTHE-ET-MOSELLE (54)	53.9
MEUSE (55)	50.2
MORBIHAN (56)	50.5
MOSELLE (57)	47.0
NIEVRE (58)	53.1
NORD (59)	37.5
OISE (60)	45.7
ORNE (61)	52.8
PARIS (75)	86.6
PAS-DE-CALAIS (62)	38.3
PUY-DE-DOME (63)	54.1
PYRENEES-ATLANTIQUES (64)	56.4
PYRENEES-ORIENTALES (66)	73.9
REUNION (974)	94.3
RHONE (69)	49.1
SAONE-ET-LOIRE (71)	55.2
SARTHE (72)	61.4
SAVOIE (73)	58.6
SEINE-ET-MARNE (77)	52.0
SEINE-MARITIME (76)	43.4
SOMME (80)	59.2
TARN (81)	50.9
TARN-ET-GARONNE (82)	53.5
TERRITOIRE-DE-BELFORT (90)	53.4
VAL-D'OISE (95)	50.2
VAUCLUSE (84)	62.9
VENDEE (85)	66.1
VIENNE (86)	53.9
VOSGES (88)	48.6
YVELINES (78)	55.5

Datasource : SISPEA (Onema) – DDT(M) – 2009

APPENDIX 3: PROPORTION OF GROUNDWATER IN RAW WATER

DEPARTMENTS	Proportion of groundwater in raw water (%)
AIN (01)	97
ALLIER (03)	74
ALPES-DE-HAUTE-PROVENCE (04)	83
ALPES-MARITIMES (06)	71
ARDENNES (08)	100
ARIEGE (09)	80
AUBE (10)	93
AUDE (11)	0
BAS-RHIN (67)	90
BOUCHES-DU-RHONE (13)	35
CALVADOS (14)	79
CANTAL (15)	62
CHARENTE (16)	97
CHARENTE-MARITIME (17)	26
CHER (18)	78
CORREZE (19)	76
CORSE-DU-SUD (2A)	0
COTE-D'OR (21)	98
COTES-D'ARMOR (22)	25
DEUX-SEVRES (79)	67
DORDOGNE (24)	88
DOUBS (25)	68
DROME (26)	99
ESSONNE (91)	30
HAUTS-DE-SEINE (92),SEINE-SAINT-DENIS (93),VAL-DE-MARNE (94)	1
EURE (27)	96
EURE-ET-LOIR (28)	92
FINISTERE (29)	40
GARD (30)	99
GERS (32)	18
GIRONDE (33)	95
HAUTE-GARONNE (31)	13
HAUTE-LOIRE (43)	70
HAUTE-MARNE (52)	92
HAUTES-ALPES (05)	88
HAUTE-SAONE (70)	100
HAUTE-SAVOIE (74)	100
HAUTES-PYRENEES (65)	100
HAUTE-VIENNE (87)	100
HAUT-RHIN (68)	91
HERAULT (34)	97
INDRE (36)	100
INDRE-ET-LOIRE (37)	96
ISERE (38)	100
JURA (39)	70
LANDES (40)	98
LOIRE (42)	30
LOIRE-ATLANTIQUE (44)	44
LOIRET (45)	98
LOIR-ET-CHER (41)	95

LOT (46)	96
LOT-ET-GARONNE (47)	74
LOZERE (48)	83
MAINE-ET-LOIRE (49)	65
MANCHE (50)	41
MARNE (51)	100
MARTINIQUE (972)	6
MAYENNE (53)	60
MEURTHE-ET-MOSELLE (54)	91
MEUSE (55)	85
MORBIHAN (56)	31
MOSELLE (57)	95
NIEVRE (58)	99
NORD (59)	83
OISE (60)	90
ORNE (61)	52
PARIS (75)	49
PAS-DE-CALAIS (62)	96
PUY-DE-DOME (63)	95
PYRENEES-ATLANTIQUES (64)	79
PYRENEES-ORIENTALES (66)	80
REUNION (974)	44
RHONE (69)	93
SAONE-ET-LOIRE (71)	94
SARTHE (72)	93
SAVOIE (73)	88
SEINE-ET-MARNE (77)	90
SEINE-MARITIME (76)	94
SOMME (80)	100
TARN (81)	53
TARN-ET-GARONNE (82)	48
TERRITOIRE-DE-BELFORT (90)	69
VAL-D'OISE (95)	93
VAUCLUSE (84)	99
VENDEE (85)	0
VIENNE (86)	88
VOSGES (88)	91
YONNE (89)	100

