

Needs of changes in agricultural practices to sustainably protect aquifers of Eocene age, exploited for drinking water supply, in the “Vexin Français” natural area.

Abstract n°1978



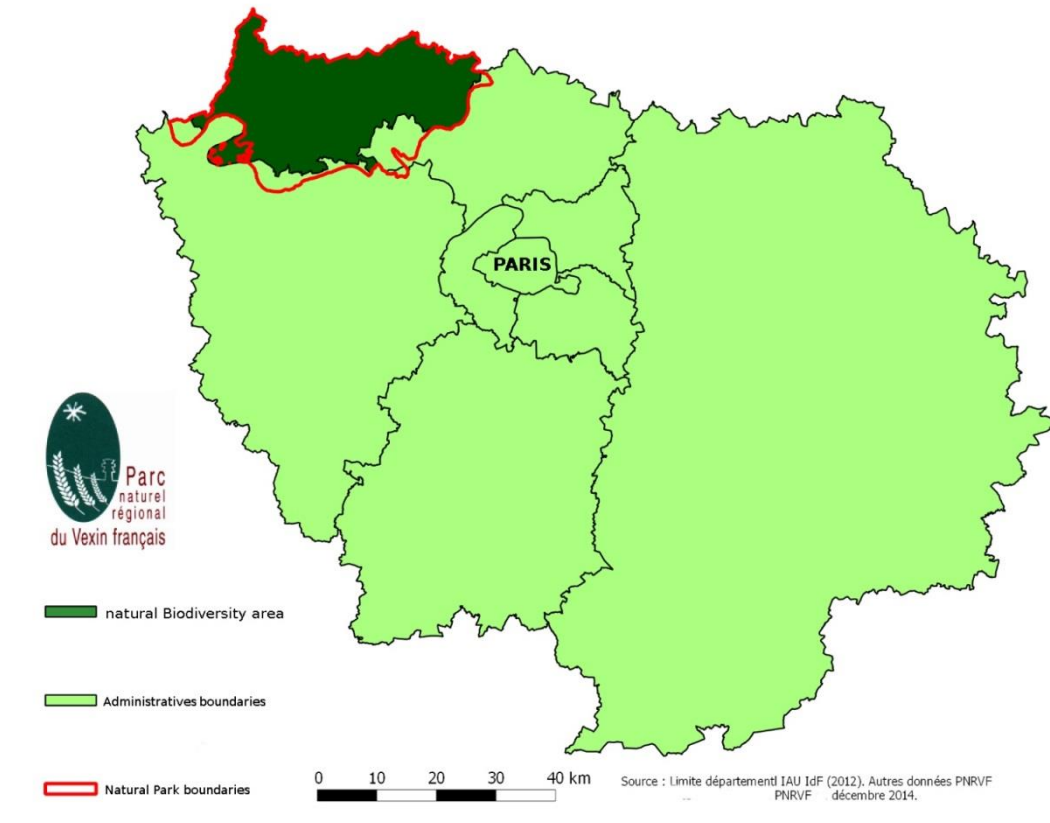
In the heart of the “Vexin Français” regional natural park, drinking water is extracted from shallow aquifers in rough Lutetian limestone or Ypresian sand. They provide flow rates superior to current needs. However, the nitrate concentrations are exceeding the acceptable maximum of 50 mg/l and about 0.2 µg/l of Atrazine or its metabolites. Over the past few years, treatments with ion exchange resins (nitrates) and active coals filters (pesticides) have been put in place by local authorities.

Nevertheless, these palliative treatments do not constitute a lasting solution. In fact, the nitrate concentration’s still increasing and some new containment, used as crop protection agents in conventional agriculture, appear in untreated water.

