National Water Quality and Sanitation Plan

Wastewater treatment systems in small towns

Dirección General del Agua

Ministerio de Medio Ambiente y Medio Rural y Marino de España

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National Sewage and Wastewater Treatment Plan: 1995-2005

- Bilateral Agreements for the proper performance of Royal Decree Law 11/1995.
- Investments 11.400 M €.
- The Plan called for a contribution from the General Administration of 25% of the total investment for each region.
- Compliance with the Directive 91/271/EEC

National Sewage and Wastewater Treatment Plan: 1995-2005

- Directive 91/271/EEC aims to reduce levels of pollution of surface waters from urban sewage.
- This Directive applies to domestic wastewater, storm water and industrial wastewater. The industries that discharge directly to the collectors network prior to obtain permission.
- RDL11/1995 states:
  - The Regions shall identify, the agglomerations areas in its territory.
  - The terms and conditions to be met by agglomerations depending on the treatment (primary, secondary, more stringent).
  - The Regions shall draw up a plan or program reported to the Central Government.
  - Shall be declared "sensitive areas“, reviewed every four years. Quality specifications must be met within 7 years.

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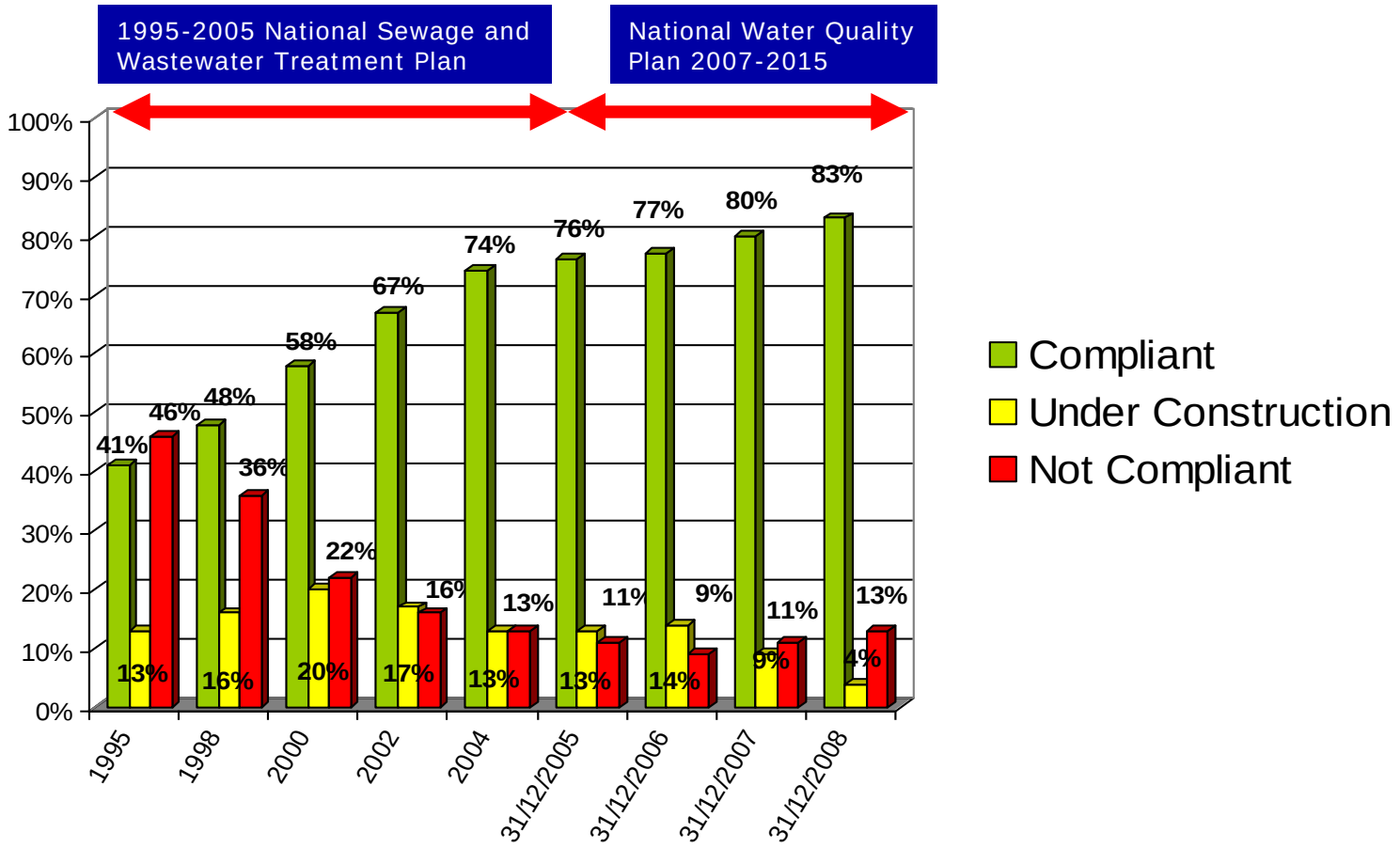
Situation at January - 2009

