

“Capacity Building and Strengthening Institutional Arrangement”

Workshop: Analysis and sampling of water

**Environmental studies of industrial areas with  
high population density**

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## 1. Introduction

Environmental studies are used to analyse all the elements that are available to understand the complex relation that characterize a specific part of a territory, as result of anthropization effects on the environment.

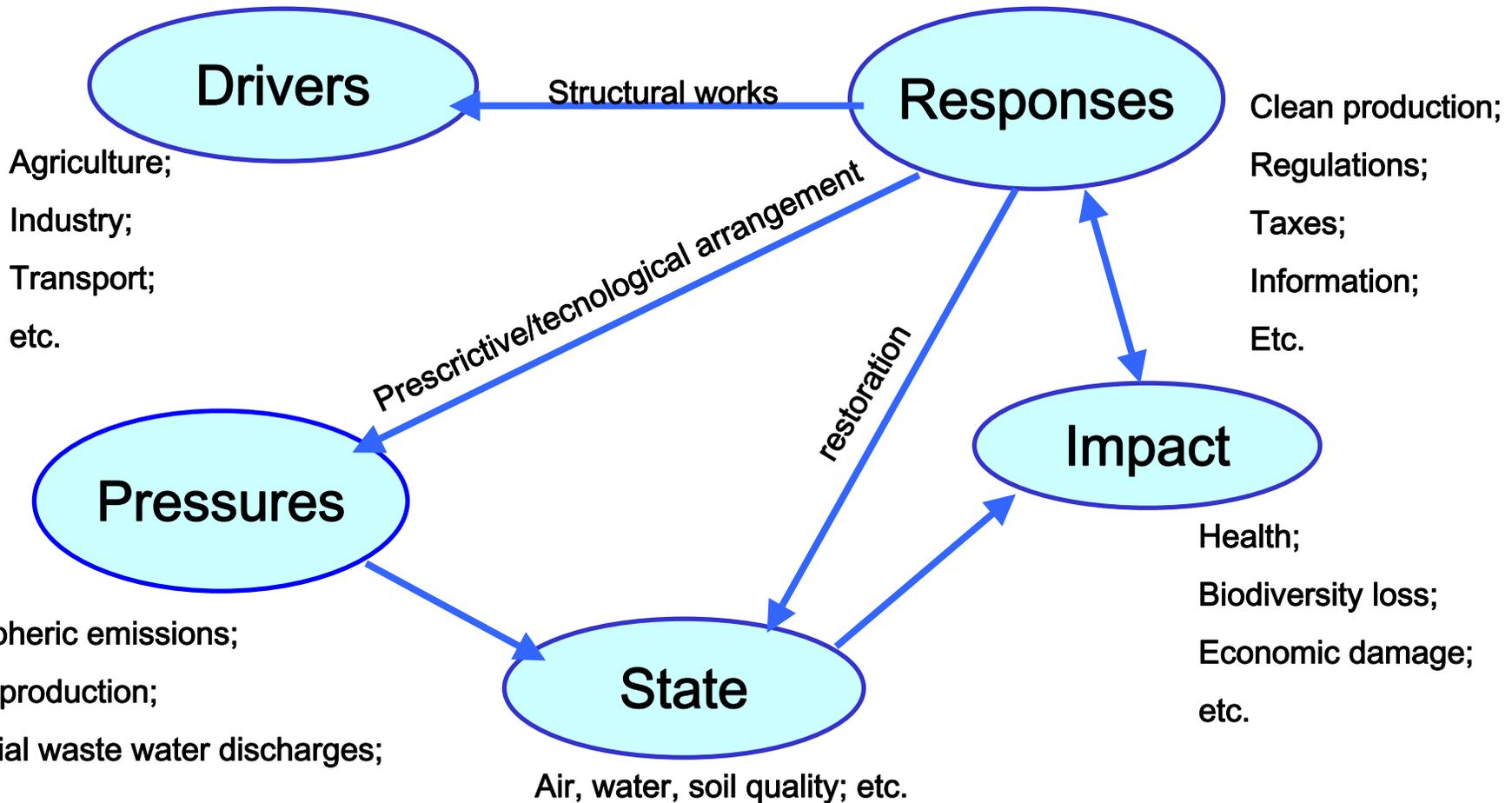
Usually these environmental studies are performed to describe direct and indirect effects of human activities on the environment, for example the conceptual model DPSIR that is a system analysis view of the relations between the environmental system and the human system, or the so-called Environmental Impact Assessment procedure (EIA) or in other specialistic fields for different purpose (planning, environmental protection, adoption of decisions, etc.)