Datasource : SISPEA (Onema) – DDT(M) – 2009

APPENDIX 4: AVERAGE RENEWAL RATE OF WATER NETWORKS

DEPARTMENTS	Renewal rate of water networks (%)
AIN (01)	1.24
ALLIER (03)	0.57
ALPES-DE-HAUTE-PROVENCE (04)	0.46
ALPES-MARITIMES (06)	0.82
ARDENNES (08)	0.99
ARIEGE (09)	0.18
AUBE (10)	0.20
AVEYRON (12)	0.06
BAS-RHIN (67)	1.14
BOUCHES-DU-RHONE (13)	0.99
CALVADOS (14)	0.40
CANTAL (15)	0.16
CHARENTE (16)	0.44
CHARENTE-MARITIME (17)	0.50
CHER (18)	0.51
CORREZE (19)	0.92
COTE-D'OR (21)	0.26
COTES-D'ARMOR (22)	0.34
DEUX-SEVRES (79)	0.54
DORDOGNE (24)	0.28
DOUBS (25)	0.71
DROME (26)	0.77
ESSONNE (91)	0.23
HAUTS-DE-SEINE (92),SEINE-SAINT-DENIS (93),VAL-DE-MARNE (94)	0.44
EURE (27)	0.25
EURE-ET-LOIR (28)	0.23
FINISTERE (29)	0.39
GARD (30)	0.48
GERS (32)	0.19
GIRONDE (33)	0.31
HAUTE-GARONNE (31)	0.76
HAUTE-LOIRE (43)	0.47
HAUTE-MARNE (52)	0.96
HAUTES-ALPES (05)	0.99
HAUTE-SAONE (70)	0.78
HAUTE-SAVOIE (74)	1.63
HAUTES-PYRENEES (65)	0.23
HAUTE-VIENNE (87)	0.25
HAUT-RHIN (68)	2.13
HERAULT (34)	0.50
ILLE-ET-VILAINE (35)	0.32
INDRE (36)	0.25
INDRE-ET-LOIRE (37)	0.33
ISERE (38)	0.82
JURA (39)	0.85
LANDES (40)	0.37
LOIRE (42)	0.57
LOIRE-ATLANTIQUE (44)	0.37
LOIRET (45)	0.32
LOIR-ET-CHER (41)	0.30

LOT (46)	0.18
LOT-ET-GARONNE (47)	0.88
LOZERE (48)	0.62
MAINE-ET-LOIRE (49)	0.31
MANCHE (50)	0.18
MARNE (51)	1.70
MAYENNE (53)	0.75
MEURTHE-ET-MOSELLE (54)	1.00
MEUSE (55)	0.27
MORBIHAN (56)	0.46
MOSELLE (57)	1.84
NIEVRE (58)	0.47
NORD (59)	0.80
OISE (60)	0.28
ORNE (61)	0.17
PARIS (75)	0.49
PAS-DE-CALAIS (62)	0.43
PUY-DE-DOME (63)	0.97
PYRENEES-ATLANTIQUES (64)	0.79
PYRENEES-ORIENTALES (66)	0.79
REUNION (974)	0.77
RHONE (69)	0.73
SAONE-ET-LOIRE (71)	0.71
SARTHE (72)	0.26
SAVOIE (73)	1.11
SEINE-ET-MARNE (77)	0.04
SEINE-MARITIME (76)	0.42
SOMME (80)	0.60
TARN (81)	0.67
TARN-ET-GARONNE (82)	0.10
TERRITOIRE-DE-BELFORT (90)	0.40
VAL-D'OISE (95)	0.75
VAUCLUSE (84)	0.87
VENDEE (85)	0.94
VIENNE (86)	0.45
VOSGES (88)	1.08
YVELINES (78)	0.11

Datasource : SISPEA (Onema) – DDT(M) – 2009

• APPENDIX 5: ASSET KNOWLEDGE AND MANAGEMENT INDEX FOR WATER AND SANITATION

DEPARTMENTS	Asset index for water (out of 100 points)	DEPARTMENTS	Asset index for collective sanitation (out of 100 points)
AIN (01)	66	AIN (01)	60
ALLIER (03)	81	ALLIER (03)	66
ALPES-DE-HAUTE-PROVENCE (04)	52	ALPES-DE-HAUTE-PROVENCE (04)	50
ALPES-MARITIMES (06)	78	ALPES-MARITIMES (06)	41
ARDENNES (08)	37	ARDENNES (08)	30
ARIEGE (09)	32	ARIEGE (09)	32
AUBE (10)	38	AUBE (10)	28
AUDE (11)	90	AUDE (11)	90
AVEYRON (12)	66	BAS-RHIN (67)	66
BAS-RHIN (67)	55	BOUCHES-DU-RHONE (13)	60
BOUCHES-DU-RHONE (13)	75	CALVADOS (14)	43
CALVADOS (14)	52	CANTAL (15)	46
CANTAL (15)	40	CHARENTE (16)	51
CHARENTE (16)	51	CHARENTE-MARITIME (17)	23
CHARENTE-MARITIME (17)	66	CHER (18)	42
CHER (18)	39	CORREZE (19)	52
CORREZE (19)	60	CORSE-DU-SUD (2A)	5
CORSE-DU-SUD (2A)	6	COTE-D'OR (21)	60
COTE-D'OR (21)	61	COTES-D'ARMOR (22)	64
COTES-D'ARMOR (22)	60	DEUX-SEVRES (79)	38
DEUX-SEVRES (79)	66	DORDOGNE (24)	48
DORDOGNE (24)	44	DOUBS (25)	79
DOUBS (25)	38	ESSONNE (91)	58
DROME (26)	68	EURE (27)	55
ESSONNE (91)	63	EURE-ET-LOIR (28)	51
HAUTS-DE-SEINE (92), SEINE-SAINT-DENIS (93), VAL-DE-MARNE (94)	100	FINISTERE (29)	49
EURE (27)	44	GARD (30)	15
EURE-ET-LOIR (28)	58	GERS (32)	33
FINISTERE (29)	54	GIRONDE (33)	55
GARD (30)	51	HAUTE-GARONNE (31)	90
GERS (32)	38	HAUTE-LOIRE (43)	49
GIRONDE (33)	59	HAUTE-MARNE (52)	60
HAUTE-GARONNE (31)	36	HAUTES-ALPES (05)	57
HAUTE-LOIRE (43)	60	HAUTE-SAONE (70)	38
HAUTE-MARNE (52)	73	HAUTE-SAVOIE (74)	30
HAUTES-ALPES (05)	71	HAUTES-PYRENEES (65)	52
HAUTE-SAONE (70)	44	HAUTE-VIENNE (87)	16
HAUTE-SAVOIE (74)	46	HAUT-RHIN (68)	39
HAUTES-PYRENEES (65)	47	HAUTS-DE-SEINE (92), SEINE-SAINT-DENIS (93), VAL-DE-MARNE (94)	100
HAUTE-VIENNE (87)	21	HERAULT (34)	47
HAUT-RHIN (68)	66	INDRE (36)	48
HERAULT (34)	53	INDRE-ET-LOIRE (37)	60
INDRE (36)	35	ISERE (38)	56
INDRE-ET-LOIRE (37)	45	JURA (39)	57
ISERE (38)	45	LANDES (40)	45
JURA (39)	56	LOIRE (42)	55