Compliance evolution of the 1995-2005 National Sewage and Wastewater Treatment Plan and later years



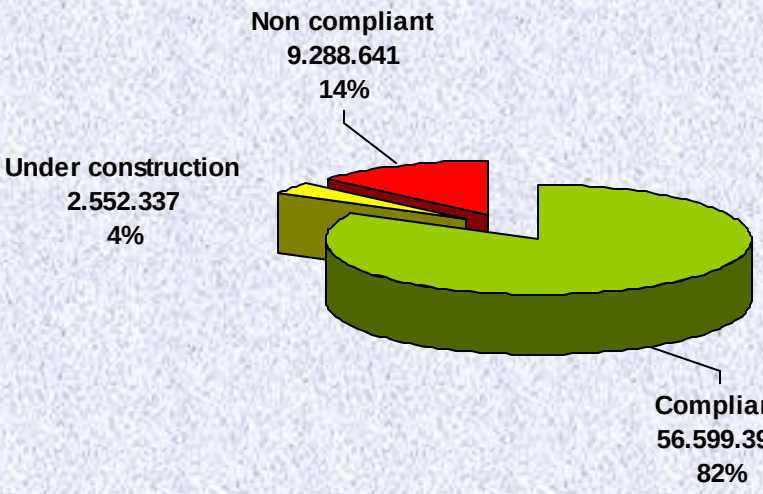
Situation at January - 2009

Degree of conformity distribution (agglomerations > 2.000 p-e)

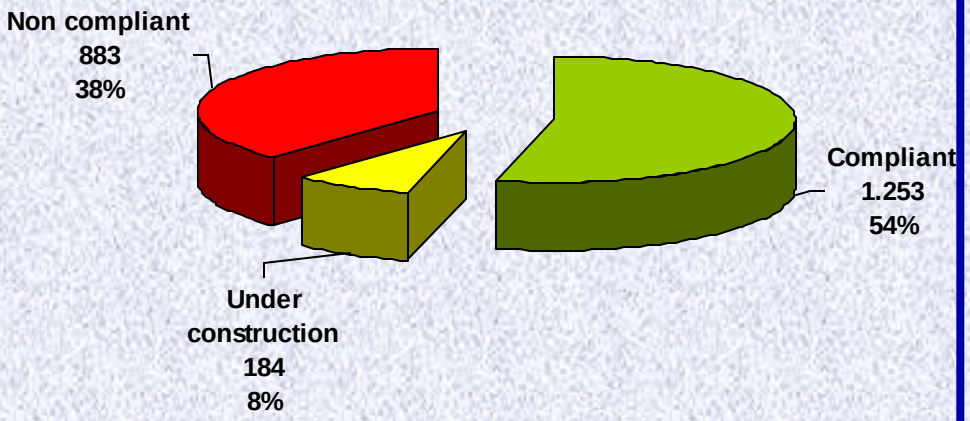
Total Load : 68.772.103 p-e

Number of agglomerations: 2.320

Conformity in load



Conformity in number of agglomerations



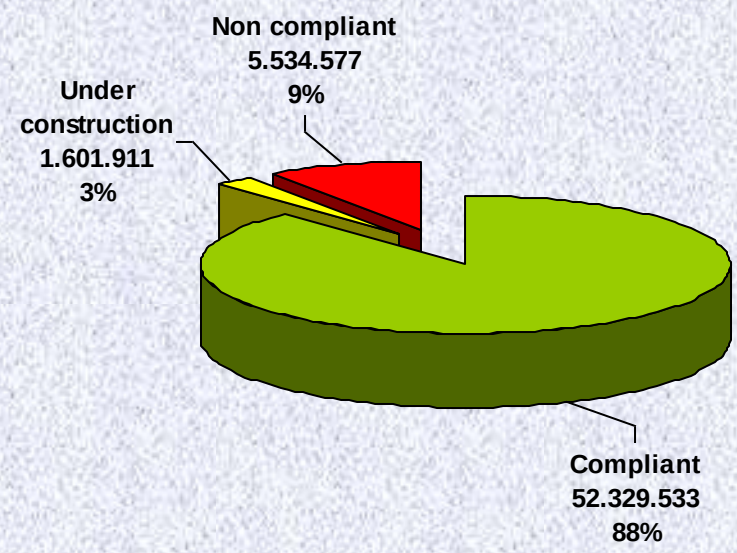
Situation at January - 2009

Degree of conformity distribution (agglomerations > 15.000 p-e)

