

# Council Directive 91/271/EEC of 21 May 1991 concerning urban waste- water treatment

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## The french implementation of the UWWTD

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Ressources, territoires et habitats  
Énergie et climat  
Développement durable  
Prévention des risques  
Infrastructures, transports et mer

Présent  
pour  
l'avenir



Direction de l'Eau et  
de l'Assainissement

Intitulé de la réunion

Ministry of ecology  
Sustainable development, transports and housing

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# The French situation

## facts and figures



# French sensitive areas in 2011

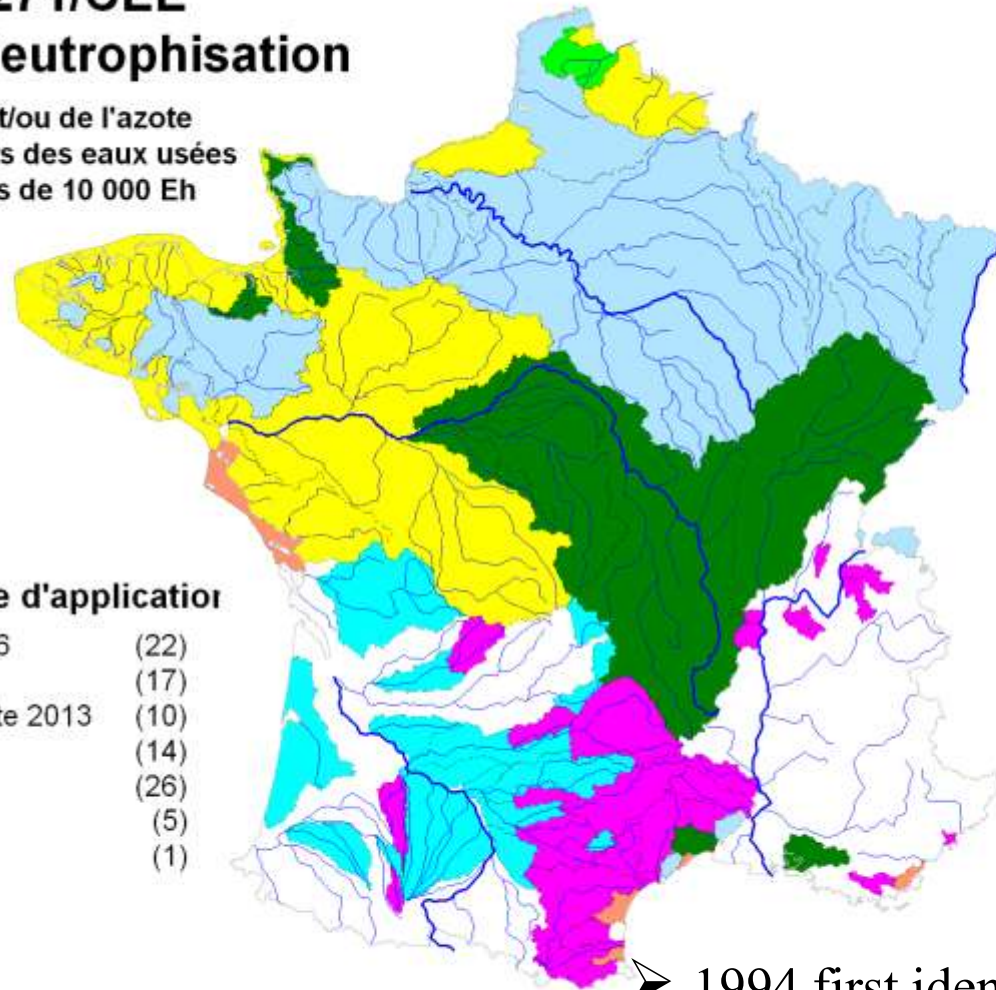
## Directive 91/271/CEE

### Zones sensibles à l'eutrophisation

Traitement du phosphore et/ou de l'azote  
pour les stations de traitements des eaux usées  
des agglomérations de plus de 10 000 Eh

#### Zones sensibles et échéance d'application

Azote et phosphore 1998 et 2006	(22)
Phosphore 1998 et 2006	(17)
Phosphore 1998 ou 2006 et azote 2013	(10)
Azote et phosphore 2013	(14)
Phosphore 2017	(26)
Azote et phosphore 2017	(5)
Azote 1998 et phosphore 2013	(1)



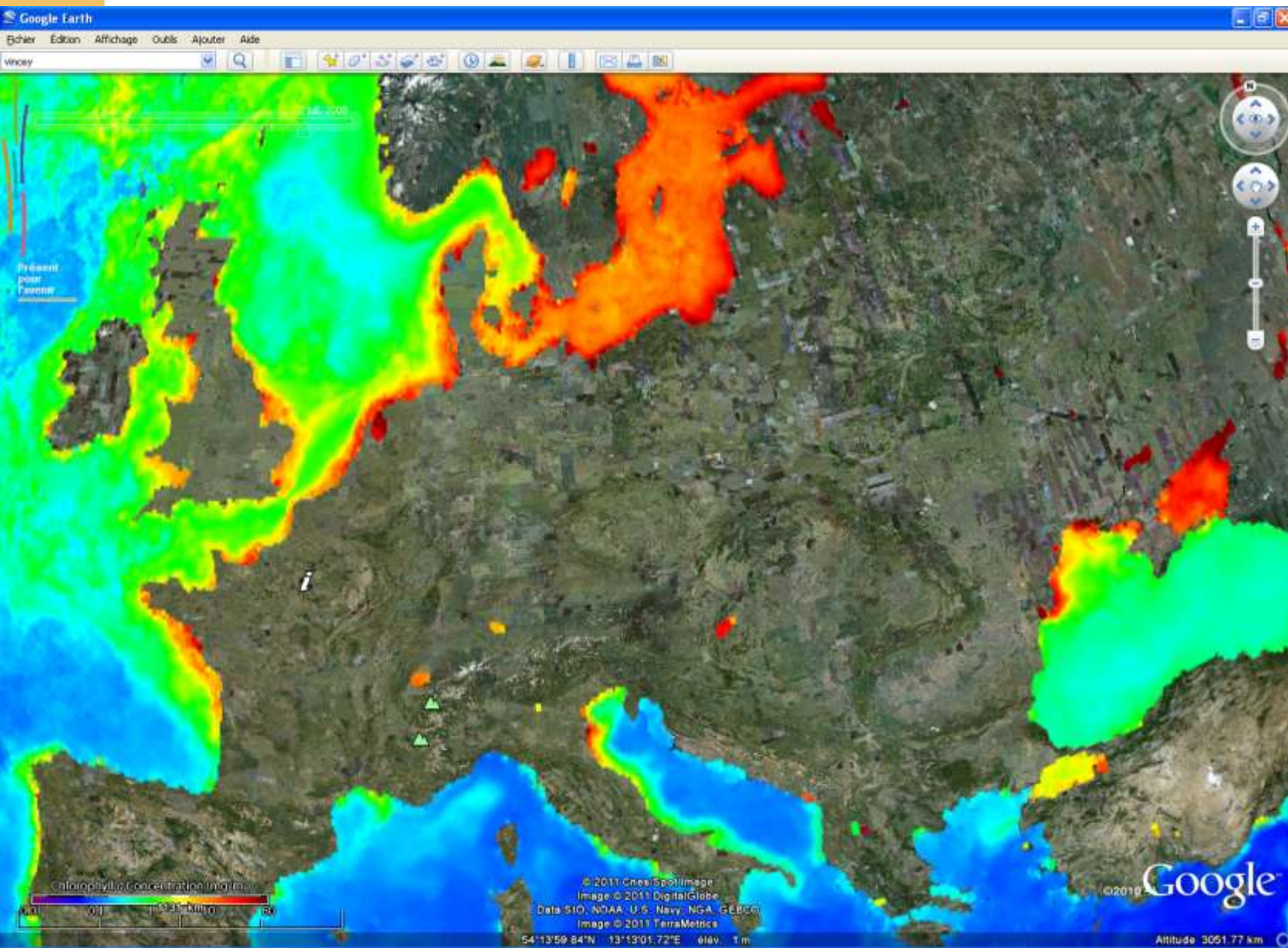
Source : BR - GR - DEB - MEDDTL - aout 2011

3/4 of France

- 1994 first identification → 1998
- 1999 first review → 2006
- 2006 second review → 2013
- 2010 third review → 2017