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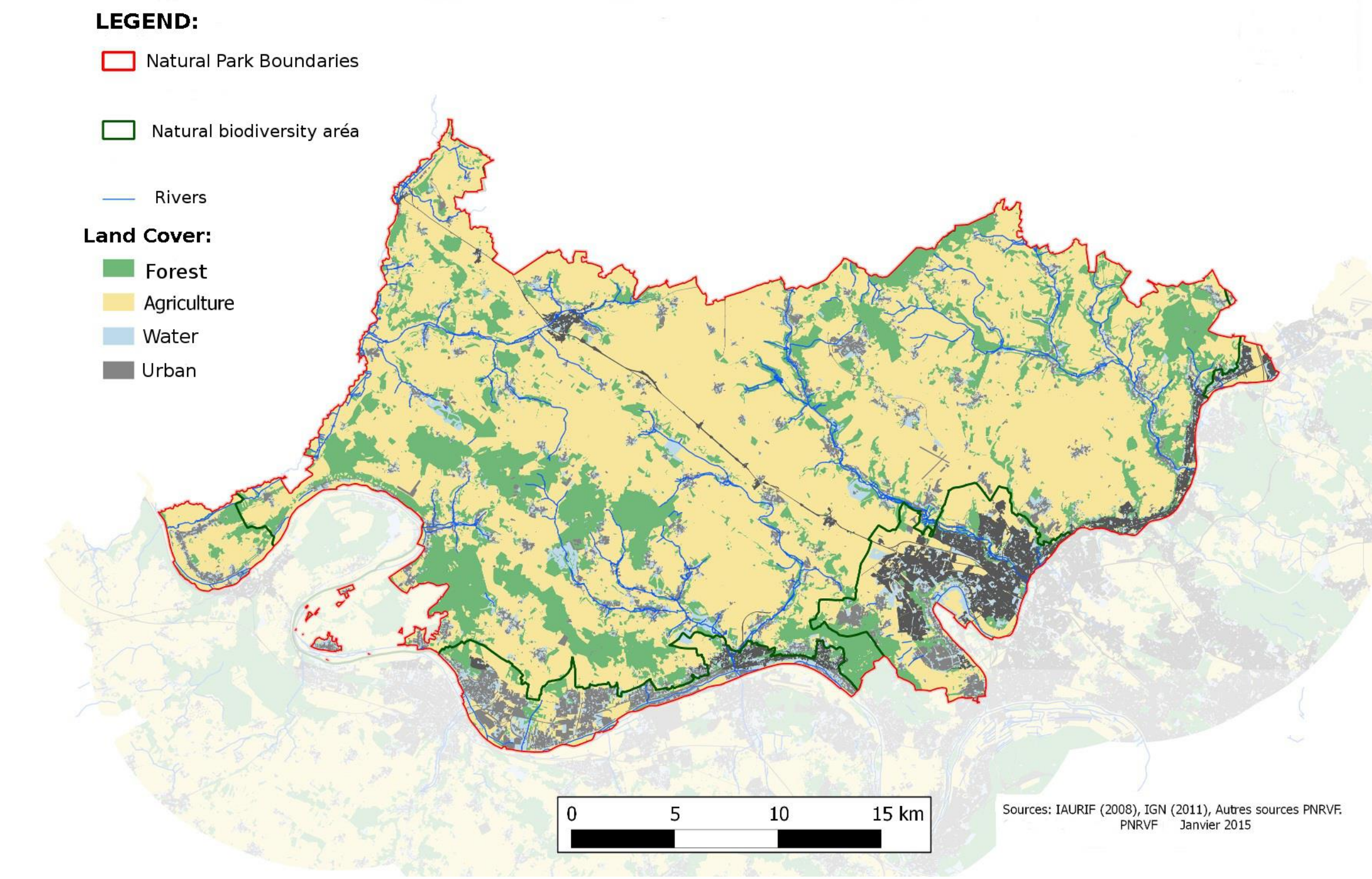
In this context, 12 catchments were included in the list of priority catchments identified in “Grenelle I” (May 30th, 2008), then under “Grenelle II”, the environmental Convention (September 22th, 2015). Aware of the resource protection issue, in February 2016, local elected officials, supported by technical assistance from the Val d’Oise department and the Seine Normandie water agency, gave 2 years for:

- 1) delineating catchment feeding areas,
- 2) assessing intrinsic vulnerability of the aquifers,
- 3) identifying and classifying hazardous practices
- 4) elaborating an action program.
- 5) Putting in place program