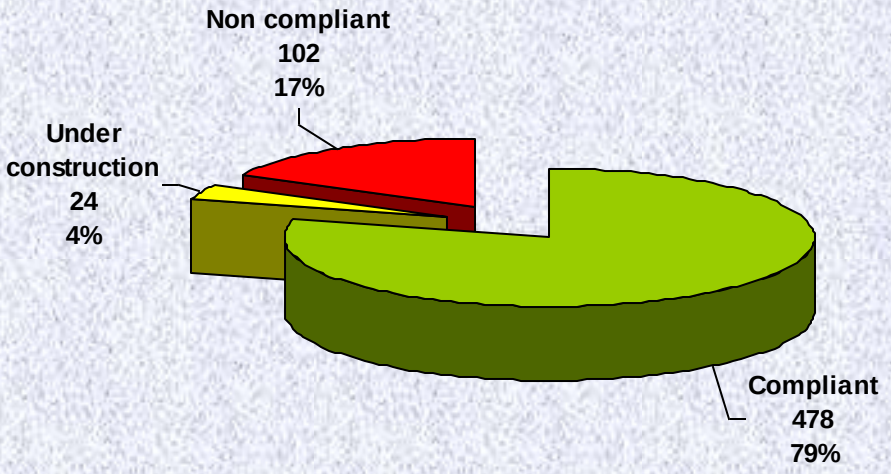
Total Load : 59.466.021 p-e

Number of agglomerations : 604

Conformity in load



Conformity in number of agglomerations



Situation at January - 2009

Pollution load distribution as a function of the agglomeration size

Agglomerarition Size	Load (p-e)		Number of Agglomerations	
From 2.000 to 15.000 p-e	9.456.082	14%	1.726	74%
From 15.000 to 150.000 p-e	22.760.333	33%	504	22%
Larger than 150.000 p-e	36.555.688	53%	90	4%
TOTAL	**68.772.103**	**100%**	**2.320**	**100%**

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Legislation in European Union concerning urban waste-water treatment (Directive 91/271/CEE)

- **Urban Agglomerations > 2.000 p-e** shall be subject to **secondary treatment** .
- Urban Agglomerations in **sensitive areas** (water bodies under special protection) be subject to a **more stringent treatment**.
- **Sensitive areas** shall be **reviewed** at intervals of no more than four years.
- **Members states** shall decide on **measures** to limit pollution from **storm water overflows**.

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Future prospects

Future needs through specific actions

- Actions on **Agglomerations larger than de 2,000 p-e** (unresolved duties according to the Directive 91/271/CEE).
- Actions on **Agglomerations due** to the new designation of **Sensitive Areas.**
- Actions to **fulfill future needs** (remodeling WWTPs already complying the Directive, storm tanks, etc.)
- Actions contributing to reach the objectives of the **Water Framework Directive**, including those affecting Agglomerations larger than 2,000 p-e which should have an adequate treatment.
- **Sanitation actions** (not including treatment)
- Actions focused on promoting **research and development** in the field of sanitation and wastewater treatment.

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New infraestructures: requirements

•The design of new infrastructure must be adapted to new prospects to achieve effective implementation of Directive 91/271/EEC and hence of the Water Framework Directive.

- Occupying a smaller footprint.
- Major environmental requirements.
- Greater effort in R + D + i for designing treatment processes demanding.