# 1. Introduction

## DPSIR model scheme

Categories and cause-effect relationships of knowhow elements



## 1. Introduction

In these environmental studies prepared for Environmental Impact Assessment (EIA) usually are analysed some different aspects, among which for example population, fauna, flora, soil, water, air, climatic factors, material goods, landscape and interactions among them.

Particularly, in order to define the state of environmental quality of a water body, are usually analyzed some specific aspects (and related parameters and indicators), as:

- The ecological state (biological quality, chemistry and microbiological)
- The chemical state (value of dangerous substances and respect of limits stated by law)



## 2. Environmental studies of industrial areas with high population density

In the case of Environmental studies of industrial areas with high population density the main aspects that are analysed are usually:

- Economics aspects (economics, industrial plants, industry growth, tourism)
- Social aspects (demography, population growth)
- Natural aspects (Environmental pollution, biodiversity, naturalistic aspects)

These aspects are analyzed in an integrated process by means also of an environmental balance, that is a kind of methodology which gives the possibility to represent all the environmental pressures and impacts on the environment in a comprehensive framework.

In order to explain better these aspects it appears useful to focus attention on a specific case study, for example referring to a specific as that of Porto Marghera – Venice.





### 3. Case study

A typical example of industrial areas with high population density is in Porto Marghera, a site near Venice, with specific characteristic highlighted by these elements :

- High density of population (378.000 people with a density of 904.3 per square km).
- Industrial area (300 company in a total area of 2.000 hectares)
- Water concerned (340 hectares for canal and stretches of water)
- International and national cultural heritage and naturalistic values to be safeguarded

In this case the Environmental Balance adopted is represented by a kind of evaluations of all the complex ecosystem characterized by the industrial pole coexisting with the urban area of Venice and its lagoon.

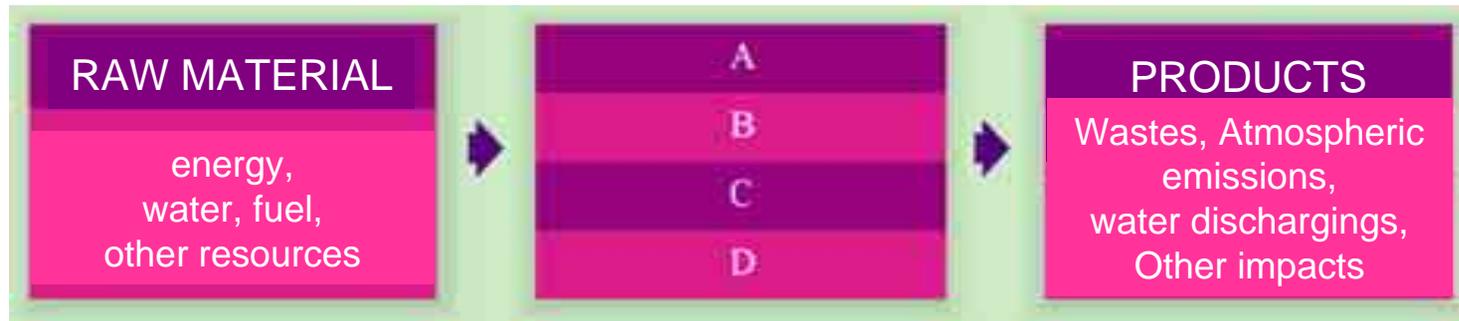




## 4. The Environmental Balance

The Environmental Balance consists in a global consideration of the ecosystem by means of:

a) the evaluation of what “enter” (raw materials, energy, water, etc.) and what “goes out” from the productive cycle (product ended, waste, atmospheric emissions, water dischargings, etc.).



b) The evaluation of other further elements about :

- Cultural heritage (Venice )
- Natural sites and biodiversity values (lagoon, islands, channels, high-level tides)