# Chlorophyll a in europe



31 may 2008



# Population and sanitation

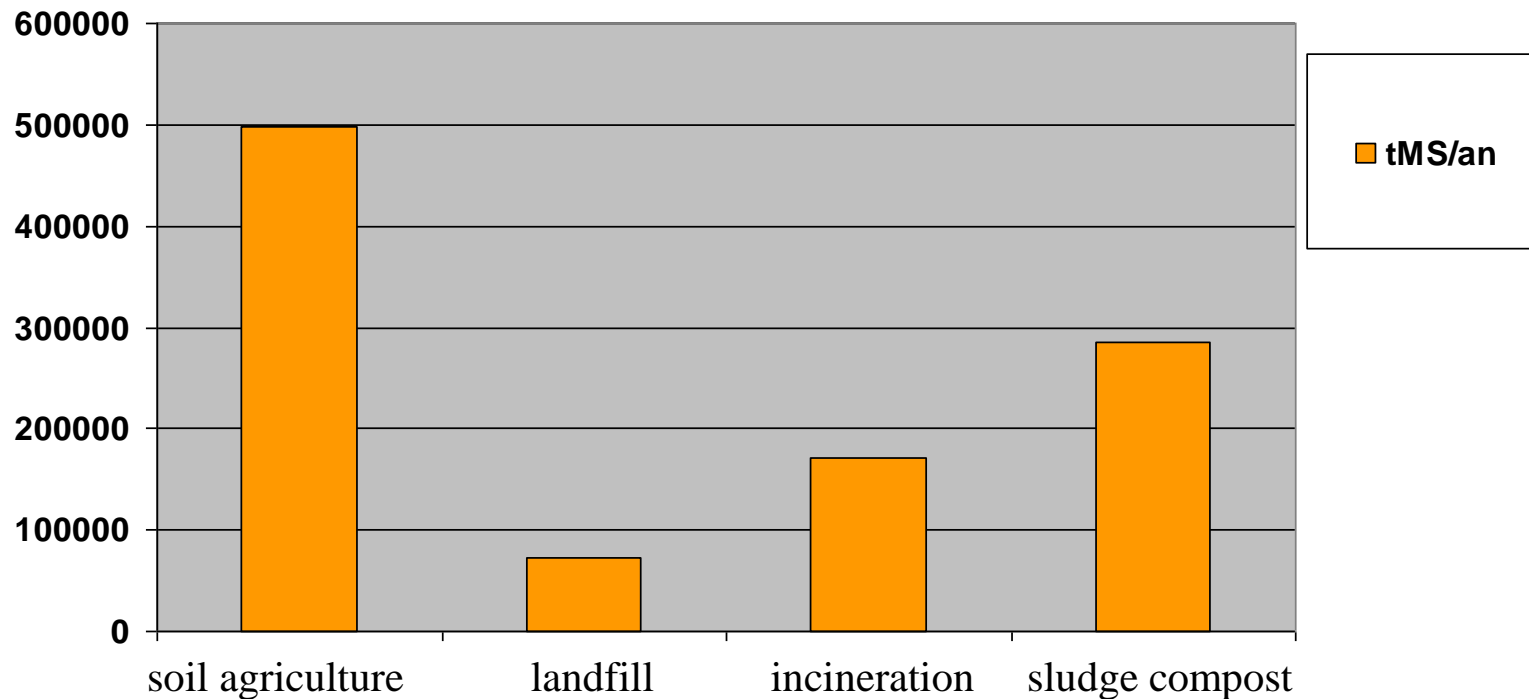
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- 65 millions inhabitants
- about 55 millions inhabitants with UWWTP and collecting system
- between 8 and 10 millions inhabitants with individual sanitation (4 to 5 millions)
- 19 200 agglomerations (3 200 agglomerations  $\geq$  2000 pe)
- 19 300 UWWTP
- 76 millions p.e generated (69 millions p.e  $\geq$  2000 Eh)
- 96 millions p.e capacity
- 5 billions m<sup>3</sup> wastewater produce each year (130 m<sup>3</sup>/s)

# Quantity and destination of sludge

## Répartition des boues évacuées

Quantity of sludge produce each year



1 050 000 t(solids)/year in 2009

45 % → soil agriculture (60% in 2006),

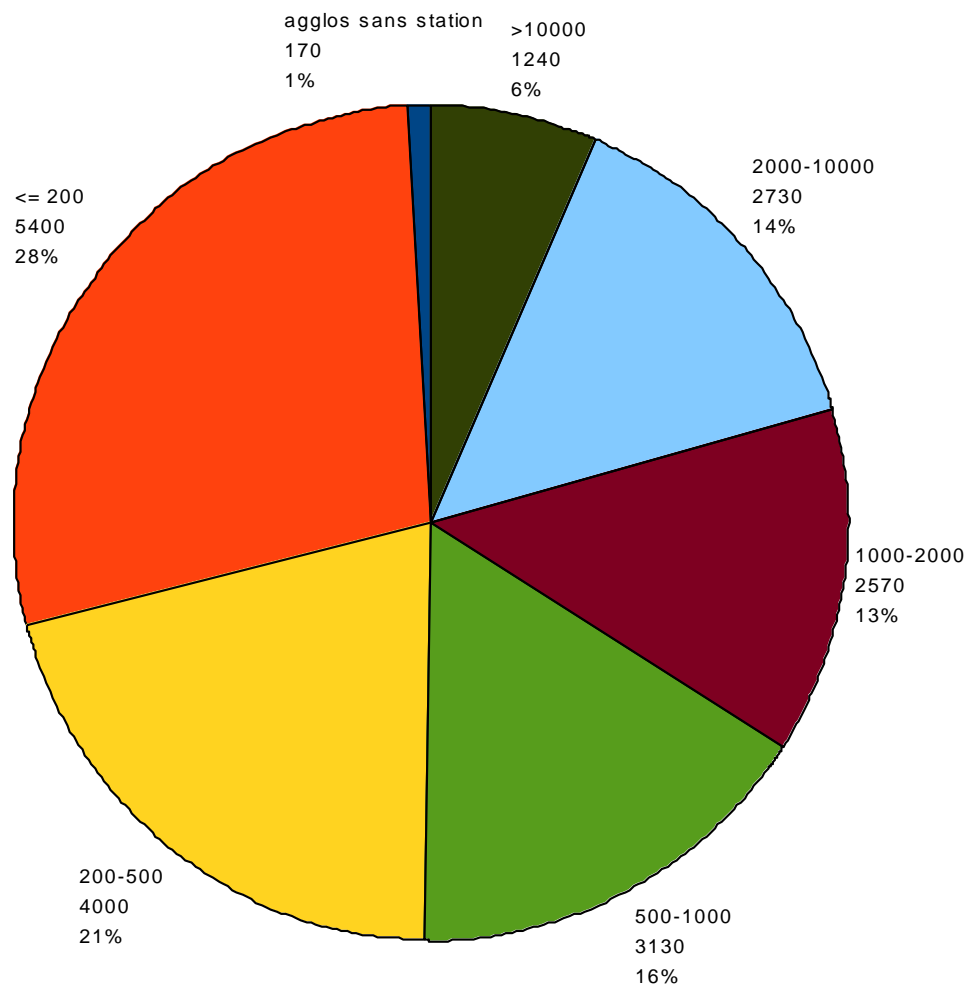
29% sludge compost → soil agriculture

7 % landfill (20% in 2006)

19% incineration

# Number of UWWTP and capacity

Nbr of UWWTP for each capacity in France

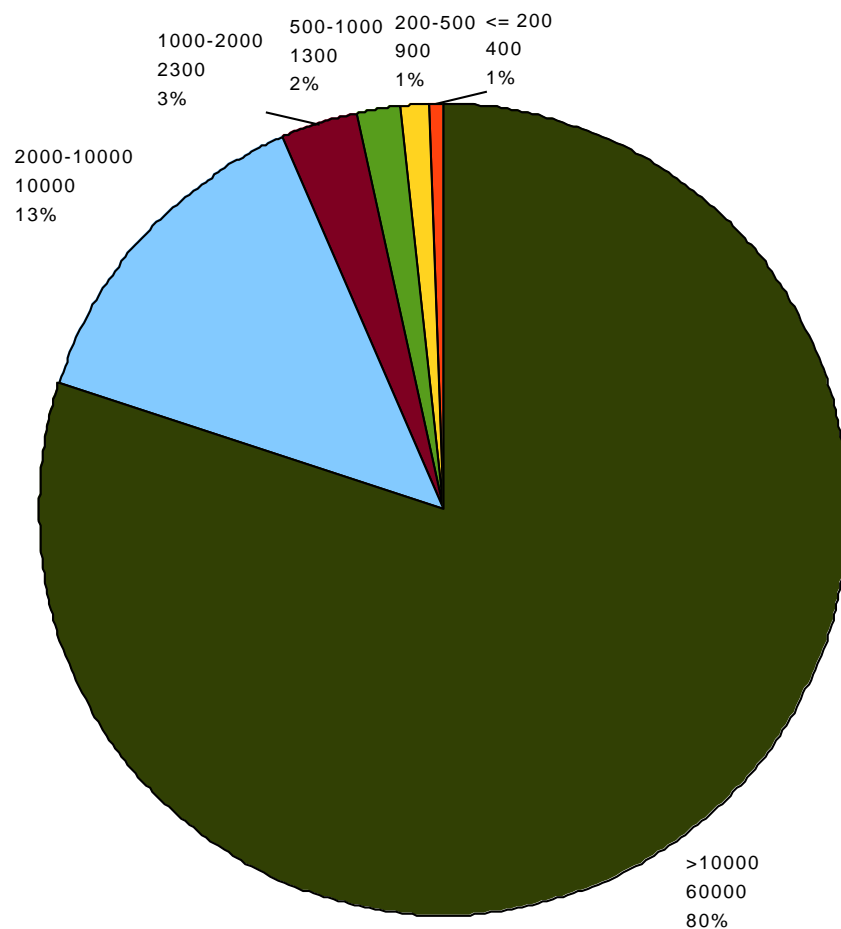


End 2009

80% UWWTP < 2000  
p.e.

