

The Case-Study of the Porto Marghera – Venice Lagoon National Priority List Site and the role of the voluntary agreement for the chemical industry

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APAT

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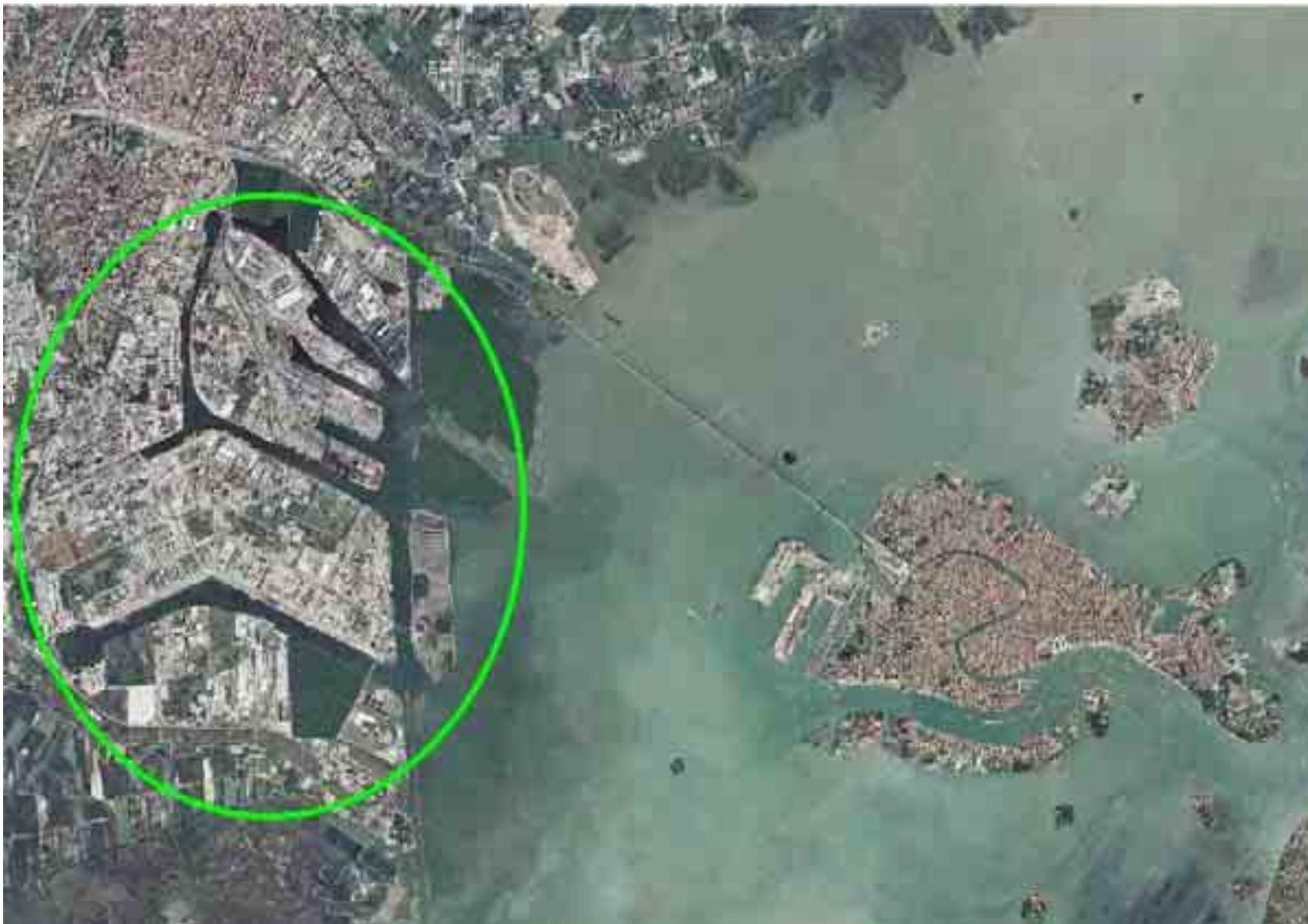
Overview of the presentation