LANDES (40)	51	LOIRE-ATLANTIQUE (44)	54
LOIRE (42)	56	LOIRET (45)	41
LOIRE-ATLANTIQUE (44)	65	LOIR-ET-CHER (41)	50
LOIRET (45)	48	LOT (46)	40
LOIR-ET-CHER (41)	42	LOT-ET-GARONNE (47)	52
LOT (46)	33	LOZERE (48)	36
LOT-ET-GARONNE (47)	70	MAINE-ET-LOIRE (49)	62
LOZERE (48)	16	MANCHE (50)	45
MAINE-ET-LOIRE (49)	56	MARNE (51)	10
MANCHE (50)	61	MAYENNE (53)	59
MARNE (51)	87	MEURTHE-ET-MOSELLE (54)	57
MAYENNE (53)	45	MEUSE (55)	34
MEURTHE-ET-MOSELLE (54)	54	MORBIHAN (56)	73
MEUSE (55)	47	MOSELLE (57)	55
MORBIHAN (56)	68	NIEVRE (58)	33
MOSELLE (57)	56	NORD (59)	51
NIEVRE (58)	44	OISE (60)	46
NORD (59)	74	ORNE (61)	64
OISE (60)	59	PARIS (75)	90
ORNE (61)	42	PAS-DE-CALAIS (62)	47
PARIS (75)	95	PUY-DE-DOME (63)	26
PAS-DE-CALAIS (62)	52	PYRENEES-ATLANTIQUES (64)	57
PUY-DE-DOME (63)	54	PYRENEES-ORIENTALES (66)	46
PYRENEES-ATLANTIQUES (64)	59	REUNION (974)	50
PYRENEES-ORIENTALES (66)	55	RHONE (69)	83
REUNION (974)	70	SAONE-ET-LOIRE (71)	15
RHONE (69)	61	SARTHE (72)	43
SAONE-ET-LOIRE (71)	72	SAVOIE (73)	47
SARTHE (72)	59	SEINE-ET-MARNE (77)	58
SAVOIE (73)	57	SEINE-MARITIME (76)	55
SEINE-ET-MARNE (77)	17	SEINE-SAINT-DENIS (93)	39
SEINE-MARITIME (76)	65	SOMME (80)	64
SOMME (80)	63	TARN (81)	52
TARN (81)	66	TARN-ET-GARONNE (82)	67
TARN-ET-GARONNE (82)	53	VAL-D'OISE (95)	39
TERRITOIRE-DE-BELFORT (90)	50	VAUCLUSE (84)	46
VAL-D'OISE (95)	69	VENDEE (85)	43
VAUCLUSE (84)	38	VIENNE (86)	64
VENDEE (85)	59	VOSGES (88)	49
VIENNE (86)	47	YVELINES (78)	63
VOSGES (88)	51	Total	56
YONNE (89)	60		
YVELINES (78)	77		
Total	57		

Datasource : SISPEA (Onema) – DDT(M) – 2009

APPENDIX 6: WATER NETWORK EFFICIENCY AND LEAKAGE INDEX

DEPARTMENTS	Efficiency (%)	Leakage index (m^3/day/linear km)
AIN (01)	72	5.06
ALLIER (03)	81	1.94
ALPES-DE-HAUTE-PROVENCE (04)	66	9.03
ALPES-MARITIMES (06)	78	19.21
ARDENNES (08)	68	7.07
ARIEGE (09)	75	4.68
AUBE (10)	76	4.44
AUDE (11)	79	3.22
AVEYRON (12)	74	1.76
BAS-RHIN (67)	80	4.62
BOUCHES-DU-RHONE (13)	78	14.11
CALVADOS (14)	83	2.25
CANTAL (15)	74	1.17
CHARENTE (16)	75	1.69
CHARENTE-MARITIME (17)	82	3.15
CHER (18)	76	1.79
CORREZE (19)	76	2.26
CORSE-DU-SUD (2A)	75	9.44
COTE-D'OR (21)	74	6.09
COTES-D'ARMOR (22)	82	1.30
DEUX-SEVRES (79)	81	2.21
DORDOGNE (24)	73	2.39
DOUBS (25)	78	4.24
DROME (26)	68	3.46
ESSONNE (91)	80	5.65
HAUTS-DE-SEINE (92), SEINE-SAINT-DENIS (93), VAL-DE-MARNE (94)	88	10.77
EURE (27)	72	3.96
EURE-ET-LOIR (28)	79	1.86
FINISTERE (29)	81	1.11
GARD (30)	63	10.59
GERS (32)	69	1.71
GIRONDE (33)	79	2.61
HAUTE-GARONNE (31)	76	2.62
HAUTE-LOIRE (43)	73	3.07
HAUTE-MARNE (52)	68	7.61
HAUTES-ALPES (05)	74	10.28
HAUTE-SAONE (70)	72	4.70
HAUTE-SAVOIE (74)	71	10.22
HAUTES-PYRENEES (65)	76	5.22
HAUTE-VIENNE (87)	75	1.12
HAUT-RHIN (68)	82	9.26
HERAULT (34)	71	14.54
ILLE-ET-VILAINE (35)	80	1.11
INDRE (36)	75	1.03
INDRE-ET-LOIRE (37)	83	1.80
ISERE (38)	69	9.96
JURA (39)	72	3.74
LANDES (40)	81	1.60
LOIRE (42)	76	4.15
LOIRE-ATLANTIQUE (44)	85	3.56