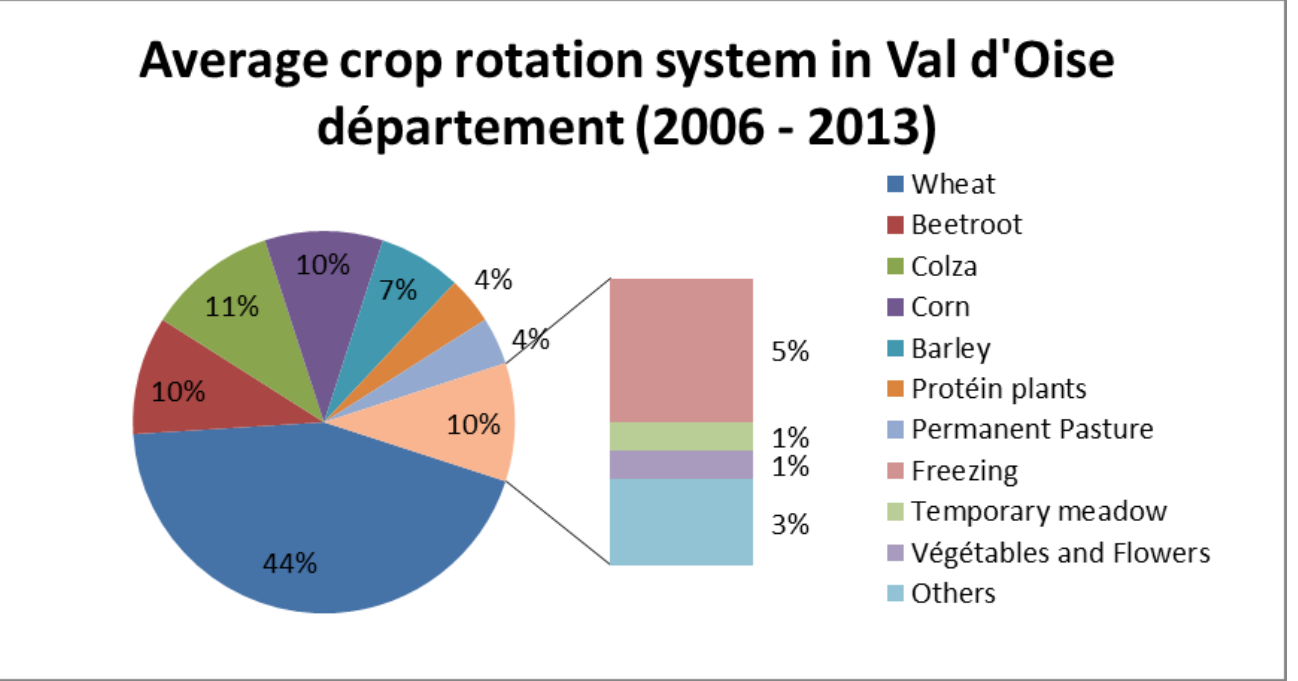


1 - Agriculture moving towards field crop

The average farm size in the natural park are 114 ha, on about twice the national average.