- **Porto Marghera NPL Site: history and state-of-the-art**
- **The VA for the chemical industry**
- **Lessons learned and conclusions**

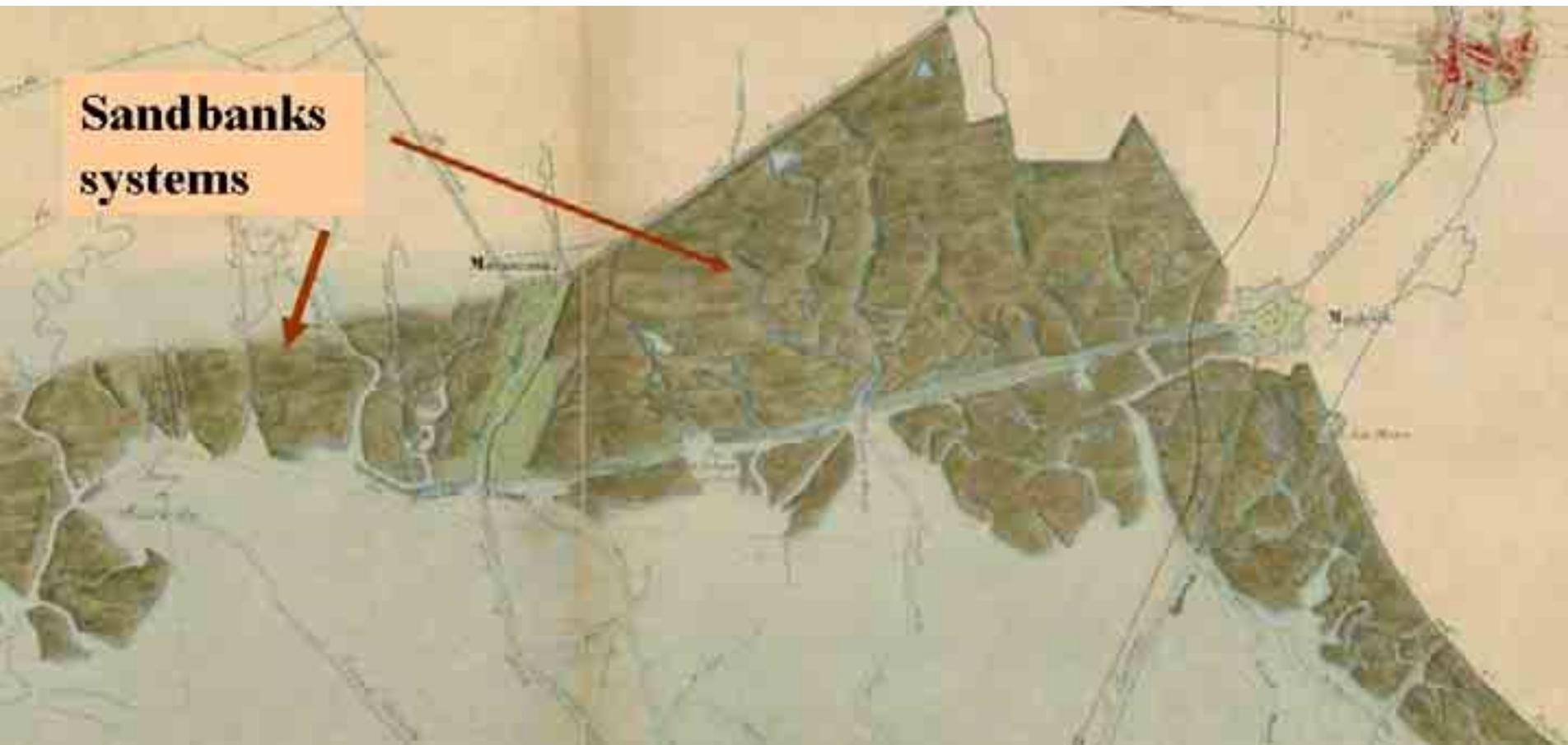
Historical Background

- On July 1917 the State and the Municipality of Venice signed an official act with a consortium of industries and banks: the “Bottenighi” area was created;
- The chemical industry production started in 1924 with the first plant of Montecatini company (fertilizers and chemical products);