LOIRET (45)	78	4.12
LOIR-ET-CHER (41)	80	1.74
LOT (46)	69	2.28
LOT-ET-GARONNE (47)	77	1.81
LOZERE (48)	68	2.70
MAINE-ET-LOIRE (49)	85	1.80
MANCHE (50)	81	1.68
MARNE (51)	80	5.53
MARTINIQUE (972)	59	9.42
MAYENNE (53)	84	1.23
MEURTHE-ET-MOSELLE (54)	78	7.32
MEUSE (55)	70	6.10
MORBIHAN (56)	84	1.25
MOSELLE (57)	81	5.48
NIEVRE (58)	72	2.25
NORD (59)	74	7.60
OISE (60)	84	3.09
ORNE (61)	77	1.53
PARIS (75)	96	12.80
PAS-DE-CALAIS (62)	75	6.17
PUY-DE-DOME (63)	72	4.30
PYRENEES-ATLANTIQUES (64)	72	4.52
PYRENEES-ORIENTALES (66)	69	9.51
REUNION (974)	59	44.25
RHONE (69)	77	4.79
SAONE-ET-LOIRE (71)	74	3.63
SARTHE (72)	81	1.53
SAVOIE (73)	76	9.15
SEINE-ET-MARNE (77)	79	1.92
SEINE-MARITIME (76)	79	11.10
SOMME (80)	76	7.50
TARN (81)	72	2.16
TARN-ET-GARONNE (82)	74	1.17
TERRITOIRE-DE-BELFORT (90)	63	11.30
VAL-D'OISE (95)	84	6.06
VAUCLUSE (84)	72	8.37
VENDEE (85)	91	1.15
VIENNE (86)	75	2.68
VOSGES (88)	73	4.22
YONNE (89)	59	2.87
YVELINES (78)	84	4.44
Moyenne	76	3.96

Datasource : SISPEA (Onema) – DDT(M) – 2009

- **APPENDIX 7: AVERAGE PRICE INCL. VAT IN €/M^3 FOR DRINKING WATER AND COLLECTIVE SANITATION**

DEPARTMENTS	Water price incl. VAT €/m^3	DEPARTMENTS	Collective sanitation price incl. VAT €/m^3
AIN (01)	1.6501	AIN (01)	1.4085
ALLIER (03)	1.9625	ALLIER (03)	1.7868
ALPES-DE-HAUTE-PROVENCE (04)	1.5330	ALPES-DE-HAUTE-PROVENCE (04)	1.1931
ALPES-MARITIMES (06)	1.7599	ALPES-MARITIMES (06)	1.9052
ARDENNES (08)	2.2646	ARDENNES (08)	1.7336
ARIEGE (09)	1.3951	ARIEGE (09)	1.7571
AUBE (10)	1.7447	AUBE (10)	1.6711
AUDE (11)	2.0175	AUDE (11)	1.9875
AVEYRON (12)	2.5896	BAS-RHIN (67)	1.3672
BAS-RHIN (67)	1.7906	BOUCHES-DU-RHONE (13)	1.0647
BOUCHES-DU-RHONE (13)	1.9679	CALVADOS (14)	1.2008
CALVADOS (14)	1.7728	CANTAL (15)	1.5275
CANTAL (15)	1.5197	CHARENTE (16)	1.8516
CHARENTE (16)	1.6025	CHARENTE-MARITIME (17)	1.5995
CHARENTE-MARITIME (17)	1.9056	CHER (18)	1.9759
CHER (18)	1.9446	CORREZE (19)	1.4981
CORREZE (19)	2.1329	CORSE-DU-SUD (2A)	1.3441
CORSE-DU-SUD (2A)	1.9630	COTE-D'OR (21)	2.0450
COTE-D'OR (21)	2.1712	COTES-D'ARMOR (22)	2.0642
COTES-D'ARMOR (22)	2.2960	DEUX-SEVRES (79)	1.9417
DEUX-SEVRES (79)	1.8653	DORDOGNE (24)	1.9514
DORDOGNE (24)	2.3201	DOUBS (25)	1.4298
DOUBS (25)	1.9596	ESSONNE (91)	2.1720
DROME (26)	1.6045	EURE (27)	2.3063
ESSONNE (91)	2.2276	EURE-ET-LOIR (28)	1.7400
HAUTS-DE-SEINE (92),SEINE-SAINT-DENIS (93),VAL-DE-MARNE (94)	2.2942	FINISTERE (29)	2.3537
EURE (27)	2.2587	GARD (30)	1.4541
EURE-ET-LOIR (28)	2.0284	GERS (32)	1.7611
FINISTERE (29)	2.0793	GIRONDE (33)	1.7608
GARD (30)	1.6146	HAUTE-GARONNE (31)	1.6831
GERS (32)	2.1422	HAUTE-LOIRE (43)	1.1960
GIRONDE (33)	1.7961	HAUTE-MARNE (52)	1.5319
HAUTE-GARONNE (31)	1.7209	HAUTES-ALPES (05)	1.2369
HAUTE-LOIRE (43)	1.6851	HAUTE-SAONE (70)	1.4463
HAUTE-MARNE (52)	1.5959	HAUTE-SAVOIE (74)	1.3068
HAUTES-ALPES (05)	1.3567	HAUTES-PYRENEES (65)	1.7707
HAUTE-SAONE (70)	1.5843	HAUTE-VIENNE (87)	1.1372
HAUTE-SAVOIE (74)	1.3102	HAUT-RHIN (68)	1.2820
HAUTES-PYRENEES (65)	1.3977	HAUTS-DE-SEINE (92)	2.1311
HAUTE-VIENNE (87)	2.0300	HERAULT (34)	1.5845
HAUT-RHIN (68)	1.7993	INDRE (36)	2.1592
HERAULT (34)	1.6304	INDRE-ET-LOIRE (37)	2.0934
INDRE (36)	1.6896	ISERE (38)	1.2520
INDRE-ET-LOIRE (37)	1.6131	JURA (39)	2.2096
ISERE (38)	1.9322	LANDES (40)	1.8973
JURA (39)	1.7251	LOIRE (42)	1.6451
LANDES (40)	1.4303	LOIRE-ATLANTIQUE (44)	1.9099
LOIRE (42)	2.1244	LOIRET (45)	2.2743