# Size of UWWTP and capacity

Load entering UWWTP in France



UWWTP < 2000 p.e.  
receive  
7% of the pollution

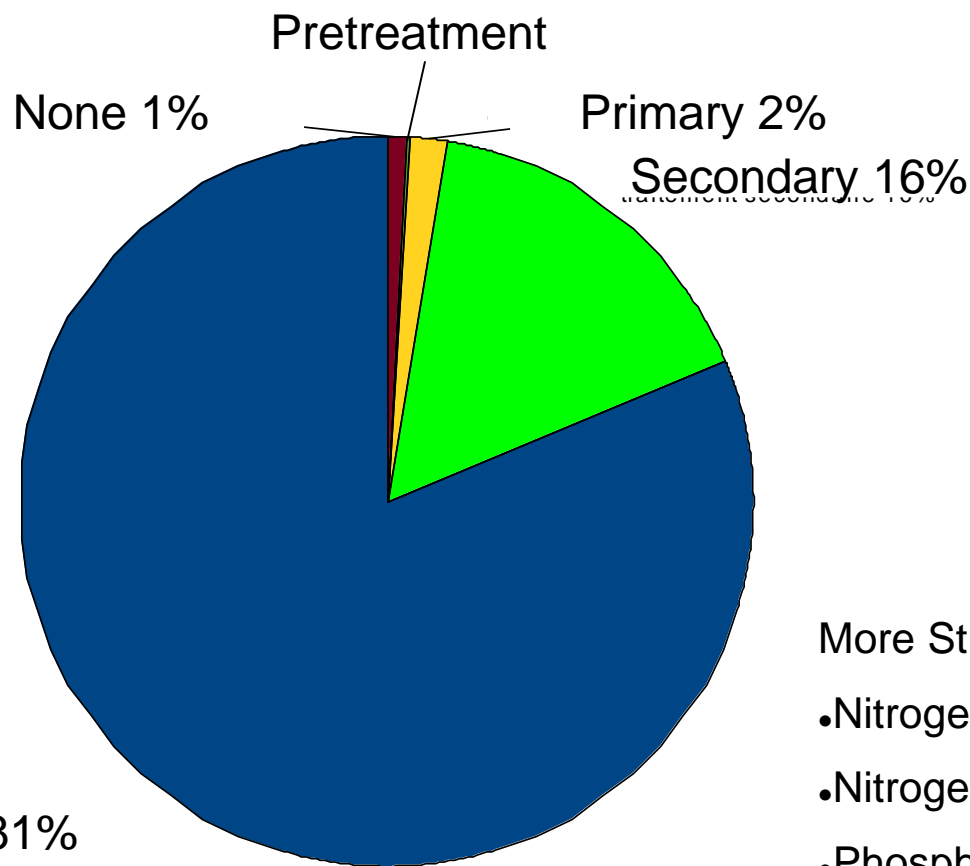
UWWTP < 500 p.e.  
receive  
2% of the pollution

→ The small UWWTP  
are not a global  
problem but can be a  
local problem in a small  
river basin



# Type of treatment for UWWTP > 2000 p.e.

Type of UTTP for UWWTP > 2000 Eh - 2009



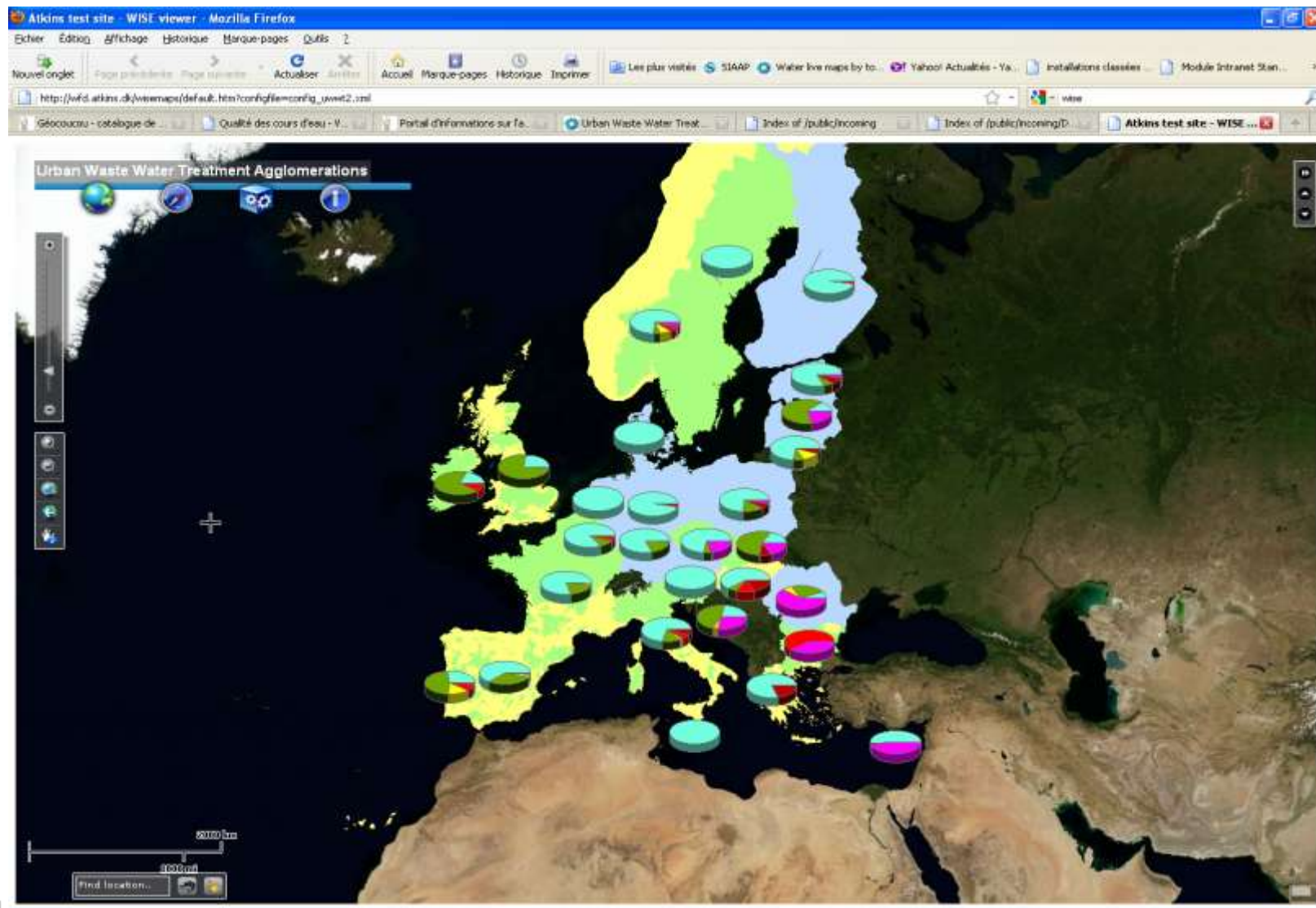
80% of the UWWTP > 2000 p.e. have a more stringent treatment

More Stringent treatment :

- Nitrogen removal alone 35%
- Nitrogen and Phosphorus removal 43%
- Phosphorus removal alone 2%
- Phosphorus and ammonia removal 1%

Desinfection : 6%

# Type of treatment in Europe in 2008



More stringent treatment



Secondary treatment

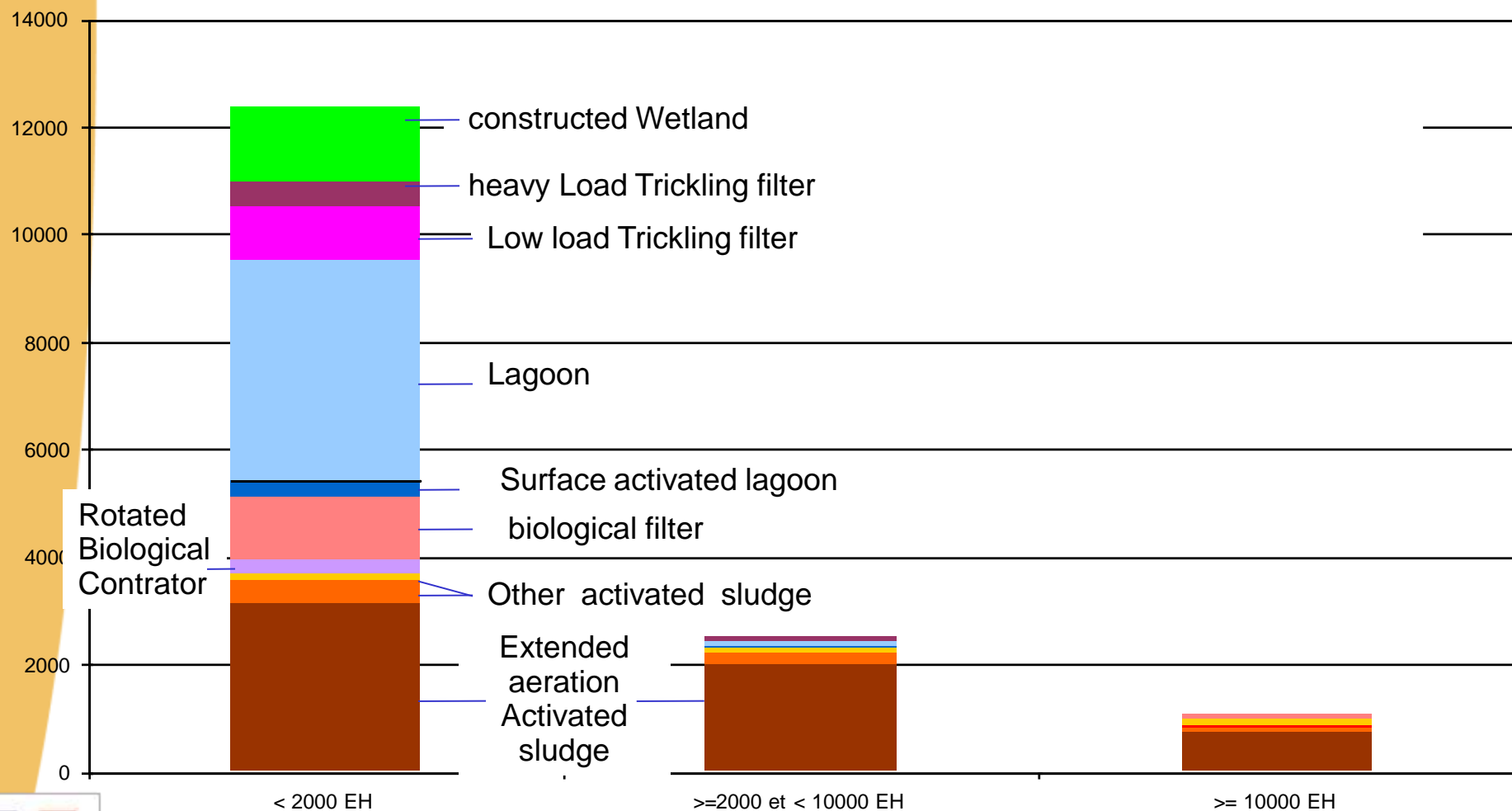
<http://www.eea.europa.eu/themes/water/interactive/soe->