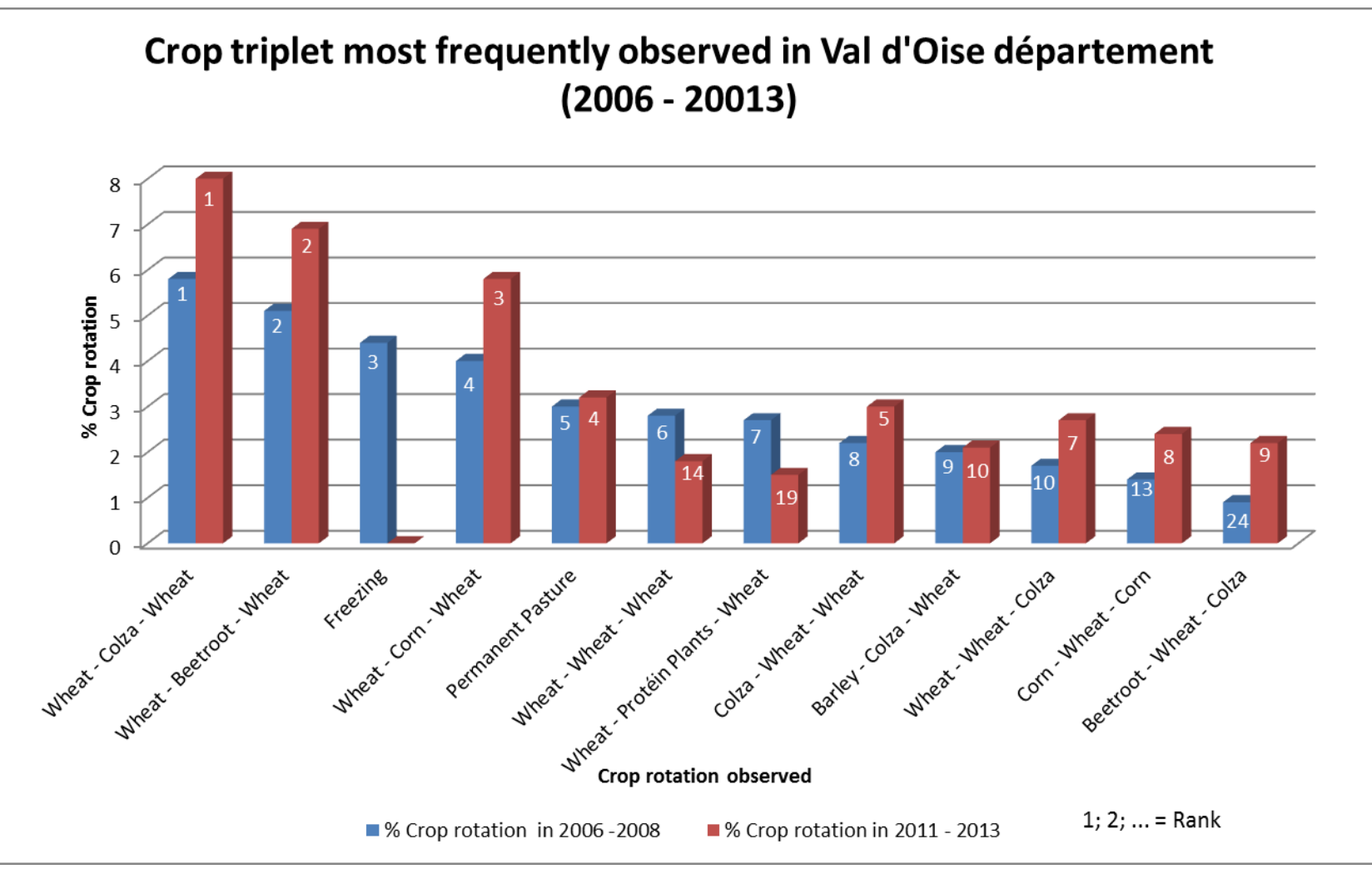


The Vexin Plateau is cover by limestone to a nominal depth of 5 meters but in the more eroded areas this may drop down to 10 centimeters.