LOIRE-ATLANTIQUE (44)	1.5139	LOIR-ET-CHER (41)	1.3452
LOIRET (45)	1.6745	LOT (46)	2.1034
LOIR-ET-CHER (41)	2.1511	LOT-ET-GARONNE (47)	1.9481
LOT (46)	2.1465	LOZERE (48)	1.3151
LOT-ET-GARONNE (47)	2.0340	MAINE-ET-LOIRE (49)	1.5751
LOZERE (48)	1.5966	MANCHE (50)	1.9760
MAINE-ET-LOIRE (49)	1.9613	MARNE (51)	1.5377
MANCHE (50)	1.8464	MARTINIQUE (972)	2.1182
MARNE (51)	1.5409	MAYENNE (53)	1.4834
MARTINIQUE (972)	2.9008	MEURTHE-ET-MOSELLE (54)	1.5238
MAYENNE (53)	2.2777	MEUSE (55)	2.3154
MEURTHE-ET-MOSELLE (54)	2.1454	MORBIHAN (56)	1.4324
MEUSE (55)	1.7024	MOSELLE (57)	1.9820
MORBIHAN (56)	1.9558	NIEVRE (58)	1.8873
MOSELLE (57)	1.9612	NORD (59)	1.9125
NIEVRE (58)	1.9846	OISE (60)	2.3494
NORD (59)	1.9255	ORNE (61)	2.0371
OISE (60)	2.2786	PARIS (75)	1.3453
ORNE (61)	1.9876	PAS-DE-CALAIS (62)	2.4947
PARIS (75)	1.7548	PUY-DE-DOME (63)	1.4238
PAS-DE-CALAIS (62)	1.9516	PYRENEES-ATLANTIQUES (64)	2.0206
PUY-DE-DOME (63)	1.4642	PYRENEES-ORIENTALES (66)	1.3786
PYRENEES-ATLANTIQUES (64)	1.4803	REUNION (974)	0.3970
PYRENEES-ORIENTALES (66)	0.5288	RHONE (69)	1.5930
REUNION (974)	0.9453	SAONE-ET-LOIRE (71)	1.4792
RHONE (69)	2.0506	SARTHE (72)	1.7592
SAONE-ET-LOIRE (71)	2.0787	SAVOIE (73)	2.0737
SARTHE (72)	1.7152	SEINE-ET-MARNE (77)	1.7931
SAVOIE (73)	1.3685	SEINE-MARITIME (76)	2.7386
SEINE-ET-MARNE (77)	1.5817	SEINE-SAINT-DENIS (93)	2.4764
SEINE-MARITIME (76)	2.1845	SOMME (80)	1.5036
SOMME (80)	1.6279	TARN-ET-GARONNE (82)	1.8487
TARN (81)	1.8378	VAL-DE-MARNE (94)	2.5824
TARN-ET-GARONNE (82)	2.0527	VAL-D'OISE (95)	2.2261
TERRITOIRE-DE-BELFORT (90)	1.6900	VAUCLUSE (84)	1.6902
VAL-D'OISE (95)	2.0845	VENDEE (85)	1.9516
VAUCLUSE (84)	1.5456	VIENNE (86)	1.6482
VENDEE (85)	2.1219	VOSGES (88)	1.7821
VIENNE (86)	1.6890	YONNE (89)	1.1358
VOSGES (88)	1.6497	YVELINES (78)	1.5023
YONNE (89)	1.4221		
YVELINES (78)	2.2114		

