# The program GESSOL, Links between technical and socio-economical aspects. An integrated approach

*Pr.Dr. Philippe BILLET*

*U. Jean Moulin-Lyon 3 (France)*

*President of the French Society for Environmental Law*

# ***Problematics***

The soil has often been considered :

- as a productive area (food, biomass…)
- as a space to build.

And not for its roles in environment.

# *Problematics*

The **another functions** of soils are gradually recognized

- as a **medium** (interface between earth, air and water)
- as a **ressource** (with a rich diversity of organisms)
- as a **function** (filter, transformer of many substances, carbon storage…)

An its **fragilities** too :

- soil formation is an extremely **slow process** and soil can be considered essentially as a **nonrenewable resource**
- any damage to its structure also **damages other environmental media and ecosystems**

# *Problematics*

Soil is subject to a **series of degradation processes or threats** :

- erosion,
- decline in organic matter,
- local and diffuse contamination,
- sealing,
- compaction,
- decline in biodiversity,
- salinisation,
- floods
- landslides

And whose degradation has a significant impact on air and water but also on our health.

# GESSOL

- Aware of the increasing pressure exerted by man on soils and the lack of coordinated research on the environmental functions of soils, the Ministry for Environment (MEEDDM) has implemented since 1998 a research program on the **Sustainable Management of Soils** (GESSOL) [**GES**tion Durable des **SOL**s] : Environmental functions and Management of Soil Heritage

- It's the first program specifically devoted to the soils with the ambition to integrate all soil functions. The program goal is

  - to provide management tools and indicators for understanding the evolution of soil and

  - to establish different systems of surveillance.

# GESSOL

- The first call for research proposals occurred in 1998, under 4 main axes
  - criteria of soil quality and evaluation methods ;
  - degradation : causes, intensity forecast ;
  - land use: management and control of impacts;
  - social, economic and political.

- In 2003, a second call for research proposals (GESSOL 2) was published, focusing specifically on two axes :
  - influence of agricultural practices on soil quality and sustainable management (management of organic materials, biological functions, methods of soil protection, becoming biotic and abiotic compounds in the soil);
  - influence of agricultural and forestry practices on transfers and groundwater quality.

# GESSOL

- At a conference in 2006, the Ministry for the Environment and ADEME have organized a first repayment of work done between 1998 and 2002 to promote researches in the framework of program GESSOL and their applications. This second conference is an opportunity to present the results of research conducted since 2005, and the work program summary and new directions.

- In 2008, a third call for research proposals (GESSOL 3) was published and proposed to work primarily on 3 axes.

  - Observe and evaluate the soil functions and the services rendered to the Society,
  - Preserving the soil Heritage and raise awareness,
  - Improve and restore soils for one or more of their functions

# GESSOL

- This assessment is physical, chemical, biological and ecological, by considering the soils potential according to their characteristics and intrinsic properties in space and time.
- This assessment is also economic, sociological and legal by examining how and why these functions are considered (or not) by different actors. It is important to understand the integration of soil functions at different scales of decision management, to the local, the national and the European policies.

# GESSOL

The program GESSOL tries

- to organise an **encounter between hard science and soft science** on a common field
- to **develop tools for common goal** : protect and repair the soils.

This encounter is not an evidence : soft science is a large umbrella term to refer to a plurality of fields outside the natural sciences.
« Outside », like an exclusion.

# Hard and soft sciences

Under GESSOL, there is a real encounter, **not a confrontation**, and interdisciplinarity take place during the drafting of research questions.

**Curiosities and surprises** of an encounter on a topic of common concern with :

- another vocabulary (soil, earth, land, wealth, capital...)
- another working methods
- another problematics.

But a **common goal**.

# Social sciences and soils

The question is no longer "How ?" but **"Why ?".** And "How ?" can no longer be reduced to a technician or technical approach, but in **combination with other disciplines**.

These include :

- anthropology
- economics
- geography
- history
- law
- political science
- sociology
- communication…

# Social sciences and soils

Example of a comparative approach about soil pollution and the decision to restore it.

- Sociology :
  - how to associate the population to the decision ?
- Economics
  - How to estimate the costs that pollution imposes on society ?
- Law
  - How to organise the repair and identify the responsible for pollution ?

# Social sciences and soils

- The sociologists are involved in **analyzing the representation of soil pollution** by the population.
- This helps to **raise awareness of the impact of choices** made on its live and **identify the springs of collective action**. And the acceptation or the refusal of the environmental requirement or the solution to remediate the pollution. How involving the population/the groups to the decision (involving the population in this process is in the spirit of democratic ideas) because it gives some rights to groups and at the same they are entiled to take part in the decision-making process that directly affects their.

# Social sciences and soils

To an economist, pollution is an externality that affects (often unintentionally) thewelfare of another without monetary compensation.

The costs of pollution to society are of two kinds:

- the costs which arise if no action is taken to address pollution (resulting from the effects of pollution on human health and the environment), and
- the costs which arise if action is taken (those resulting from efforts made to reduce or eliminate the pollution source)

# Social sciences and soils

The decision will be defined in terms of its economic advantages over its disadvantages
(cost of remediation, current land use, balance between land value and cost remediation, cost of inaction for health…)

And estimates society's "willingness-to-pay" for the reduction of environmental pollution

# Social sciences and soils

To a jurist, pollution and degradation of soil raise several questions :

- What is soil ? : a surface ? a material ? a property ? A resource that is collectively owned (commons)...
- What is a pollution ? : a normal use of property ? a damage ?
- Is there any pollution if the activity is authorized ?
- How to characterize a polluted and a degraded soil ? (qualification determines the legal regime) : as a waste ? as a damage to property ? as a damage to a common heritage ?
- How to keep the memory of a contaminated soil ?
- How to incorporate a polluted soil in a decision ?
- Who is responsible for the pollution/degradation of soils?
- How to involve people in remediation of a pollution/degradation ?
- How to organise the repair ? : by the victim ? by the Administration? by the judge ? other ?

# Conclusion

**Potential pitfalls** :

- pooling at the time of writing a report
- let the supremacy of one discipline
- (…)

and

**potential remediations**

- take time to meet and discuss
- multiply the experience/the opportunity to work together
- (…)