[wfd/atkins.dk/wisemaps/default.htm?configfile=config\\_uwwt2.xml](http://wfd.atkins.dk/wisemaps/default.htm?configfile=config_uwwt2.xml) Workshop on Safe Drinking Water and Sanitation

September 2011

# Type of water treatment used in France

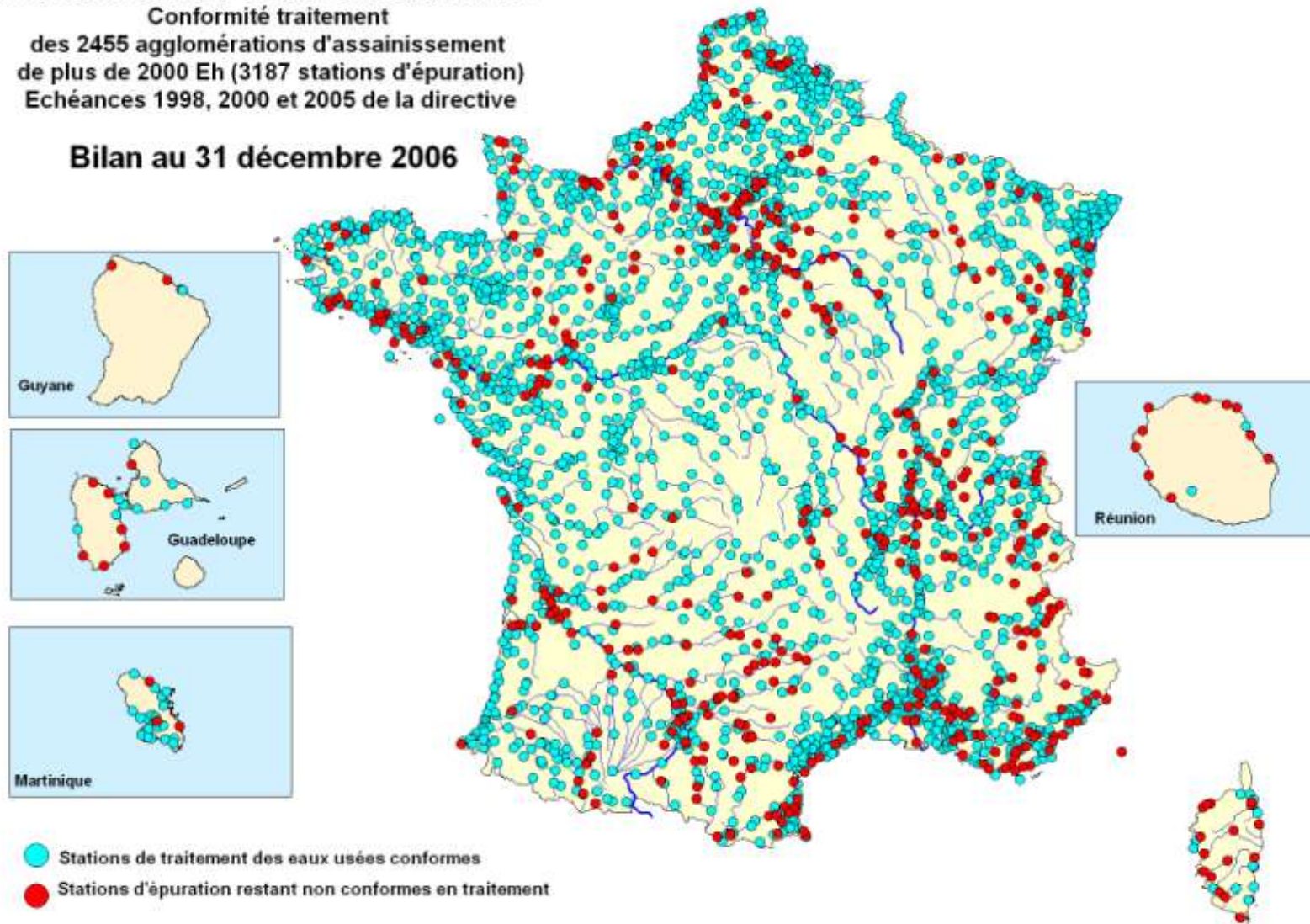
Type of UWWTP with the capacity



# The situation of UWWTP in 2006

Directive 91/271/CEE "eaux urbaines résiduares"  
Conformité traitement  
des 2455 agglomérations d'assainissement  
de plus de 2000 Eh (3187 stations d'épuration)  
Echéances 1998, 2000 et 2005 de la directive

Bilan au 31 décembre 2006



● Stations de traitement des eaux usées conformes  
● Stations d'épuration restant non conformes en traitement

Sources : BOERU - MEEDDM - DGALN - DEB - GR - BR - novembre 2010

20% of UWWTP not with correct treatment.



# The situation of UWWTP in 2010

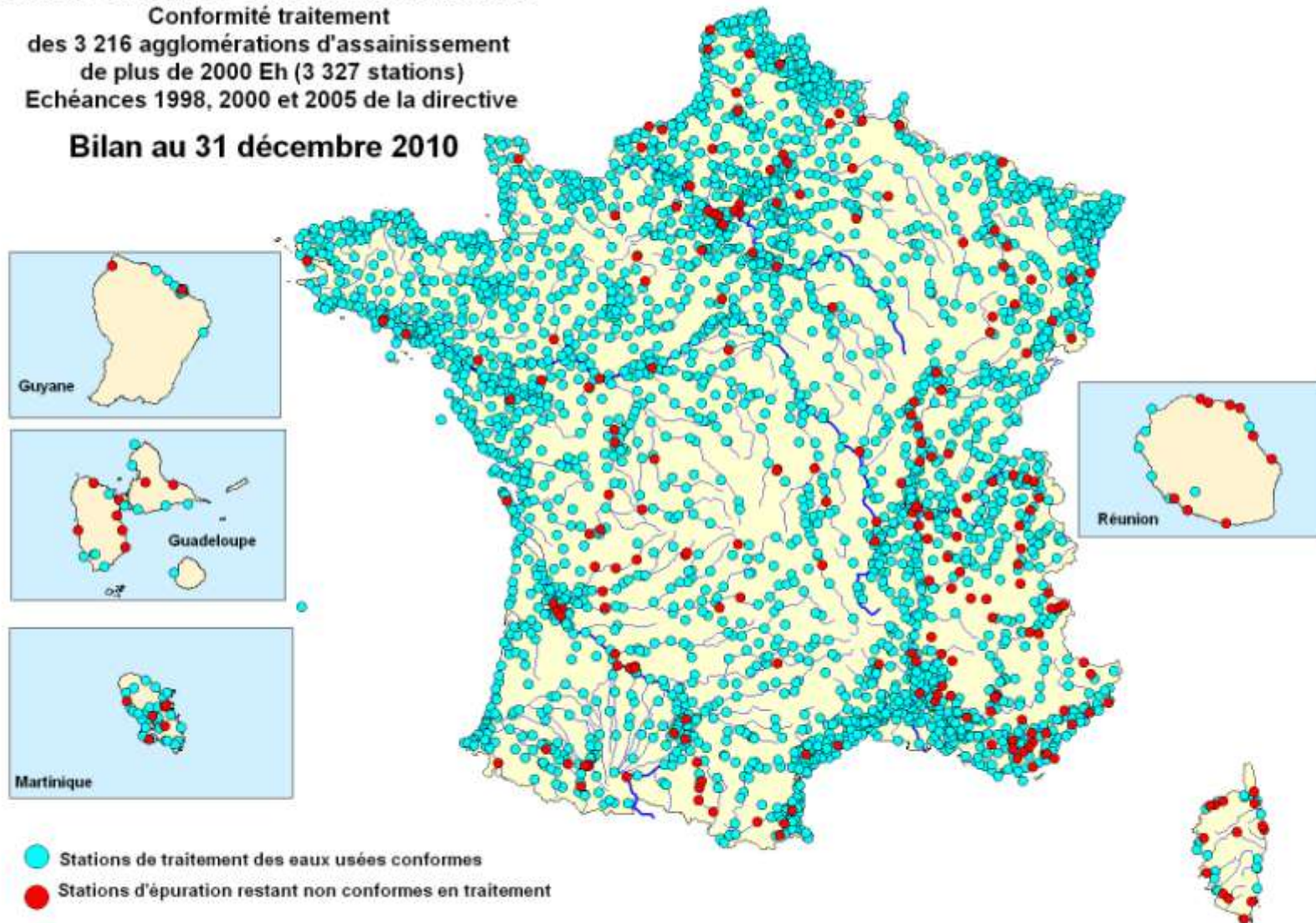
Directive 91/271/CEE "eaux urbaines résiduares"

Conformité traitement

des 3 216 agglomérations d'assainissement  
de plus de 2000 Eh (3 327 stations)

Echéances 1998, 2000 et 2005 de la directive

**Bilan au 31 décembre 2010**



Sources : BDERU - MEEEDM - DGALN - DEB - GR - BR - novembre 2010

8% of UWWTP not with correct treatment. (with 3% new UWWTP appear since 2007)

Life of a treatment plant is between 30 and 40 year.