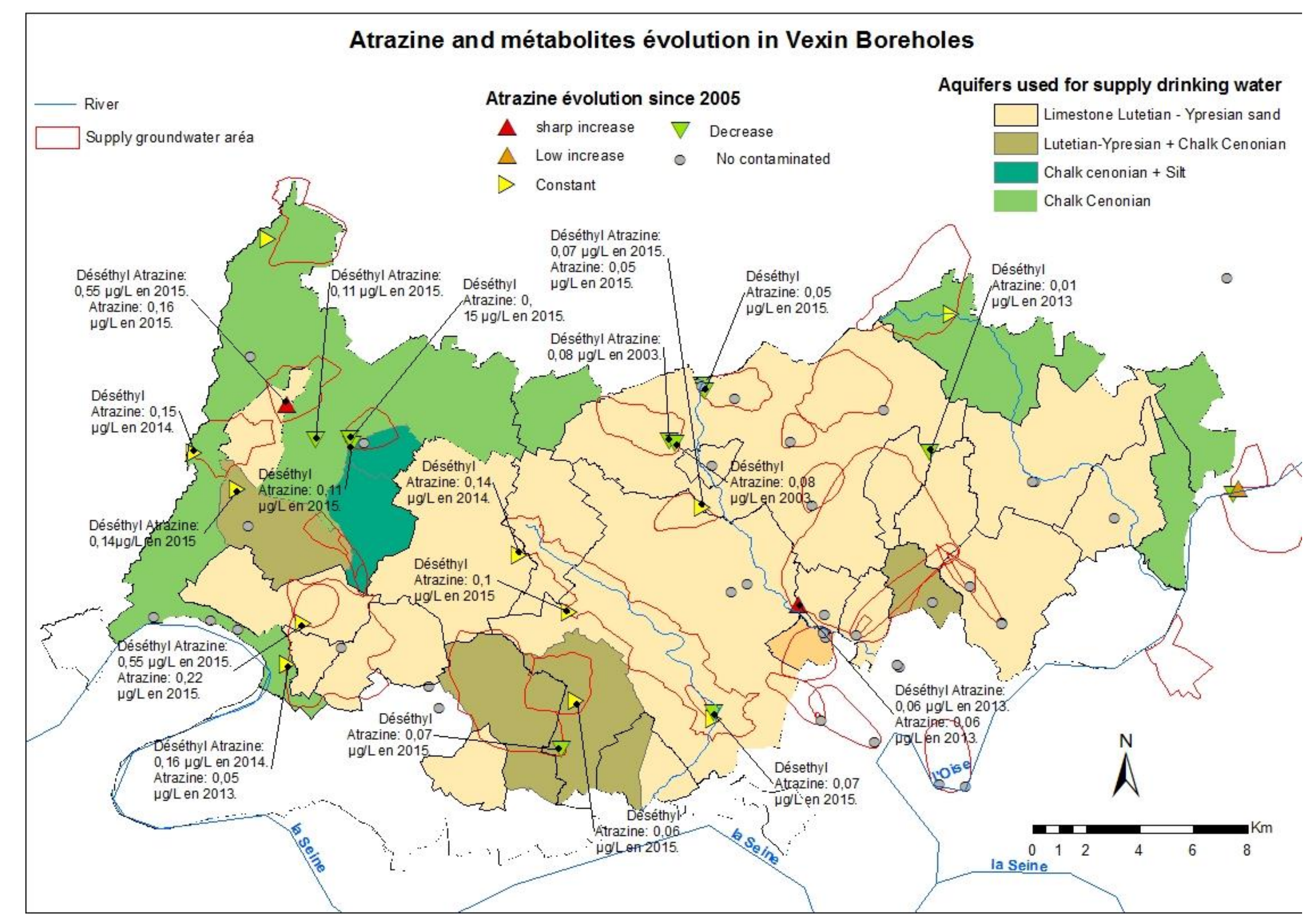
The relative flat topology of the landscape is particularly well adapted to cereals farming : 62 % of the 364 farms on the « Vexin plateau » cultivated grain crops.