Datasource : SISPEA (Onema) – DDT(M) – 2009

- **APPENDIX 8: NUMBER OF INTERMUNICIPAL SERVICES AND POPULATION CONNECTED TO AN INTERMUNICIPAL SERVICE FOR WATER**

DEPARTMENTS	Population connected to an intermunicipal service	Intermunicipal services
AIN (01)	376,407	36
AISNE (02)	404,361	84
ALLIER (03)	264,838	17
ALPES-DE-HAUTE-PROVENCE (04)	27,530	9
ALPES-MARITIMES (06)	786,911	11
ARDECHE (07)	143,355	18
ARDENNES (08)	165,575	68
ARIEGE (09)	134,874	9
AUBE (10)	119,850	75
AUDE (11)	129,767	17
AVEYRON (12)	206,781	23
BAS-RHIN (67)	960,709	29
BOUCHES-DU-RHONE (13)	1,551,170	9
CALVADOS (14)	390,723	78
CANTAL (15)	98,593	24
CHARENTE (16)	220,671	39
CHARENTE-MARITIME (17)	399,968	14
CHER (18)	115,848	42
CORREZE (19)	159,895	20
CORSE-DU-SUD (2A)	99,118	9
COTE-D'OR (21)	442,316	70
COTES-D'ARMOR (22)	399,466	49
CREUSE (23)	ND	20
DEUX-SEVRES (79)	353,727	27
DORDOGNE (24)	306,069	57
DOUBS (25)	253,400	44
DROME (26)	180,031	24
ESSONNE (91)	836,582	22
HAUTS-DE-SEINE (92),SEINE-SAINT-DENIS (93),VAL-DE-MARNE (94)	3,611,497	4
EURE (27)	535,103	42
EURE-ET-LOIR (28)	145,631	56
FINISTERE (29)	663,521	43
GARD (30)	419,062	43
GERS (32)	112,959	31
GIRONDE (33)	1,185,974	57
HAUTE-CORSE (2B)	99,631	14
HAUTE-GARONNE (31)	1,089,065	31
HAUTE-LOIRE (43)	164,457	24
HAUTE-MARNE (52)	43,468	36
HAUTES-ALPES (05)	3,697	6
HAUTE-SAONE (70)	110,280	64
HAUTE-SAVOIE (74)	331,333	26
HAUTES-PYRENEES (65)	99,070	24
HAUTE-VIENNE (87)	136,697	11
HAUT-RHIN (68)	418,093	59
HERAULT (34)	492,709	28
ILLE-ET-VILAINE (35)	ND	40
INDRE (36)	183,377	32
INDRE-ET-LOIRE (37)	301,089	54
ISERE (38)	676,091	53

JURA (39)	185,531	46
LANDES (40)	248,931	20
LOIRE (42)	289,422	33
LOIRE-ATLANTIQUE (44)	666,838	18
LOIRET (45)	184,787	67
LOIR-ET-CHER (41)	197,416	68
LOT (46)	117,793	34
LOT-ET-GARONNE (47)	264,676	17
LOZERE (48)	19,132	13
MAINE-ET-LOIRE (49)	751,926	33
MANCHE (50)	435,896	63
MARNE (51)	443,052	64
MARTINIQUE (972)	398,428	4
MAYENNE (53)	203,991	37
MEURTHE-ET-MOSELLE (54)	495,438	49
MEUSE (55)	98,331	48
MORBIHAN (56)	587,322	34
MOSELLE (57)	617,778	65
NIEVRE (58)	170,079	31
NORD (59)	2,181,942	16
OISE (60)	518,173	96
ORNE (61)	251,197	72
PAS-DE-CALAIS (62)	1,238,186	130
PUY-DE-DOME (63)	316,280	19
PYRENEES-ATLANTIQUES (64)	478,927	43
PYRENEES-ORIENTALES (66)	345,725	19
REUNION (974)	159,678	2
RHONE (69)	1,707,520	23
SAONE-ET-LOIRE (71)	430,613	44
SARTHE (72)	376,372	56
SAVOIE (73)	210,385	24
SEINE-ET-MARNE (77)	852,713	67
SEINE-MARITIME (76)	1,215,160	78
SOMME (80)	437,907	84
TARN (81)	223,957	18
TARN-ET-GARONNE (82)	183,794	31
TERRITOIRE-DE-BELFORT (90)	131,624	5
VAL-D'OISE (95)	1,016,880	20
VAR (83)	217,690	10
VAUCLUSE (84)	481,999	8
VIENNE (86)	123,372	33
VOSGES (88)	109,015	44
YONNE (89)	182,516	45
YVELINES (78)	135,984	28
Total	40,255,715	3481

Datasource : SISPEA (Onema) – DDT(M) – 2009

- **APPENDIX 9: NUMBER OF INTERMUNICIPAL SERVICES AND POPULATION CONNECTED TO AN INTERMUNICIPAL SERVICE FOR COLLECTIVE SANITATION**