We have to rebuild each year 3% of the UWWTP



# Performance of UWWTP

## FRANCE 2006

BOD5 : 90 %  
COD : 85 %  
Phosphorus : 60 %  
Totalnitrogen : 40 %  
Kjeldahlnitrogen : 60 %

## FRANCE 2009

BOD5 : 94 %  
COD : 90 %  
Phosphorus : 80 %  
Totalnitrogen : 60 %  
Kjeldahlnitrogen : 75 %

## FRANCE 2012 prospective

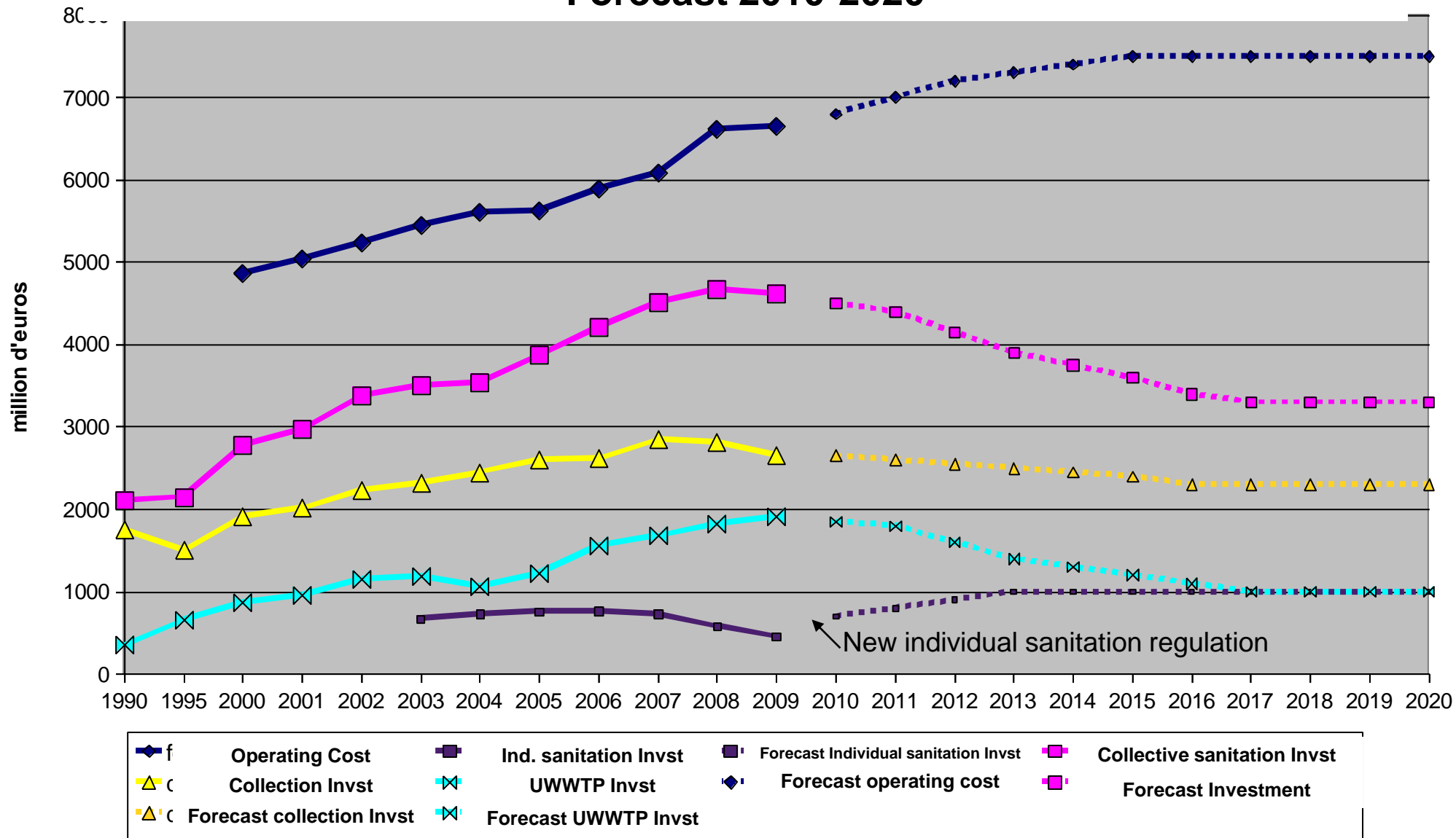
BOD5 : 96 %  
COD : 92 %  
Phosphorus : 85 %  
Totalnitrogen : 75 %  
Kjeldahlnitrogen : 85 %

A extend aeration  
activated sludge UWWTP  
can reach :

BOD5 : 97 %  
COD : 92 %  
Phosphorus (normal  
biological removal) : 40 %  
Phosphorus (boosted  
biological removal) : 60%  
Phosphorus (chemical  
removal) : 80-95 %  
Totalnitrogen : 80-90 %  
Kjeldahlnitrogen : 90-95 %

# The cost of the UWWTD

## Investment and operating cost 1990 – 2009 Forecast 2010-2020



# The cost of the french sanitation

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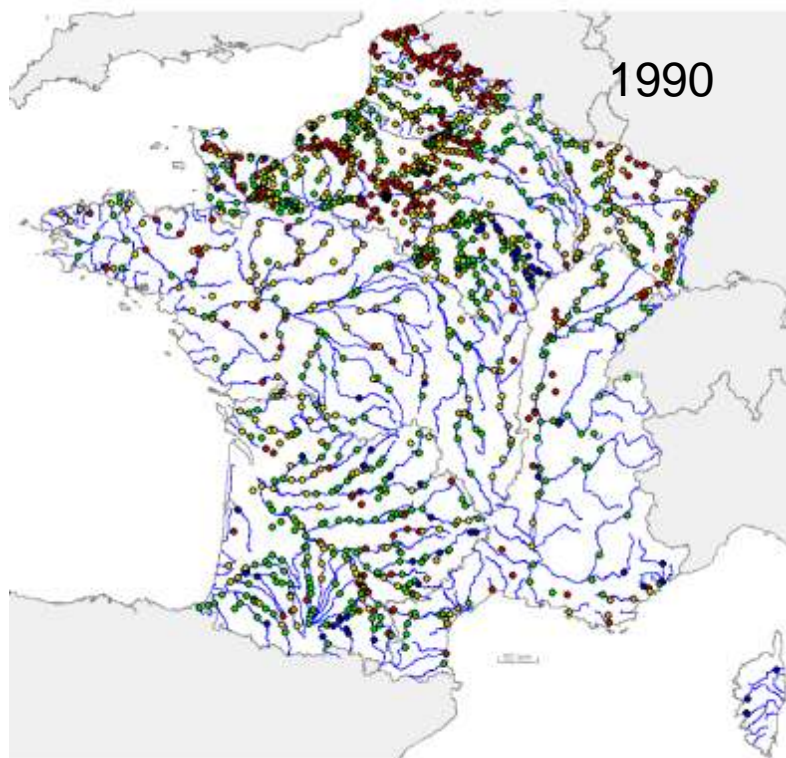
- Each Year, 150 UWWTP more than 2000 p.e rebuilt
- Investment of 75 billions euros on collective sanitation (treatment and collection) from 1990 to the end of 2011.
- Annual operating cost of the system (collection and treatment) is 6,6 billions euros (10% of investment) and will reach more than 7 billions euros when all UWWTP correct.  
→ water prices 3.4 euros/m<sup>3</sup> in 2009
- One euro in a UWWTP is three euros in a collecting system