Repetitive cultivation of the same crop(s) and/or limited crop rotation can be a breeding ground for disease lead to the excessive use of chemical pesticides.

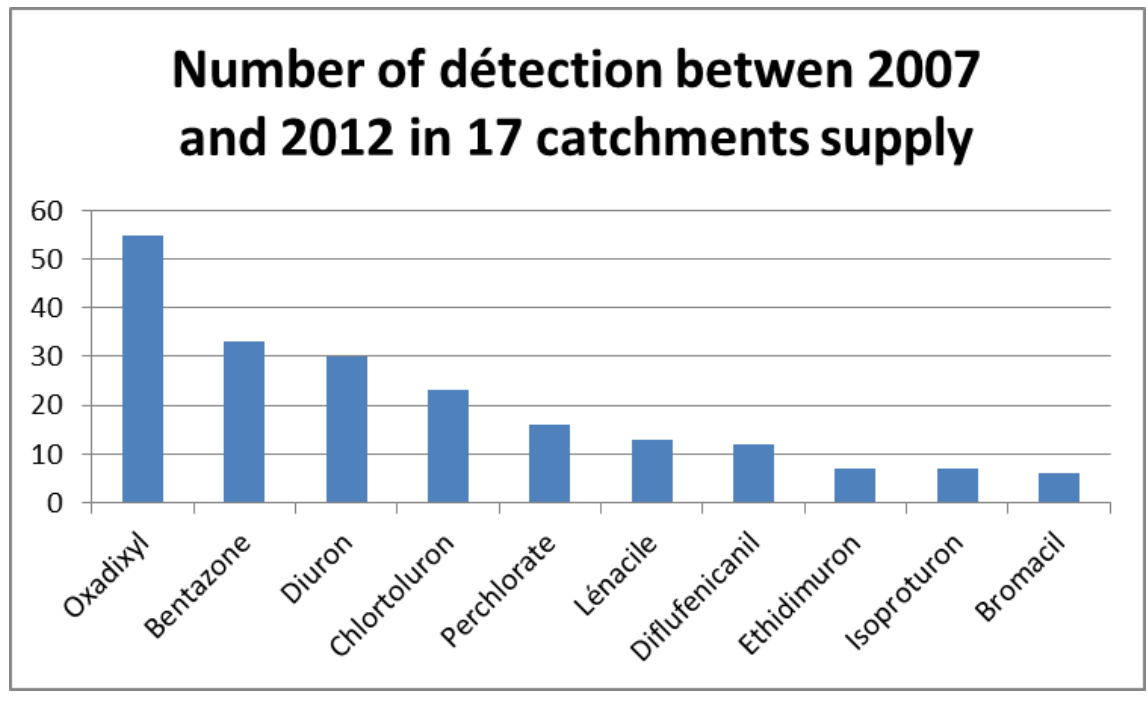
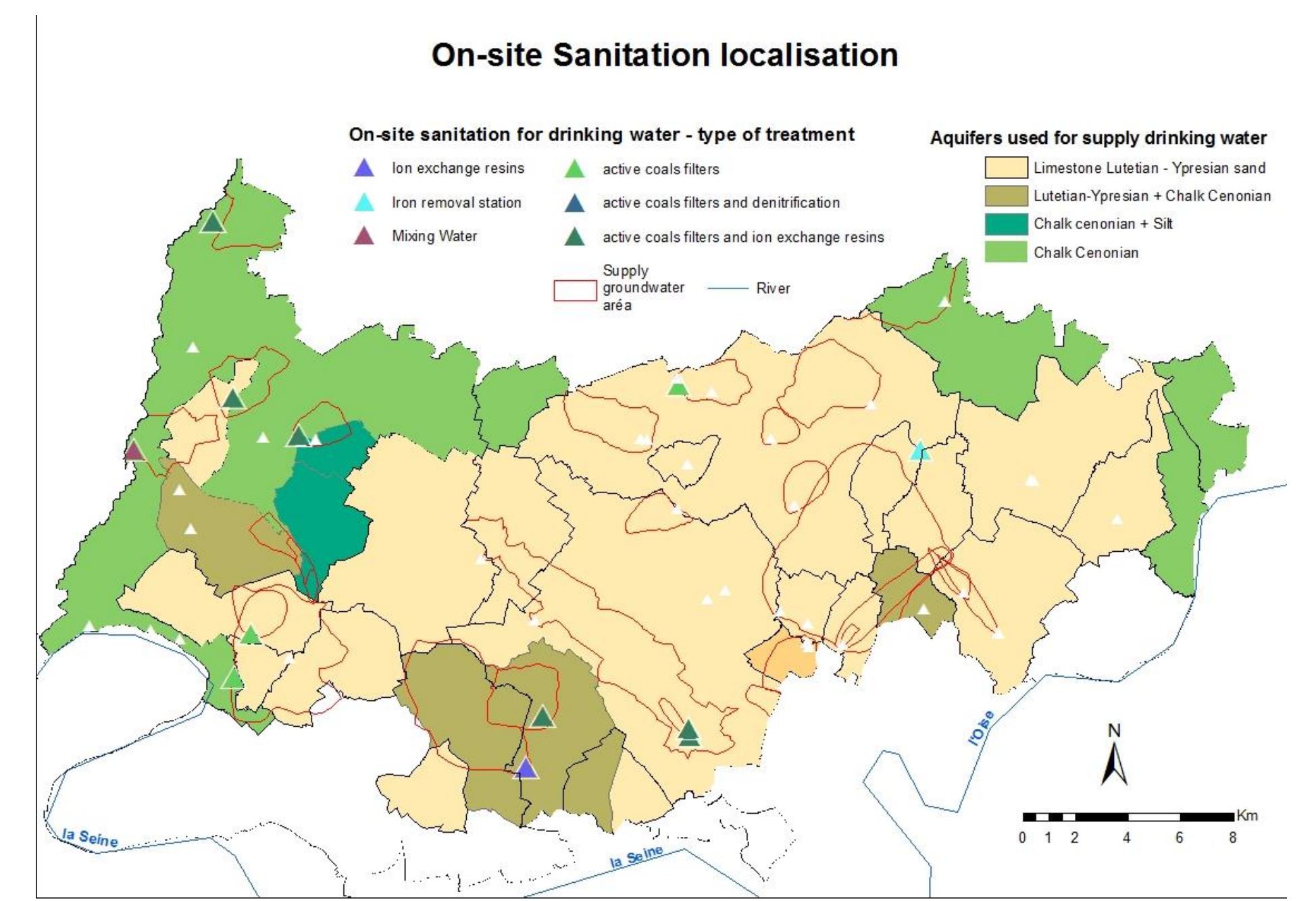


2 - A water ressource contaminated

20 catchments are contaminated by Atrazine and/or its metabolites. It’s the mean reason why 12 of them have on-site sanitation treatment now.



When faced with the ban of a substance, the usual agricultural practice is to find a substitute. Explains the multiple toxic contaminants detected in the groundwater



Public water suppliers may use expensive treatment to remove specific contaminants. But new toxin emerge.

In addition, nitrate’s concentration continue to increase in the source water, which may impact the ecosystem.

Their palliative solution may become insufficient.