- The workers were 6.000 in 1930, 16.000 in 1950, 35.000 in 1975: the industrial area became one of the most important in Europe despite of the Second World War bombings;
- In the late '80s the decline starts;
- In the '90s a new series of regulatory acts set limits to the contamination of soil and groundwater, emphasizing the degradation of lagoon habitat and a deep social and economic crisis.

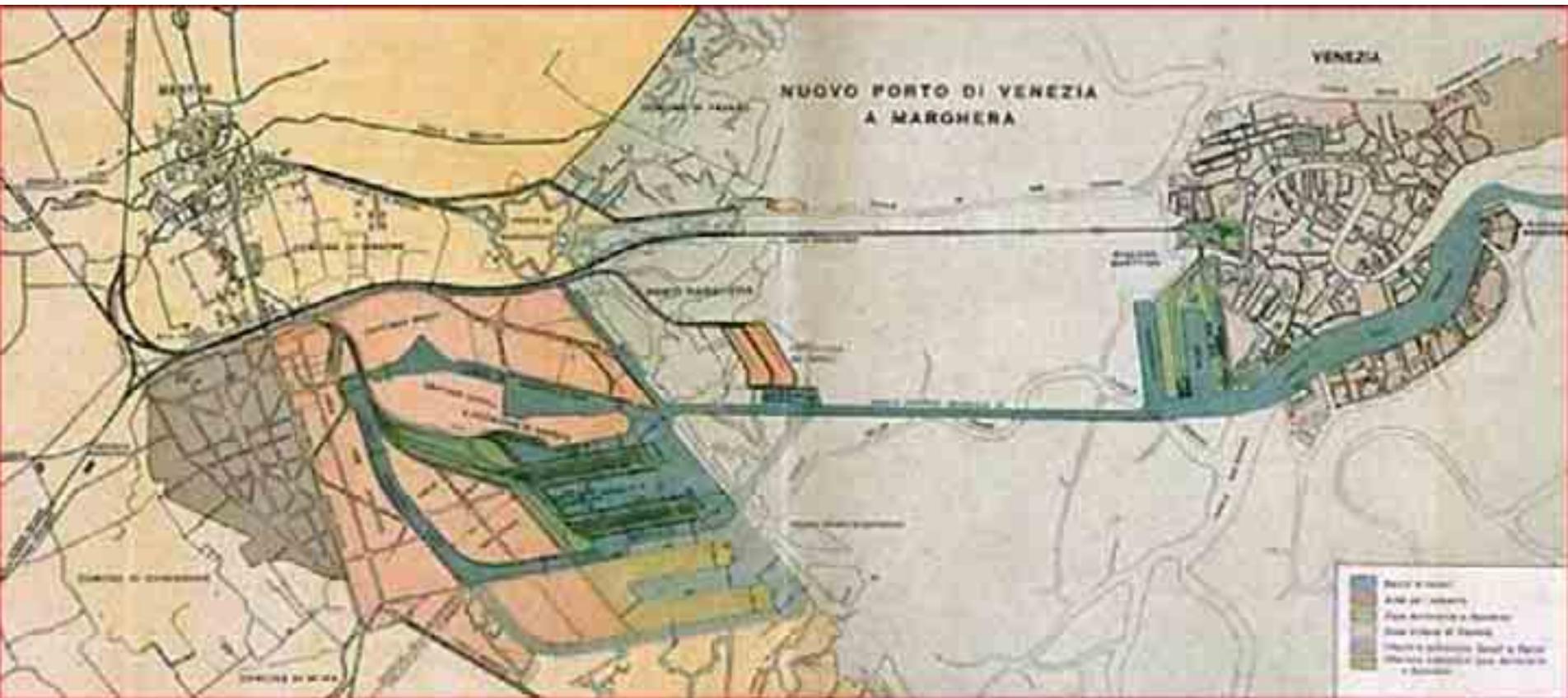
The Industrial Area of Porto Marghera



The Lagoon before the construction of Porto Marghera (1900)