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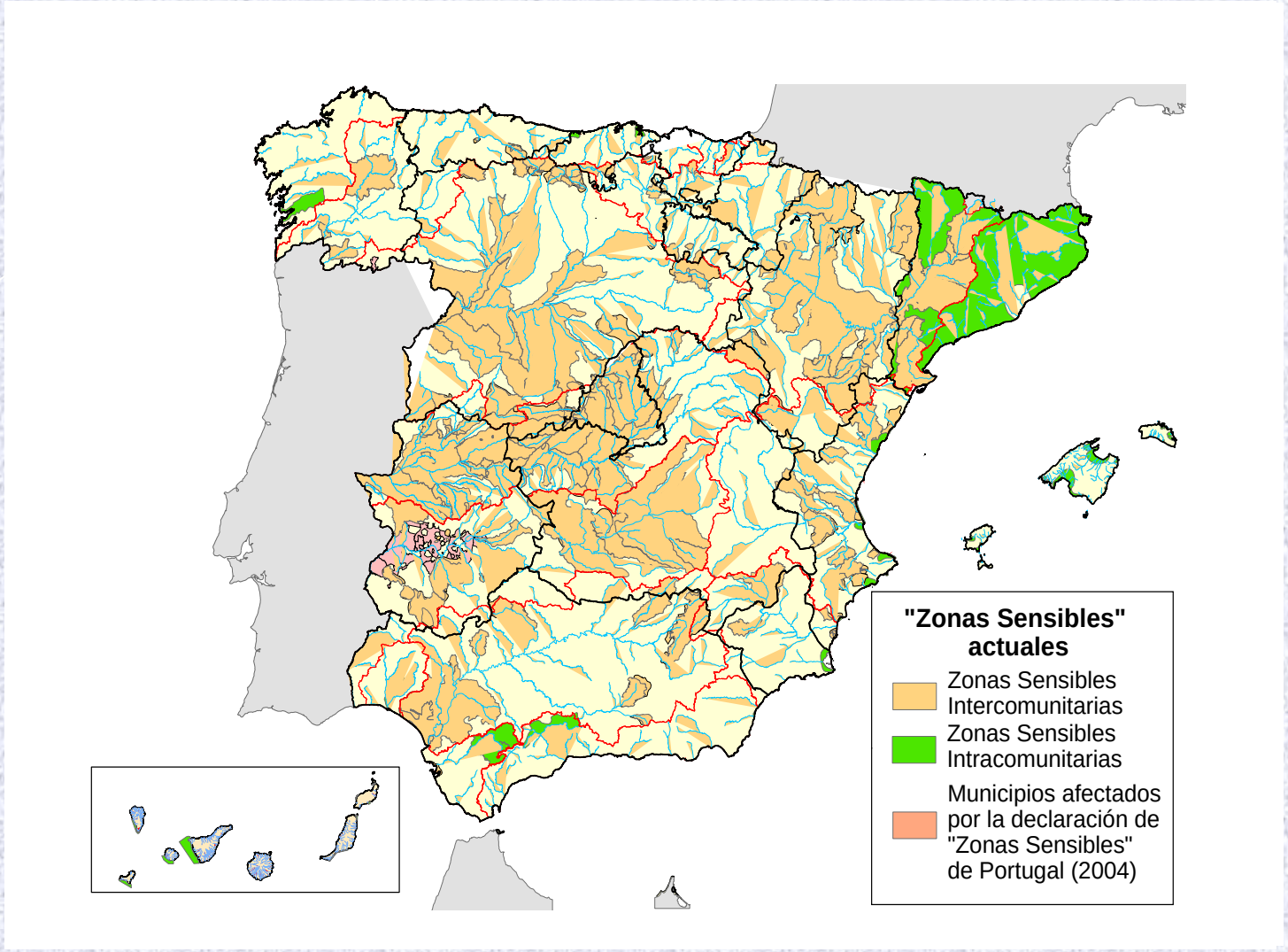