DEPARTMENTS	Population connected to an intermunicipal service	Intermunicipal services
AIN (01)	205,211	21
AISNE (02)	346,274	20
ALLIER (03)	211,236	6
ALPES-DE-HAUTE-PROVENCE (04)	22,423	7
ALPES-MARITIMES (06)	136,355	8
ARDECHE (07)	80,599	12
ARDENNES (08)	102,170	11
ARIEGE (09)	108,267	5
AUBE (10)	30,811	14
AUDE (11)	176,205	7
AVEYRON (12)	14,069	5
BAS-RHIN (67)	1,009,207	41
BOUCHES-DU-RHONE (13)	1,578,529	12
CALVADOS (14)	462,610	50
CANTAL (15)	65,415	5
CHARENTE (16)	65,519	9
CHARENTE-MARITIME (17)	439,787	15
CHER (18)	46,960	12
CORREZE (19)	100,769	7
CORSE-DU-SUD (2A)	94,474	6
COTE-D'OR (21)	389,957	31
COTES-D'ARMOR (22)	40,094	19
CREUSE (23)	ND	6
DEUX-SEVRES (79)	325,382	19
DORDOGNE (24)	86,891	13
DOUBS (25)	302,019	28
DROME (26)	22,290	7
ESSONNE (91)	879,233	22
EURE (27)	278,164	18
EURE-ET-LOIR (28)	151,317	22
FINISTERE (29)	425,410	16
GARD (30)	379,899	20
GERS (32)	21,536	4
GIRONDE (33)	1,105,509	45
HAUTE-CORSE (2B)	110,420	12
HAUTE-GARONNE (31)	827,803	18
HAUTE-LOIRE (43)	95,704	11
HAUTE-MARNE (52)	36,885	10
HAUTES-ALPES (05)	29,074	9
HAUTE-SAONE (70)	41,534	18
HAUTE-SAVOIE (74)	461,973	30
HAUTES-PYRENEES (65)	34,327	9
HAUTE-VIENNE (87)	201,683	2
HAUT-RHIN (68)	595,162	48
HAUTS-DE-SEINE (92),PARIS (75),SEINE-SAINT-DENIS (93),VAL-DE-MARNE (94)	3,279,997	12
HERAULT (34)	716,596	19
ILLE-ET-VILAINE (35)	ND	21
INDRE (36)	98,990	8
INDRE-ET-LOIRE (37)	122,984	19
ISERE (38)	1,005,983	51

JURA (39)	101,102	19
LANDES (40)	160,046	8
LOIRE (42)	159,992	11
LOIRE-ATLANTIQUE (44)	275,775	13
LOIRET (45)	404,521	18
LOIR-ET-CHER (41)	153,384	17
LOT (46)	27,365	9
LOT-ET-GARONNE (47)	182,721	12
LOZERE (48)	7,227	5
MAINE-ET-LOIRE (49)	504,036	14
MANCHE (50)	240,244	25
MARNE (51)	498,213	45
MARTINIQUE (972)	398,427	4
MAYENNE (53)	65,342	8
MEURTHE-ET-MOSELLE (54)	560,356	35
MEUSE (55)	108,001	20
MORBIHAN (56)	179,734	12
MOSELLE (57)	796,086	54
NIEVRE (58)	99,402	16
NORD (59)	2,046,531	31
OISE (60)	473,305	53
ORNE (61)	154,111	20
PAS-DE-CALAIS (62)	1,415,047	48
PUY-DE-DOME (63)	251,180	25
PYRENEES-ATLANTIQUES (64)	482,534	27
PYRENEES-ORIENTALES (66)	319,474	16
REUNION (974)	341,348	3
RHONE (69)	1,521,221	26
SAONE-ET-LOIRE (71)	208,296	19
SARTHE (72)	42,658	13
SAVOIE (73)	281,008	26
SEINE-ET-MARNE (77)	792,890	44
SEINE-MARITIME (76)	1,154,844	71
SOMME (80)	239,475	17
TARN-ET-GARONNE (82)	22,664	4
TERRITOIRE-DE-BELFORT (90)	127,149	6
VAL-D'OISE (95)	735,350	18
VAR (83)	189,357	7
VAUCLUSE (84)	286,101	9
VENDEE (85)	198,426	12
VIENNE (86)	93,008	9
VOSGES (88)	162,244	24
YONNE (89)	121,212	16
YVELINES (78)	ND	51
Total	33,945,113	1780

Datasource : SISPEA (Onema) – DDT(M) – 2009

- **APPENDIX 10: NUMBER OF SERVICES AND AVERAGE POPULATION PER SERVICE FOR WATER**

DEPARTMENTS	Number of drinking water services	Average no. of inhab./service/dpt
Ain	211	2,781
Aisne	249	2,112
Allier	34	10,464
Alpes-de-Haute-Provence	192	856
Hautes-Alpes	183	730
Alpes-Maritimes	125	8,602
Ardèche	169	1,843
Ardennes	272	1,075
Ariège	198	830
Aube	192	1,590
Aude	402	692
Aveyron	103	2,778
Bouches-du-Rhône	101	19,653
Calvados	143	4,793
Cantal	175	884
Charente	51	7,103
Charente-Maritime	50	12,133
Cher	99	3,257
Corrèze	146	1,717
Côte-d'Or	289	1,820
Côtes-d'Armor	113	5,178
Creuse	90	1,376
Dordogne	130	3,213
Doubs	310	1,733
Drôme	254	1,841
Eure	111	5,219
Eure-et-Loir	314	1,356
Finistère	184	4,981
Gard	236	2,889
Haute-Garonne	132	8,724
Gers	51	3,253
Gironde	111	12,921
Hérault	203	4,171
Ille-et-Vilaine	57	17,155
Indre	63	3,802
Indre-et-Loire	116	5,065
Isère	315	3,829
Jura	193	1,392
Landes	63	5,985
Loir-et-Cher	131	2,591
Loire	147	4,721

