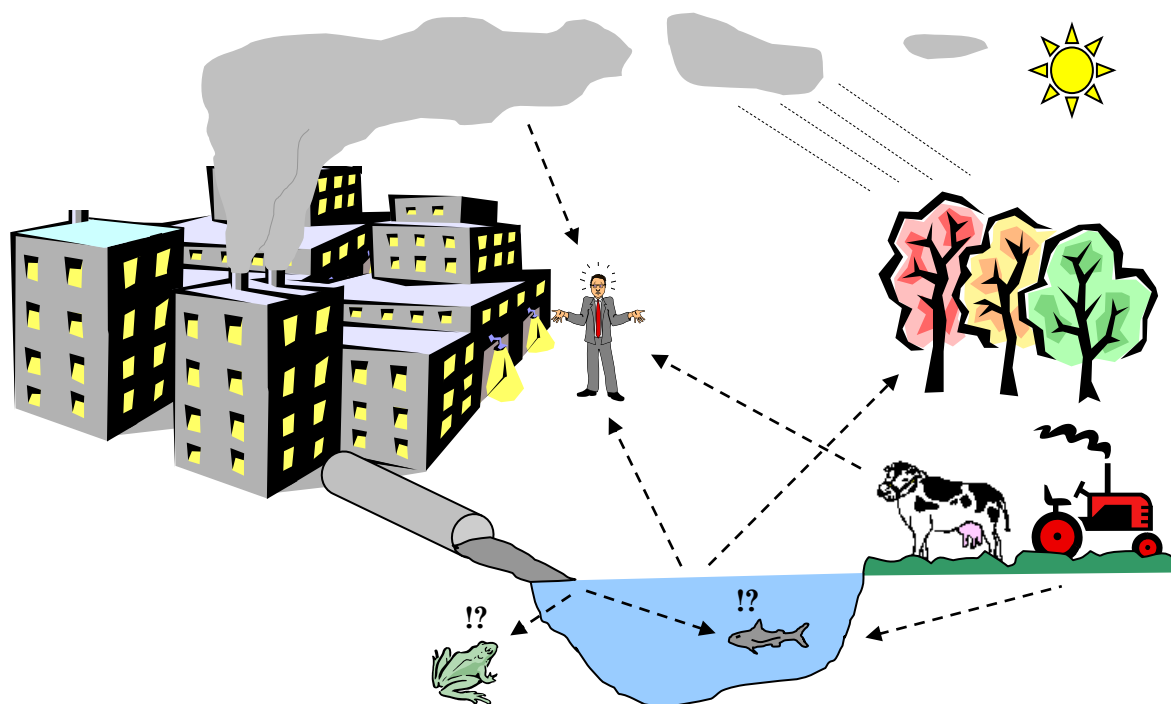




Environmental Studies: a Rational Approach



Data analysis

Prospective models

Expertise of ongoing projects

Updated : February 2017

Environmental protection is usually quite difficult, scientifically speaking: it requires models which are always complex. However, it has a great social importance. This is a domain where data are not numerous, where knowledge is limited, but expectations are high, both from the public, the politicians and the industry.

Our Company, SCM SA, has been in existence for more than 20 years, and we developed progressively technical competences in various domains connected with environmental studies: air, soil, water pollution, best use of water resources, and so on.

Above all, we developed strong competences in the economical analysis of projects: those which will be profitable, and those which survive only from temporary subsidies.

Data analysis, for air, soil, water pollutions

Many parameters need to be taken into account, and the physical laws of propagation are usually quite complicated. Air pollution, for instance, depends on the pollutant source, but also on meteorological conditions: winds, sun, atmosphere condition, and so on, and they act differently in a city or in a forest.

In order to handle these difficulties, we developed robust probabilistic methods, which indicate the most important parameters, taking uncertainties into account. We may for instance elaborate a predictive model (dealing with the threshold of toxicity of some chemical product in an ecosystem, with air quality at a given place, and so on), which will help the authorities make the proper decisions. For instance, is it appropriate to put restrictions upon car traffic, in a given street of city, in certain circumstances ?