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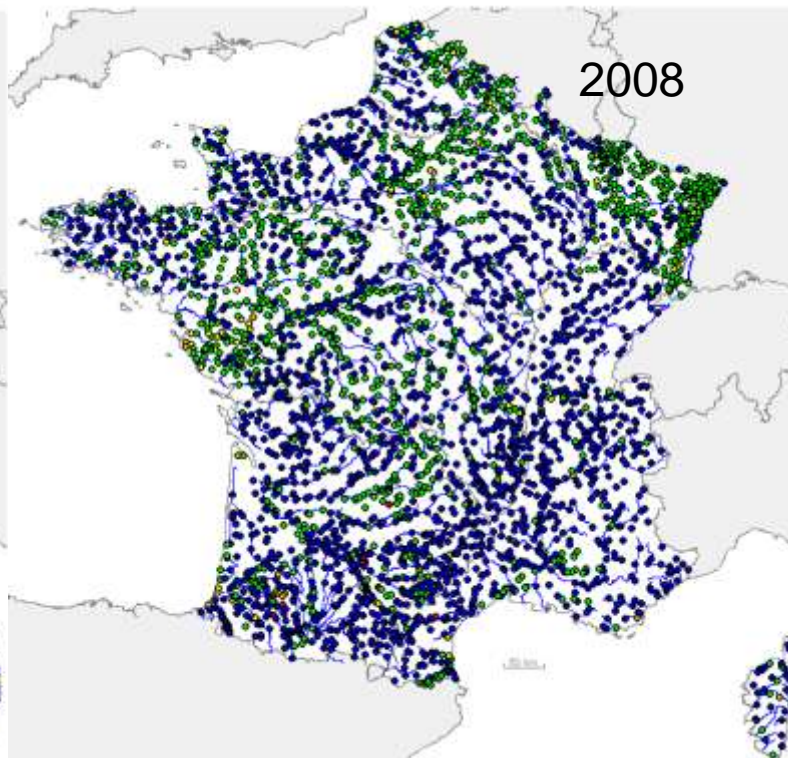
# The results of the investments

## An improvement of the quality of rivers

# Impact on rivers - BOD5



35% in bad status



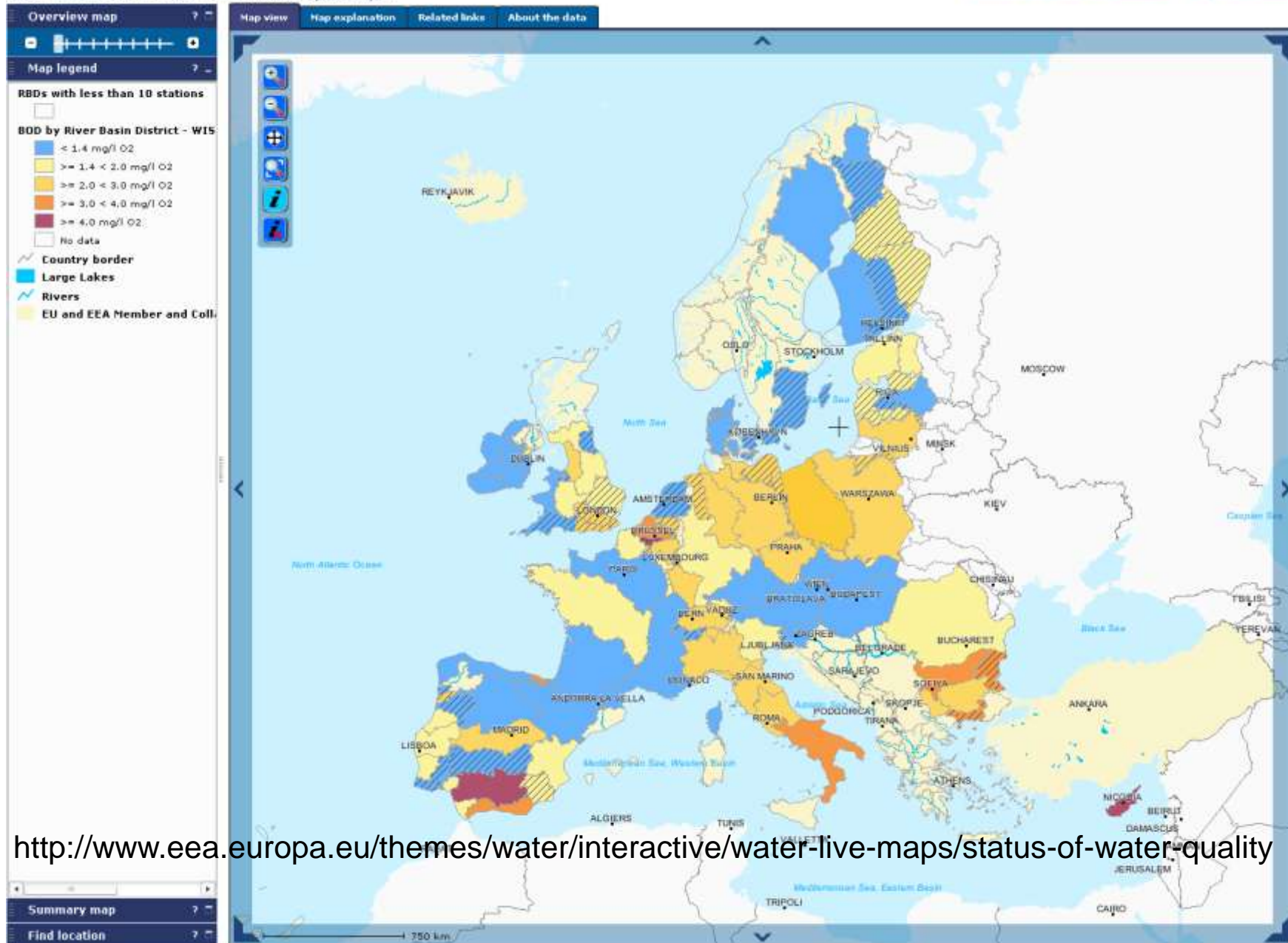
3% in bad status



# Europe rivers BOD5

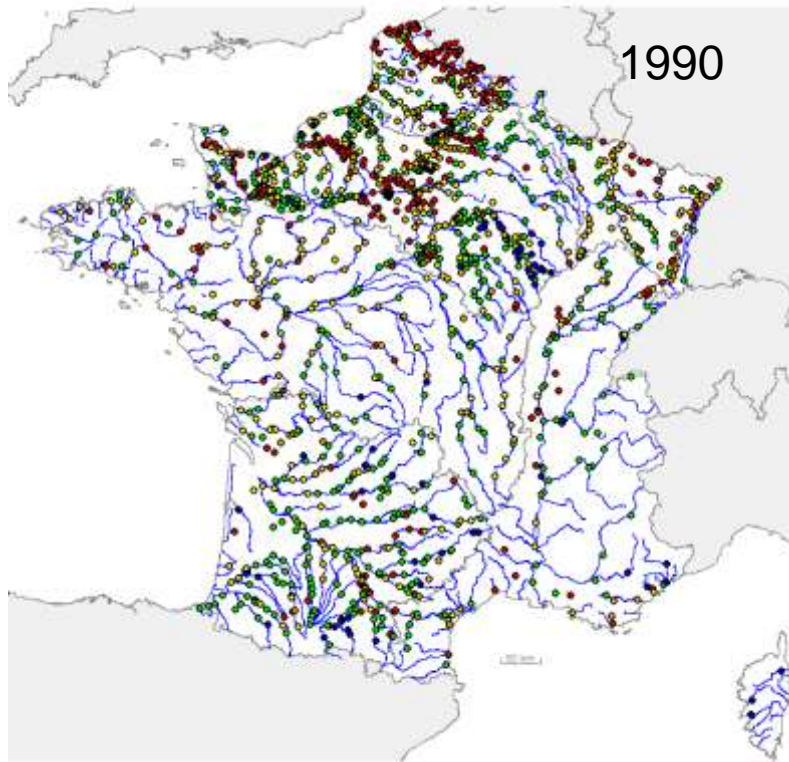
Mean annual BOD in rivers for the latest reported year

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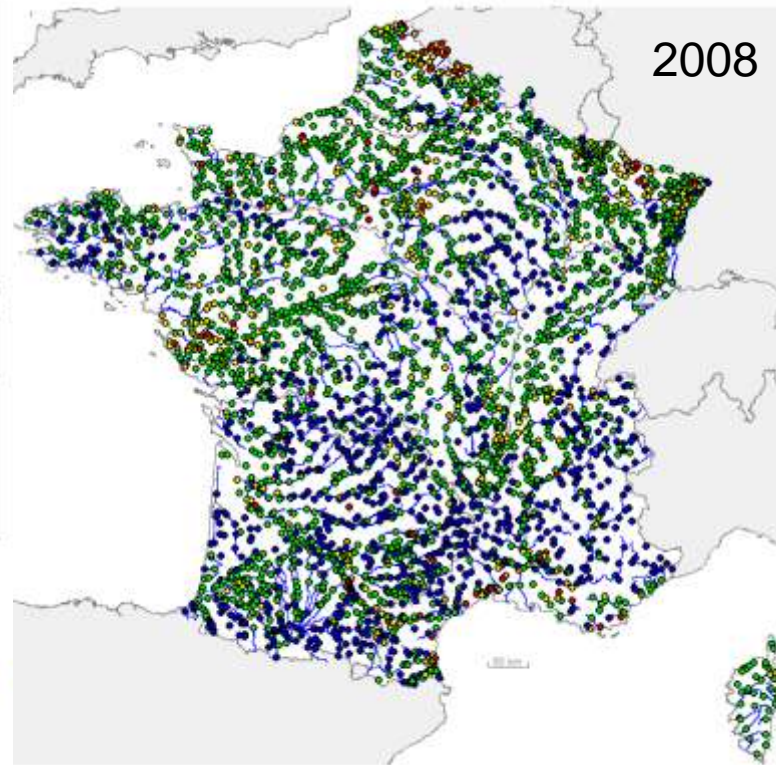
<http://www.eea.europa.eu/themes/water/interactive/water-live-maps/status-of-water-quality>

