

# Renaturation of an « ill-famed » territory: Estarreja's case

*Renaturation d'un territoire « mal famé » : le  
cas d'Estarreja*

# I – The scenario :

Industrial contamination / Decontamination / Renaturation

# An industrial complex created in the middle of the countryside



# « Bad reputation »: a well-known pollution case for 50 years in the whole country

1999 - Jornal *Público* : « A poluição escondida de Estarreja »  
(« *Estarreja's hidden pollution* »)  
Ricardo Garcia - 26 de Maio de 1999



2018 – WHO report : Estarreja = First portuguese place for air pollution

17 OHM studies of health risks

# Emergence of an environmental awareness

- January 1986 : Portugal integrates the EEC : new production rules
- Years 1990 : Changes in production patterns to cleaner processes (« *disruptive event* »)
- After 2000 : Progressive awareness of the population and local authorities on environmental problems :
  - Création of Pacopar
  - Participation of the population in UA and OHM scientific projects,
  - Involvement of schools in participatory science projects
  - Creation of the « Environment week » by the Estarreja Municipality

12 OHM studies with  
participatory approach

# Rehabilitation : Total décontamination ?

- **Partial containment** of industrial wastes (**ERASE project**) : 300 000 m<sup>3</sup> of Pyrite ash (As) waste and Hg-rich sludge
- **Water decontamination** of drainage ditches : ?
- **Air pollution +++** (PM<sub>10</sub>, PM<sub>2.5</sub>) : cf WHO report , may 2018



*22 OHM studies of contaminations / decontamination*

# Rehabilitation : Estarreja, a new « eco-center » for tourism ?



The new « tourist image » of  
Estarreja : BIORIA



8 OHM studies  
of biodiversity



Annual Labex DRIIHM Symposium  
Interdisciplinary Research Design on Human-Environments Interactions

October 8th-10th, 2018 – Marseille-La Couronne (France)

# II – Beyond the appearances : Humans and « Nature » in the Estarreja area



# Intensive human activity a long time before the construction of the CC



# Changes and permanence in land use

- **Relatively preserved agricultural activity** (the agricultural area still represents almost **half** of the total municipal area)
- **Dispersed urban expansion**, to the detriment of the city center



10 OHM studies of agricultural practices and land use

# Persistence of pollution, currently due to multiple causes

- **The Chemical Complex** :  
decreasing but still present contamination
- The use of inputs in **agriculture** ( amount of contamination: ???)
- Indoor and outdoor **air pollution** (fine particles ...): **road traffic** ?



# Evolution of ecosystems, human activity and climatic changes

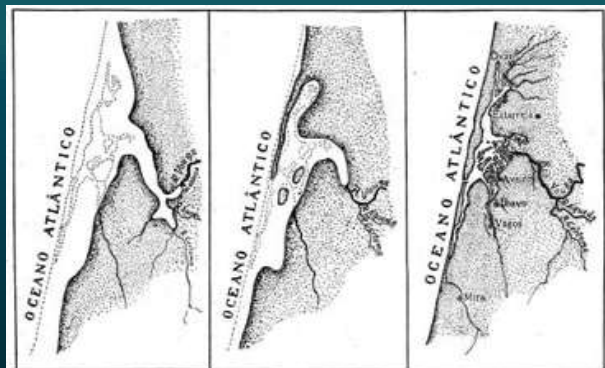


Fig. 30 -- Fases da formação da ria de Aveiro  
Da esquerda para a direita: 1) Reconstituição do litoral junto da foz do Vouga na época proto-histórica; 2) Desenho da Ria de Aveiro em mapas antigos; 3) Configuração atual da Ria de Aveiro.

1

2



Sea fishing



Lagoon fishing

currently

1 + 2

Future : only 1?

5 OHM studies on effects of climatic changes

- **Salinization**: future of agriculture ?
- **Floods** : consequences on spatial planning?

# Estarreja and « found again nature »: reconstruction of a myth ?

Has there ever been a « natural » ecosystem in Estarreja ?

Increasing anthropization : new successive equilibriums /  
co-adaptations of humans, plants and animals