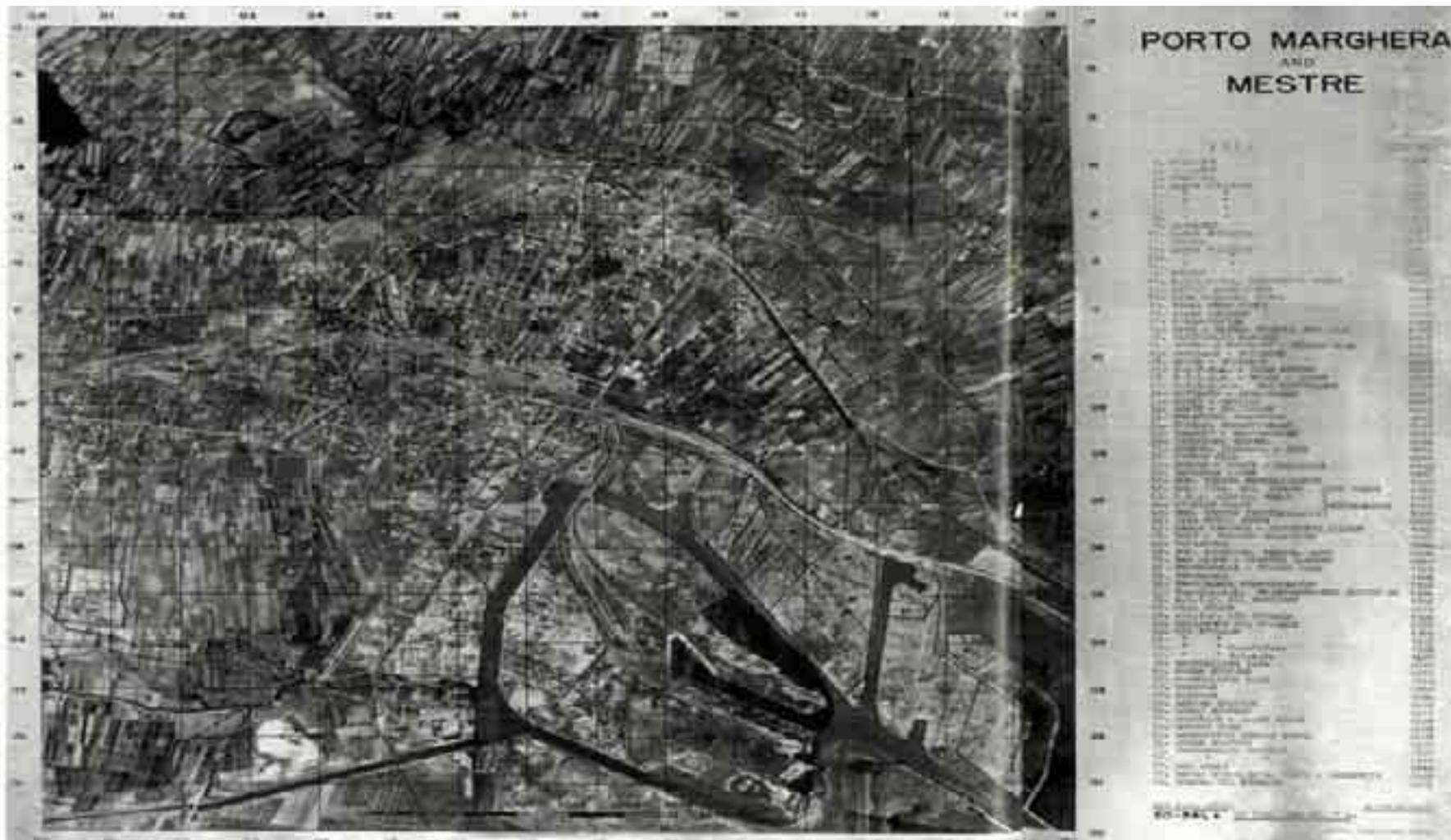


The design of the new port of Marghera (1923)