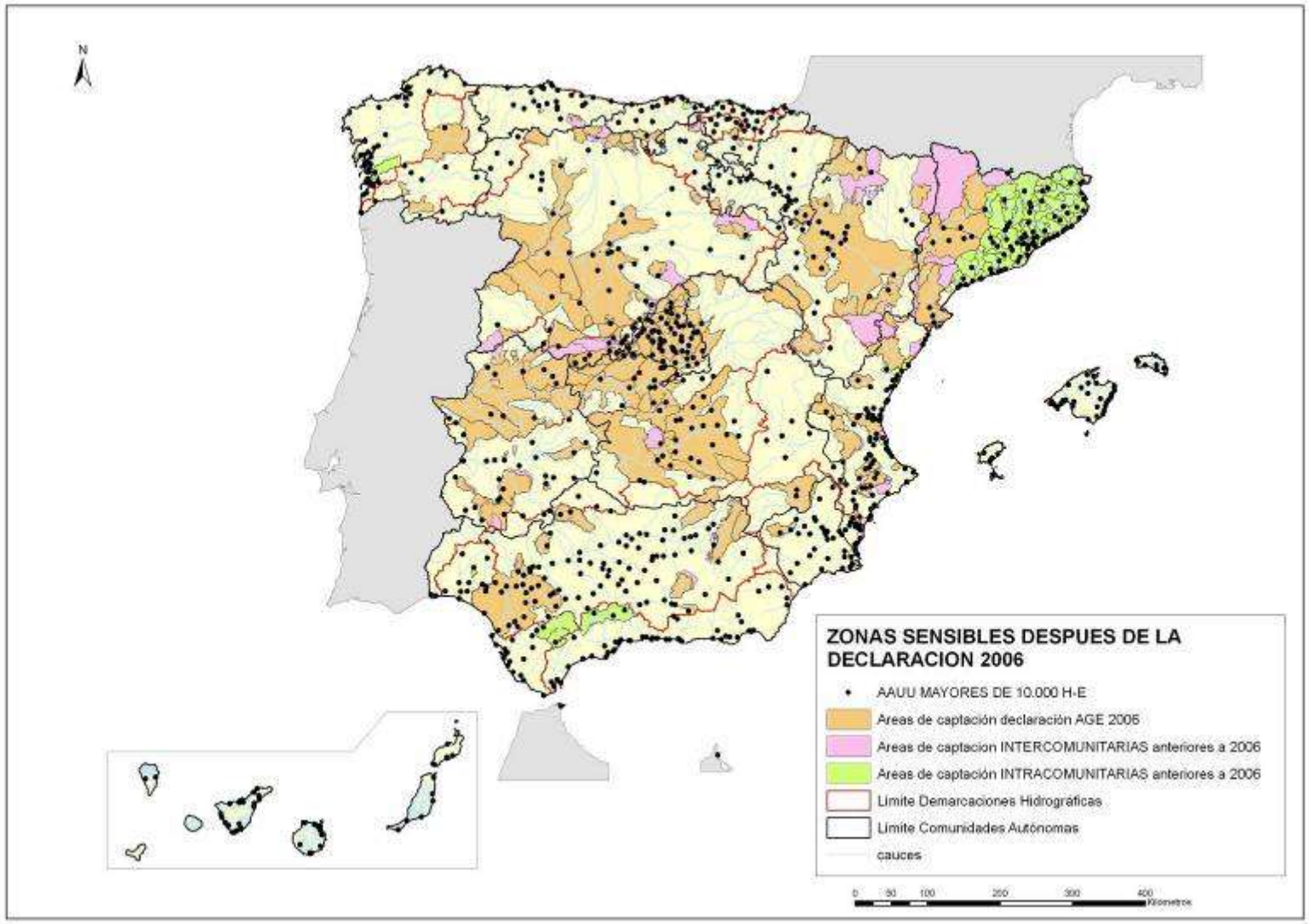
Designation of Sensitive Areas - July 2006