Haute-Loire	141	1,639
Loire-Atlantique	23	55,943
Loiret	233	2,852
Lot	107	1,598
Lot-et-Garonne	39	8,204
Lozère	171	479
Maine-et-Loire	51	15,433
Manche	111	4,618
Marne	244	2,318
Haute-Marne	365	529
Mayenne	73	4,271
Meurthe-et-Moselle	266	2,794
Meuse	237	821
Morbihan	50	14,446
Moselle	189	5,644
Nièvre	92	2,440
Nord	60	36,366
Oise	256	3,159
Orne	132	2,300
Pas-de-Calais	355	4,067
Puy-de-Dôme	161	3,955
Pyrénées-Atlantiques	127	5,220
Hautes-Pyrénées	197	1,165
Pyrénées-Orientales	157	2,811
Bas-Rhin	105	10,452
Haut-Rhin	227	3,330
Rhône	49	35,783
Haute-Saône	318	744
Saône-et-Loire	102	5,647
Sarthe	86	6,620
Savoie	223	1,831
Haute-Savoie	224	3,222
Paris	1	2,215,197
Seine-Maritime	155	8,155
Seine-et-Marne	279	4,293
Yvelines	90	13,396
Deux-Sèvres	64	5,855
Somme	217	2,614
Tarn	95	3,856
Tarn-et-Garonne	49	4,935
Var	150	5,840
Vaucluse	32	17,192
Vendée	5	124,219
Vienne	59	7,347
Haute-Vienne	94	4,015
Vosges	282	1,396

Yonne	229	1,543
Territoire de Belfort	10	13,486
Essonne	68	15,640
Hauts-de-Seine	2	780,435
Seine-Saint-Denis	4	379,768
Val-de-Marne	15	87,948
Val-d'Oise	65	8,099
Corse-du-Sud	104	1,327
Haute-Corse	234	710
Guadeloupe	ND	ND
Martinique	7	57,670
French Guiana	ND	ND
Reunion Island	28	28,678
TOTAL	14,217	4,359

Datasource : SISPEA (Onema) – DDT(M) – 2009

- **APPENDIX 11: NUMBER OF SERVICES AND AVERAGE POPULATION PER SERVICE FOR COLLECTIVE SANITATION**

DEPARTMENTS	Number of collective sanitation services	Average no. of inhab./service/dpt
Ain	344	1,702
Aisne	98	4,012
Allier	146	2,157
Alpes-de-Haute-Provence	171	848
Hautes-Alpes	154	804
Alpes-Maritimes	131	3,561
Ardèche	267	1,184
Ardennes	119	1,936
Ariège	126	951
Aube	96	2,462
Aude	361	934
Aveyron	261	1,086
Bouches-du-Rhône	104	19,085
Calvados	163	3,677
Cantal	204	739
Charente	132	2,275
Charente-Maritime	38	14,096
Cher	112	2,491
Corrèze	162	1,442
Côte-d'Or	434	1,171
Côtes-d'Armor	228	ND
Creuse	122	ND
Dordogne	226	1,481
Doubs	398	1,314
Drôme	359	1,314
Eure	112	3,695
Eure-et-Loir	163	2,197
Finistère	206	4,262
Gard	278	2,387
Haute-Garonne	177	5,618
Gers	108	1,212
Gironde	149	8,991
Hérault	299	3,434
Ille-et-Vilaine	298	ND
Indre	136	1,574
Indre-et-Loire	187	3,040
Isère	273	4,387
Jura	205	1,156
Landes	71	4,799
Loir-et-Cher	178	1,821
Loire	307	2,433

Haute-Loire	176	1,295
Loire-Atlantique	178	7,215
Loiret	193	3,301
Lot	118	1,231
Lot-et-Garonne	45	6,467
Lozère	133	569
Maine-et-Loire	246	3,203
Manche	187	2,308
Marne	156	3,451
Haute-Marne	248	699
Mayenne	214	1,437
Meurthe-et-Moselle	391	1,857
Meuse	66	2,316
Morbihan	195	3,659
Moselle	329	3,179
Nièvre	149	1,449
Nord	53	38,614
Oise	221	3,127
Orne	168	1,580
Pas-de-Calais	103	12,431
Puy-de-Dôme	393	1,569
Pyrénées-Atlantiques	161	3,787
Hautes-Pyrénées	121	1,516
Pyrénées-Orientales	157	2,760
Bas-Rhin	92	11,899
Haut-Rhin	170	4,024
Rhône	159	10,701
Haute-Saône	478	436
Saône-et-Loire	385	1,407
Sarthe	320	1,738
Savoie	196	2,059
Haute-Savoie	120	6,004
Paris	1	1,107,599
Seine-Maritime	151	8,160
Seine-et-Marne	271	4,494
Yvelines	190	ND
Deux-Sèvres	54	6,581
Somme	109	3,531
Tarn	10	12,186
Tarn-et-Garonne	116	1,885
Var	151	4,771
Vaucluse	84	5,971
Vendée	220	2,716
Vienne	219	1,966
Haute-Vienne	182	2,085
Vosges	111	2,826

Yonne	275	1,132
Territoire de Belfort	17	8,208
Essonne	111	11,148
Hauts-de-Seine	24	65,036
Seine-Saint-Denis	33	30,585
Val-de-Marne	30	28,316
Val-d'Oise	114	8,951
Corse-du-Sud	98	1,372
Haute-Corse	197	835
Guadeloupe	ND	ND
Martinique	14	28,835
French Guiana	ND	ND
Reunion Island	22	35,179
TOTAL	17,228	3,128

Datasource : SISPEA (Onema) – DDT(M) – 2009


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