# Impact on rivers - orthosphates



60% in bad status

(Ammonium 43% in bad status)



15% in bad status

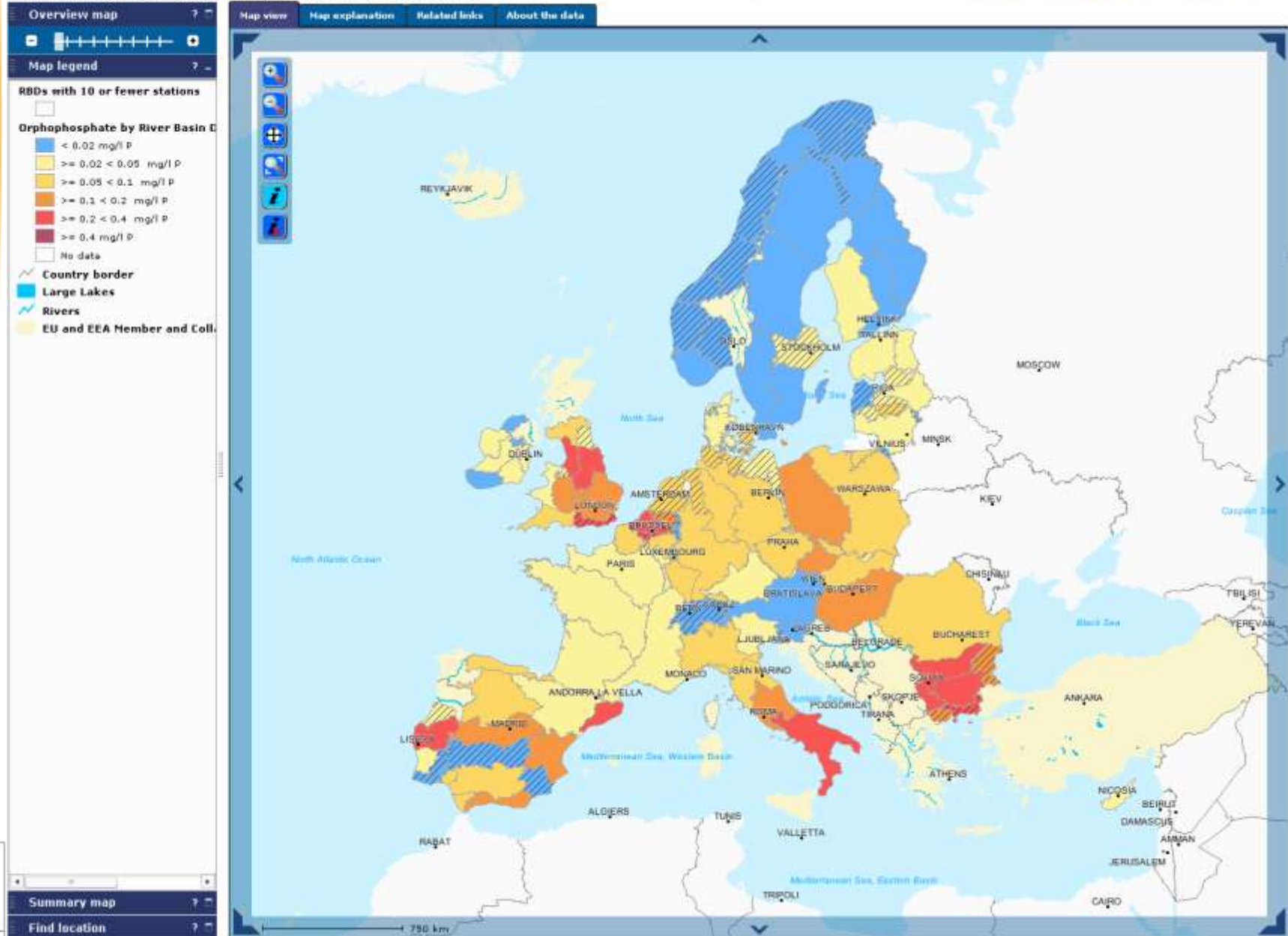
(Ammonium 11% in bad status)



# Europe rivers orthophosphate

Mean annual orthophosphate in rivers for the latest reported year

Print | Send link | Bookmark | Help | Full screen



Bucharest : Workshop on Safe Drinking Water and Sanitation

September 2011

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# Best practices in urban waste water treatment

## The french tools to implement the directive

# The river basin agencies RBA (since 1964)

## The money



11,6 billions euros aid (2007-2012)

### UWWTP

aid between 30% and 40%

### Collecting systems

aid between 20 and 35%

### Origin of the RBA budget (Exemple of RMC)

- 70% households
- 19% local authorities
- 7% industries
- 1% agriculture
- 3% pesticides
- 1% other

**Sanitation tax on the water bill** between 35 and 70 cents

**Solidarity between urban and rural areas** in the same river basin



# The national office of water ONEMA (since 2008)

The budget comes from the 6 rivers bassin agencies → 120 millions euros each year

## Missions of ONEMA

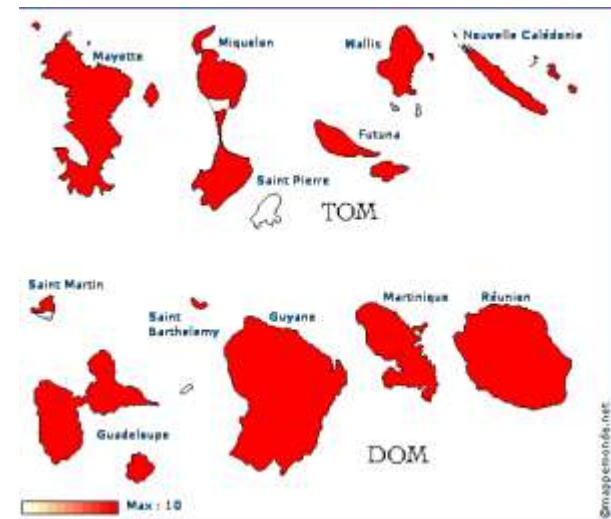
- The financial solidarity to the benefit of **Corsica** and **french ultramarine territories**

20 millions euros each year for aid to investment

For exemple in Corsica, the river bassin agency Rhône Méditerranée and Corse gives an aid of 30% and ONEMA 40%.

- the knowledge and national data

- The water Research



# How to pay the UWWTP

## Mainland France

- river bassin agencies (30 to 40%)
- regional and department local authorities (0 to 20%)
- local authorities in charge of the project (20 to 70% with a bank loan)

## Corsica

- River bassin agency RMC (30%)
- ONEMA (40%)
- Department local authorities (20%)
- local authorities in charge of the project (10%)