Technical expertise of existing models

Quite often, a decision is taken from a numerical simulation, instead of true data. What is the value of this simulation ? This is often unclear, and very hard to check. We will perform a critical analysis of such models: What laws are used? Are they appropriate, or oversimplified? How are the uncertainties taken into account? Quite often also, some parts of a model are detailed, and some others are very imprecise, which leads to poor results.

Rough computations about equipments

Quite often, any environmental network requires complex equipments, which are costly and interdependent. Before making precise computations, we perform a preliminary approach, of coarse nature, which will indicate the general costs and benefits, depending on various situations. Our experience is that this coarse approach is often neglected, and the studies turn too quickly to precise computations. People turn to details, whereas the general picture has been neglected.

Critical analysis of economical models

This is quite frequent about environmental concerns: many decisions are taken on the grounds of incomplete information, and are based upon irrational motivations. The dangers of a situation are over-estimated, the costs of the solutions are under-estimated, the acceptability by the public is taken for granted, the assumptions about tarification are arbitrary, and so on.

We analyze, in each situation, what will be the effective return of the project: subsidies are limited in time and create only temporary advantages. We investigate the negative sides of the decisions, which has been hidden or neglected. Our task is therefore to come with a honest analysis of the business model for such a project.

Recent references

Air pollution

- 2010, SCM SA : Forest fires in Eastern Countries: is there any radiological danger?
- 2010-2011, SCM, together with CITEPA (Center for Air Pollution): Uncertainties evaluation upon the "National Spatialized Inventory" for pollutants. French Ministry of Ecology.
- 2012, CITEPA (Center for Air Pollution): Detecting aberrant data in a set of environmental data.
- 2012, Agency for Urban Ecology, City of Paris: Critical analysis of a software "Aria Impact", supposed to assess the improvement in air quality, resulting from limitations in car traffic.
- 2014-2015 : Direction Générale Energie-Climat (French Ministry of Ecology): Probabilistic links between traffic and pollution on the "Boulevard Périphérique", around Paris.
- 2015 : Lig'Air (Organization in charge of air pollution in the Region Centre) : Improving the provisions of air quality in the Region.

Soil Pollution

- 2007-2012, Agence Nationale pour la Gestion des Déchets Radioactifs (National Agency for Radioactive Waste) : Probabilistic analysis of radionuclide transfer in soils.
- 2009, Extension of sensitivity and uncertainty analysis for long term dose assessment of high level nuclear waste disposal sites to uncertainties in the human behaviour, by Achim Albrecht (ANDRA) and Stéphan Miquel (SCM).
- 2010, Total SA : Evaluation of the pollution in a harbour.
- 2010, Areva : Evaluation of the pollution in some facilities.
- 2016, Critical Analysis of the document "National Policy for Polluted Sites Assessment", French Ministry of Ecology.

Water resources

- 2007, Veolia Environnement: Detecting sensors failures in networks.
- 2007, Agence de l'Eau Artois-Picardie (French Water Agency): Probabilistic methods for the assessment of water quality in rivers.
- European Environment Agency: SCM won a framework contract: Probabilistic methods for the environment, 2006-2010, 2011-2015
- 2012, ISTE (Scientific Institute for the Environment): Is there a relationship between seaweed and nitrates in Brittany ?
- 2012, Lyonnaise des Eaux (French Company): What parameters have the strongest influence upon water treatments ?
- 2012, With the groups Pöyry and Vito : European Commission – Directorate General Environment. Preparatory Action - Development of Prevention Activities to halt desertification in Europe - Service Contract to contribute to the building of Water and Ecosystem accounts at EU level. Ref. system and Ressources datasets.
- 2016, COSEA : Statistical analysis related to water turbidity.

Climate, economical analyses

- 2008, Direction Générale de l'Energie et des Matières Premières (French Government): Models linked with CO2 emissions; critical analysis.
- 2009, International Stainless Steel Forum : Stainless steel and CO2: Facts and scientific observations.
- 2011, SCM SA : Carbon Footprint: fundamental mistakes and uncertainties
- 2015 - The battle against global warming: an absurd, costly and pointless crusade. White Paper drawn up by SCM SA.
http://www.scmsa.eu/archives/SCM_RC_2015_08_24_EN.pdf
Second Volume : The Fight against Global Warming: Social Consequences
http://www.scmsa.eu/archives/SCM_LBRCV2_2015_12_EN.pdf