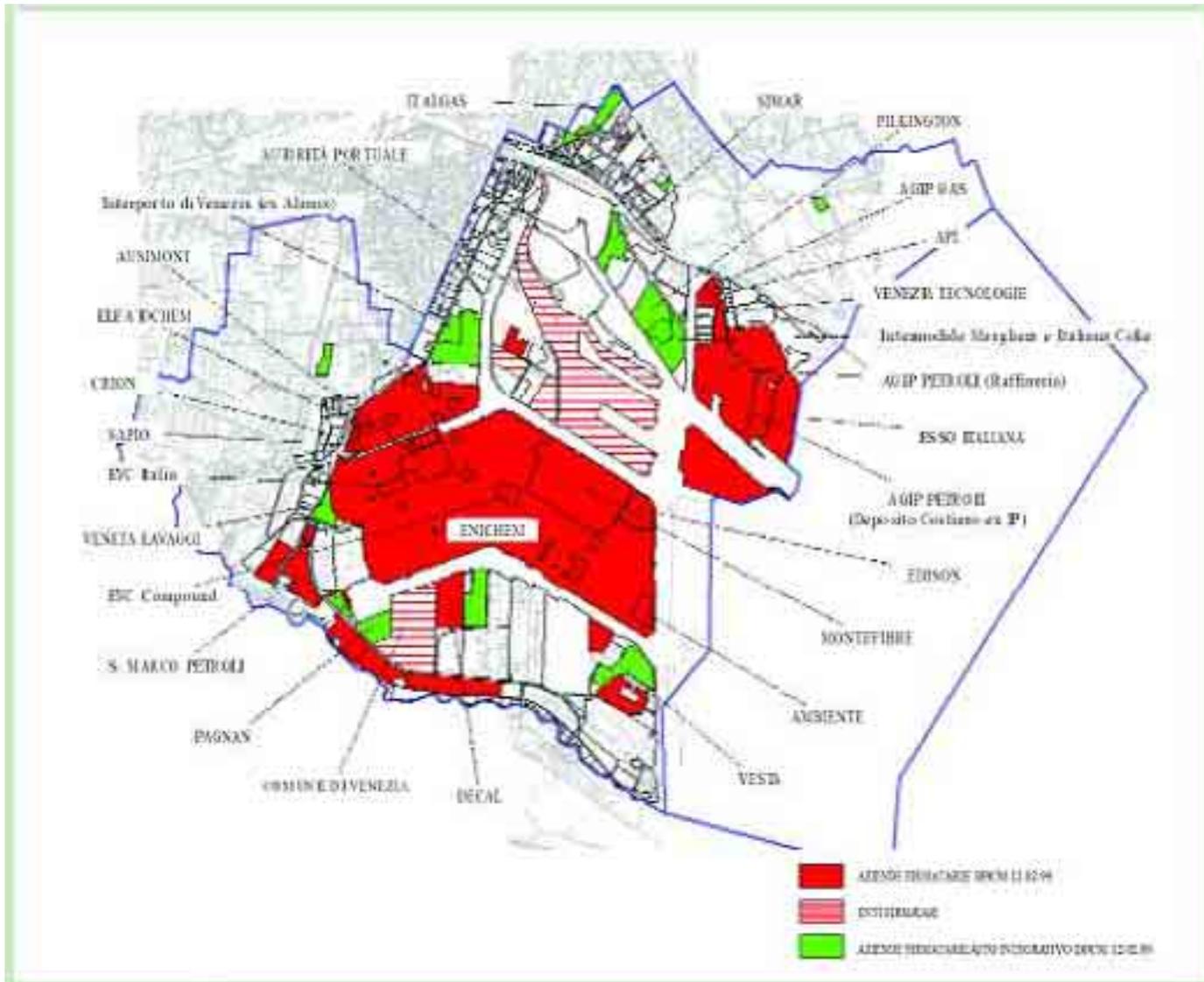


Venice  
Porto Marghera

Venice  
Center

## 4. The Environmental Balance

- c) The choose of appropriate indicators for the analyses:
- expenses and investments in environmental field
  - water intakes and dischargings
  - atmospheric emissions
  - wastes production and treatment
  - production and energy consumption
  - productions and materials handling
  - occupational safety on the job
- d) The correct assessment of all the dynamics of the territory.



## 5. Conclusions

From these example it is easy to understand that many factors are considered in an environmental study of industrial areas with high population density, in terms of analysis and assessment of different specific agents (presence of industries, population, nature).

This is possible in an integrated manner by means of adoption of indicators built upon scientific parameters, whose values in terms of data are collected by Environmental Agencies.