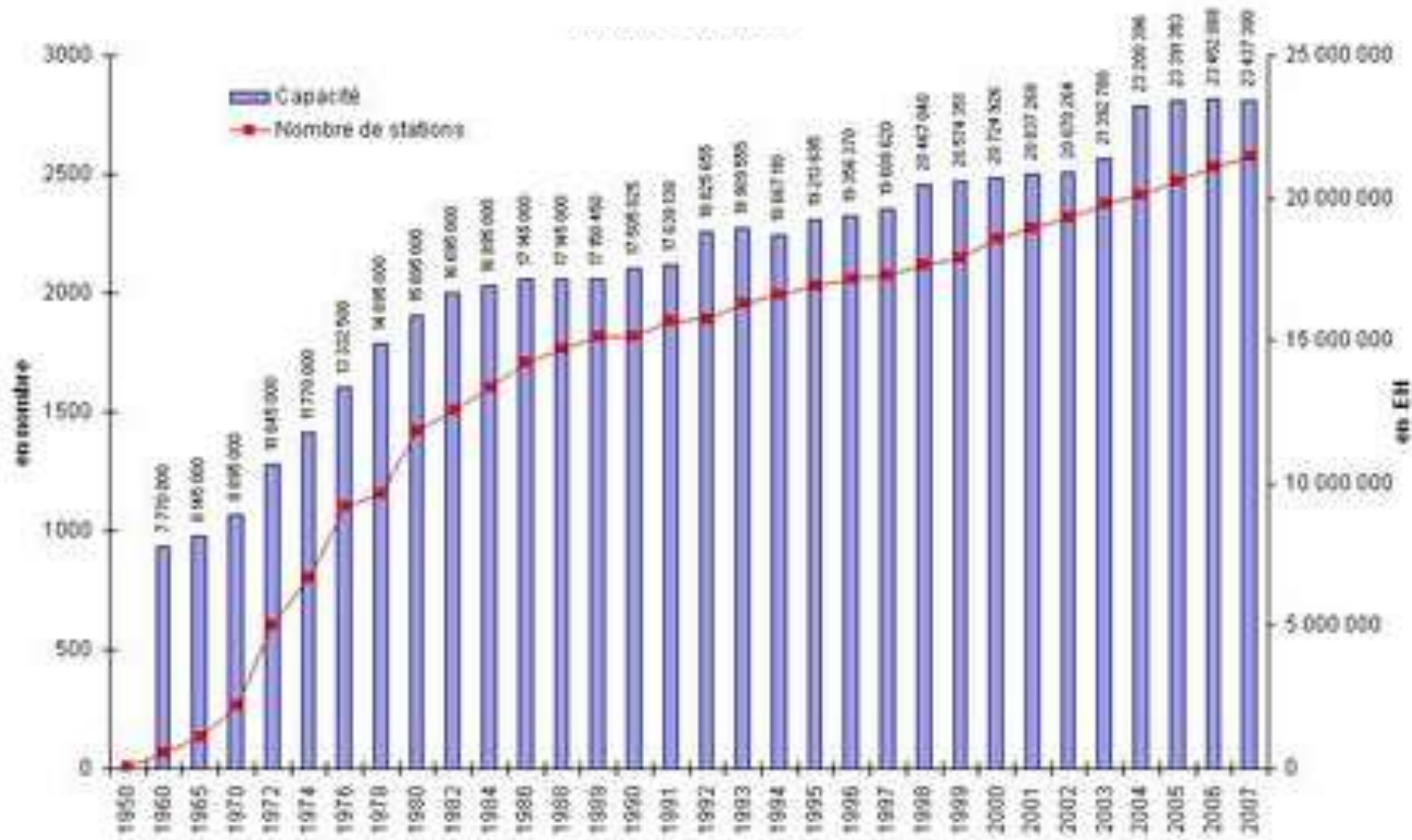
## Ultramarine territories

- ONEMA
- FEDER (it depends from the department)
- french state
- Department local authorities
- local authorities (a small part)

The department and regional level have problems of budget. The sanitation aid will disappear

# 40 years of investments

## The Seine-Normandie sanitation history between 1950 and 2007



# The deadlines were not respected bad result

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We are concerned with 3 complaints of the commission about each deadline of the UWWTD (1998, 2000 and 2005)

- We were sentenced by the court of justice in 2004 on account of not having respect the 1998 deadline. We received a letter of formal notice 260. At the end of this year all agglomerations will respect the directive.
- We had a referral to court 258 for not having respect the 2000 deadline. At the end of this year only 4 agglomerations will stay not compliant.
- We received a letter of formal notice 258 about 551 UWWTP for not having respect the 2005 deadline. At the end of this year only 60 UWWTP will stay not compliant thanks to the action plan adopted in 2007.

**It needs between 3 and 5-6 year to make an agglomeration compliant when starting from the beginning of the procedure.**

→ target for the 2000 and 2005 deadlines 100% compliance before the end of 2013



# action Plan 2007-2011 (Indispensable)

Because of our late Jean Louis Borloo, Minister of Ecology, has decided to implement a action plan in September 2007 :

- all the French authorities from the Minister to local state agents have now the same approach,
- Legal formal notices are taken by the Prefects (state's representative in a french department) where the beginning and the end of the build are written. Criminal and financial sanctions can be applied if the local autoroties don't respect the deadlines,
- Criminal sanctions can be applied if there's a water pollution,
- Town planning can be blocked,
- I was recruited to implement and monitor the plan. I help the local state agents to make their job in case of problems. I don't hesitate to go out an meet local authorities. I make training.
- the river water agencies help local authorities but can reduce their aid if they do not respect their contract,
- The prefects can be called by the first minister cabinet if they don't want to apply the measures of the action plan

# The importance of the data

At the national level we have to access to data to be able to understand what happens for each agglomeration, to help local authorities and to be able to give good data to the commission :

- we created a national data base in 2004 with a special software « BD-ERU » which was feeded by the states local authoroties; It took us 4 year to have a correctly completed data base. More than 150 persons feed this database. We check the data from the regional to the national level. It takes us a long time but that is indispensable.
- this year we have changed the system with a new WEB-TOOL « ROSEAU » which was more complet and allows us to access to more recent data. We have all 19 200 agglomerations and 19 300 UWWTP in the data base but with more accurate informations for the middle and big agglomerations ( $\geq 2000$  p.e), eg the compliance with WFD. That represents 3 millions single

# The importance of the data

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- we have developped a special format « sandre » to facilitate the transmission of monitoring data of all the treatment plants with a special software for the operators of the UWWTP « mesurestep » and for the local water police states services « autostep ». They can thus calculate the compliance of each treatment plant. At the national level we use now this tool to build a national data base about all the monitoring data. We wil be able to use a single database for all reporting with the accurate performances of each UWWTP for all parameters.
- next year all monitoring data will be put in a WEB-tool “VERSEAU” by each local operator. VERSEAU will be in link with the ROSEAU's web-tool to calculate automatically the compliance of the UWWTP, the charges, the flow...That will represent each year 6 millions informations.

# The importance of the data

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- next year we will develop the national exploitation of the discharges data of the collecting system which are collected since 2009
- We have developed an Internet site to communicate about our data. The transparency is total.  
<http://assainissement.developpement-durable.gouv.fr/>
- We have developed an Internet site with the plug in google earth to exploit all the water quality data in the river and in the sea to help our local authorities to know where we have to focus our attention to implement the WFD. It's still not a public web-tool.



# The importance of the data

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- It took us 10 year to build a complete data system about sanitation.
- We have to make pressure every day to be sure that the data bases are feeded. 3 persons at the national level are necessary for that : A manager, a technician and a web-tool developper
- We are able in Paris to know all about each treatment plant and the river where it is discharged

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# Agglomerations less than 2000

## The new horizon in link with WFD

# The treatment objectives

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**For France appropriate treatment is to respect WFD objectives**

**The first step : A collective or individual sanitation system?**

*Planning of sanitation areas are compulsory in France with a public participation. Cities or community of cities have to create areas where a collecting system and a treatment are required and areas where individual sanitation are necessary. They have to justify the choices (technical, environmental, financial, social...justification). In rural areas, they may recommend the association of several houses on a single UWWTP if it is more attractive, particularly if it is impossible to have individual sanitation (e.g. no garden).*

# The french method

A the beginning of 2012 we will have a new regulation. what follows are proposals still under discussion.

The second step : the respect the minimum level of treatment (french new regulation)

## Minimum level of treatment (proposal)

Paramètre		Concentration	Minimum percentage of reduction
DBO5	Daily average	35 mg/l	60%
DCO	Daily average	200 mg/l	60%
MES	Daily average	50 mg/l	50%



# The french method

The third step : to respect the objectives of quality of rivers WFD with the notion of disproportionate costs.

if there is a disproportionate cost we will provide a maximum level of treatment to be achieved by 2015. We will request an indirect discharge into a artificial discharge area vegetated. We will ask for a follow-up whether to go further by 2021

## Maximum level of treatment (proposal)

Paramètre		Concentration maximale à ne pas dépasser	Rendement minimum à atteindre
DBO5	Moyenne journalière	15 mg/l	90%
DCO	Moyenne journalière	90 mg/l	85%
MES	Moyenne journalière	10 mg/l	90%
NTK*	Moyenne journalière	10 mg/l	80%
NTK*	Moyenne journalière	10 mg/l	80%

# The new action plan

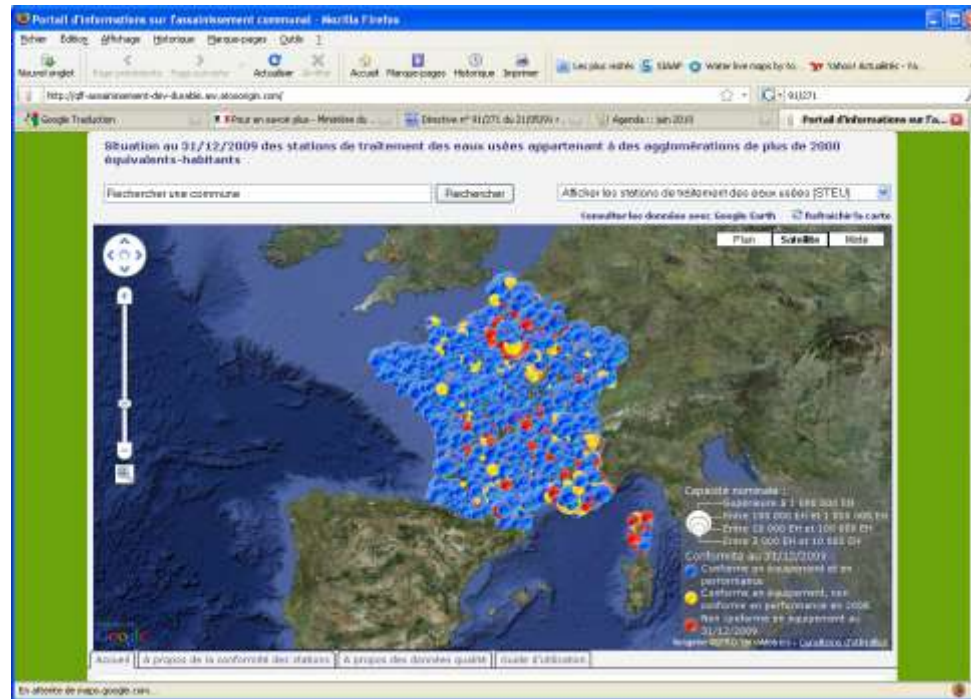
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To be sure that we will not be late with the WFD deadlines, France is preparing a new action plan for a new period 2012 -2018

The great change with the former one (a UWWTD plan) is the sanitation in link with the WFD objectives.

We introduce the link with sustainable development and in this thematic the climate change.

# Thank you for your attention



<http://assainissement.developpement-durable.gouv.fr/>

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