Agglomerations >10.000 p-e in sensitive Areas



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2007 -2015 National Water Quality Plan

- The new Plan has identified more than 2.100 new proposals for action to be undertaken in the next 10 years with an estimate investment of 19.007 M €.

- Bilateral Agreements between the Central Government and the Regions.

2007 -2015 National Water Quality Plan

Main activities of the new Plan (1/2)::

•Remaining actions from previous period.

•Projects in agglomerations in non sensitive and new sensitive areas.

•Actions to ensure compliance with the environmental objectives of the Water Framework Directive, some of which affect the agglomerations with less than 2.000 p-e have to be adequate treatment available (***"Manual of wastewater treatment systems in small towns"***).

2007 -2015 National Water Quality Plan

Main activities of the new Plan (2/2)::

- Future needs (currently remodeling compliant sewage, storm tanks (about 3.114 million euros), etc.).
- Reorganization proceedings (not including wastewater treatments).
- Actions to promote R + D + i.

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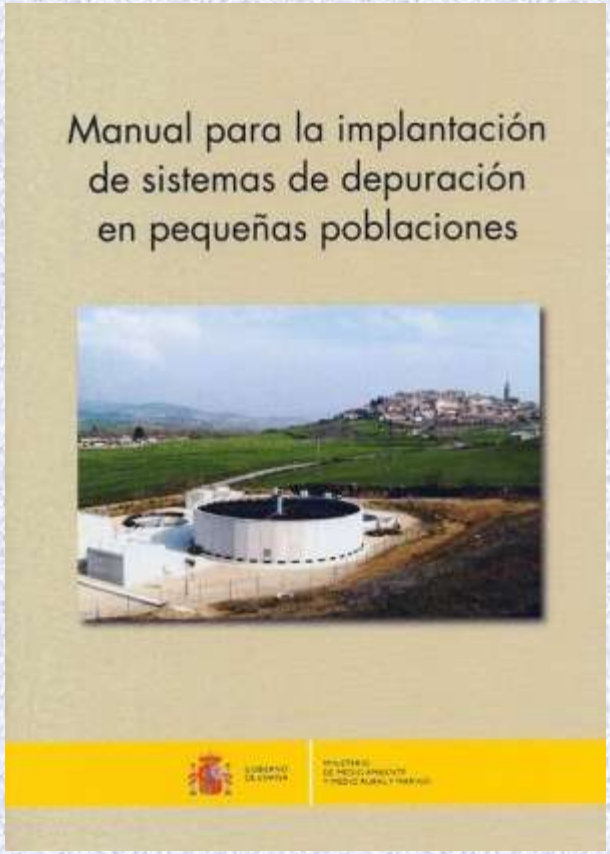
Manual for the implementation of wastewater treatment systems in small towns



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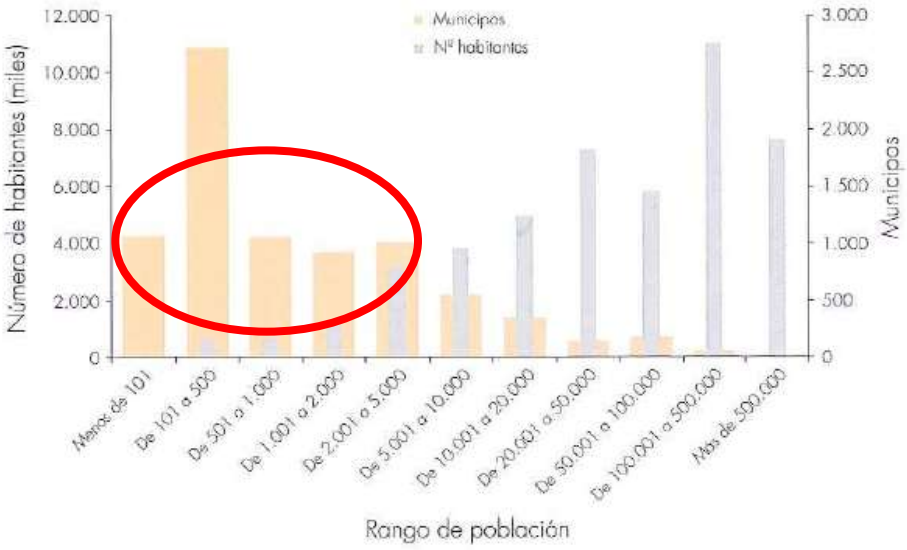
Treatment in small towns

About 6.000 out of the 8.000 Spanish municipalities have a population less than 2.000 inhabitants.

Although the load is not very relevant (about 3 to 4 million p-e), is required the wastewater treatment of these small municipalities to achieve the environmental objectives of the Water Framework Directive:

Figura 1.1. Distribución del número de municipios y número de habitantes por rangos de población. Fuente INE, censo 2009



Treatment in small towns

Water treatment of small villages, less than 2.000 population equivalent, is one of the priorities of the National Water Quality Plan.

Study on wastewater treatment technologies appropriate to small towns, with the objectives:

- Analyze current trends in the water treatment of small towns and their application to the Spanish context.
- Manual for the implementation of treatment systems for small communities, aimed at establishing criteria for the proposed solutions for each type of problems and technical recommendations to assist the drafting of projects, construction, maintenance and operation of these systems.
- Draft a proposed program of priorities for R & D + i for sanitation and wastewater treatment of small populations.
- Information and dissemination of knowledge

Characteristics of the manual of wastewater treatment (1/2)

Analysis of specific conditions that affect the wastewater treatment in small towns,

Criteria for selecting the most appropriate solution in each case,

Technical recommendations, on preparation of the project, execution,operation and maintenance of facilities.

The preparation of the Manual has been a participatory process, which has benefited from technical input from experts.

Consists of 10 chapters that make a very thorough study of applicable technologies and analyzes of the costs of implementation and operation of these small treatment plants.

Characteristics of the manual of wastewater treatment (2/2)

The manual gives particular emphasis to technologies that meet the following requirements:

- Maximum integration into the environment.
- Facilities where potential failures of equipment and processes causing minimal deterioration in effluent quality.
- Processes that require a minimum of operator.
- Equipment that requires minimal maintenance.
- Effective operation in a wide range of flow and load.
- Minimum energy consumption.