3 - Water suppliers challenges

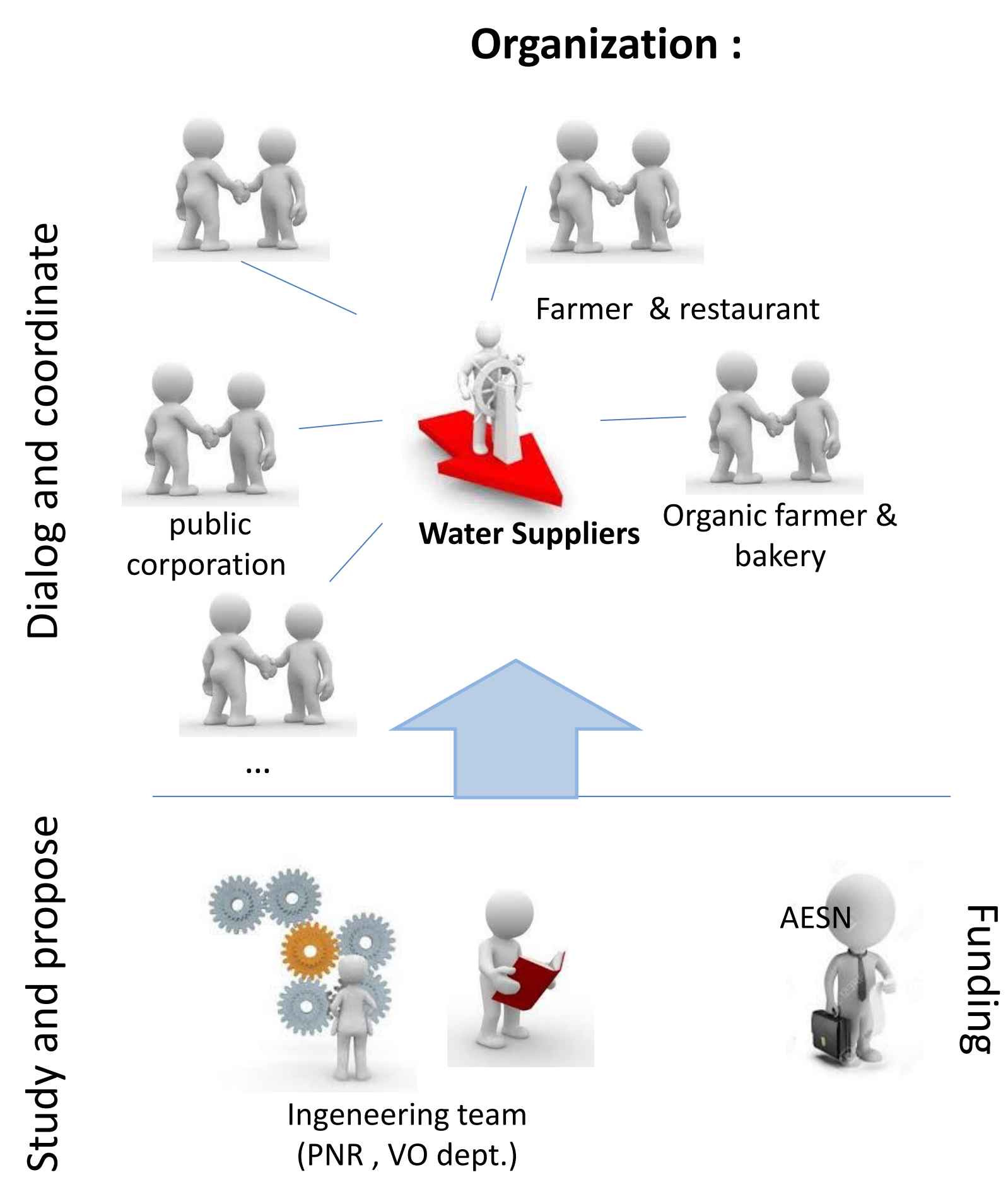
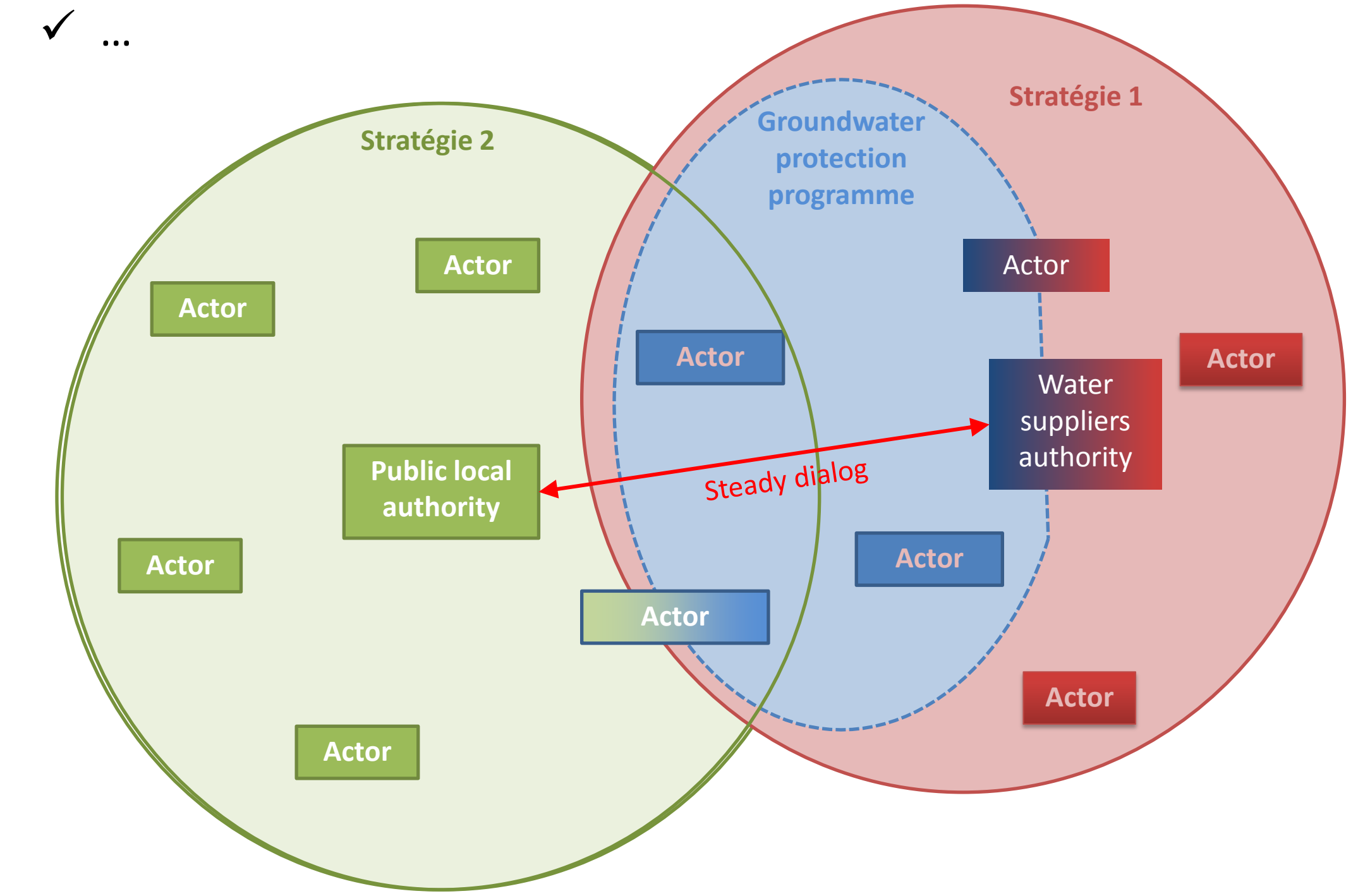
Building a groundwater protection program is a real challenge for public water suppliers. Indeed water use is a complex social issue.



Change fertilizer practices is complicated. It requires to find a new economic solution who take into account both ecologic objectives and the farmer’s economic needs. To be successful, it will be necessary to study individual situation and find individual solution. However, these individual solutions must fit together in a global plan.

Some solutions:

- ✓ Create partnership with public local authorities who want to develop a business plan to distribute local food in schools, restaurants and home.
- ✓ Create short channels for food consumption or energetic consumption for promoted low-impacts practices
- ✓ Prepare a land strategy to pre-empt land farm situated in the catchments areas vulnerability.
- ✓ Create a local organic label for keep extensive ranching in catchments areas.
- ✓ Help volunteer’s farmers to develop organic farming,
- ✓ Inform people about groundwater context, health hazard with conventional agriculture,
- ✓ ...



4 - Conclusions

To reach these goals, the water suppliers :

- Should be the main actor of the action program.
- Find various stakeholders and create a solid network.
- Use engineering team and funding support.
- Create a lobby group with other water suppliers to be more convincing towards conventional farmers.