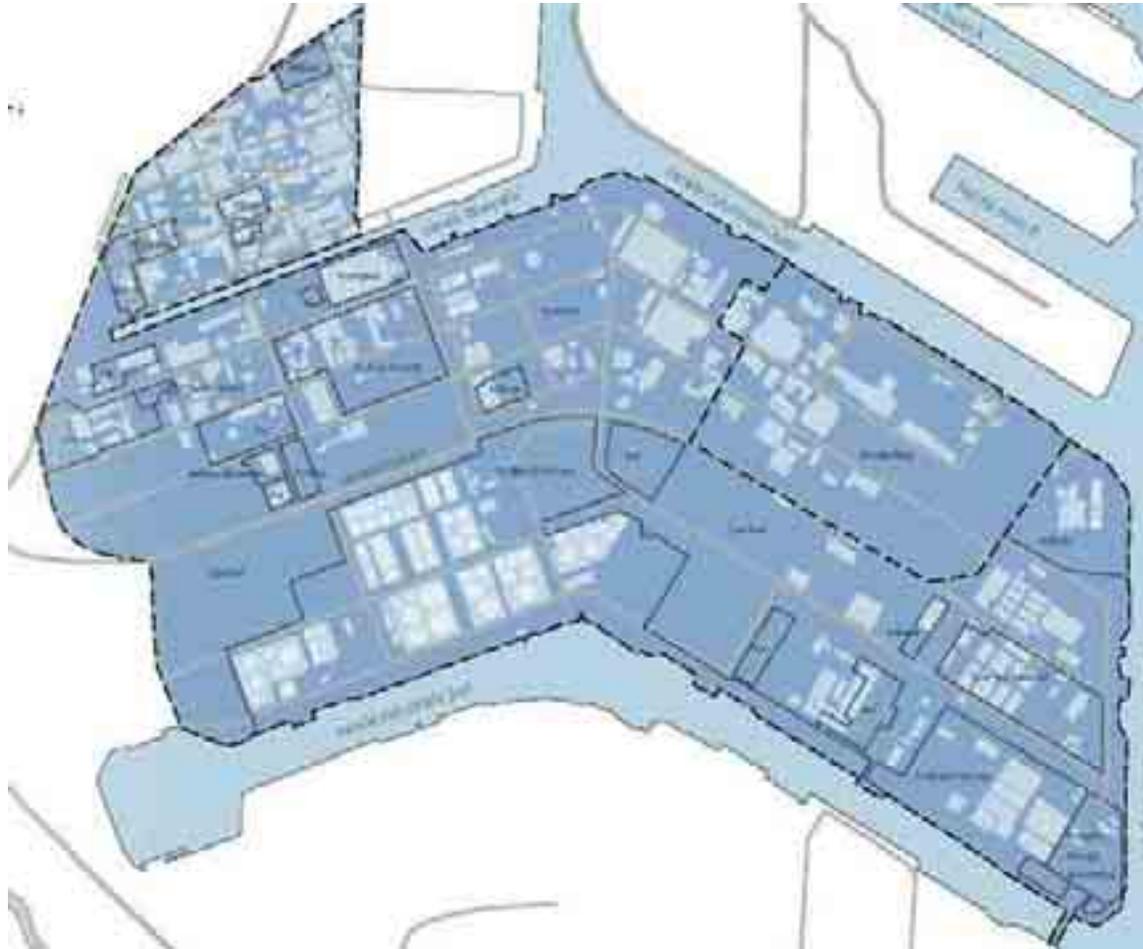
1920

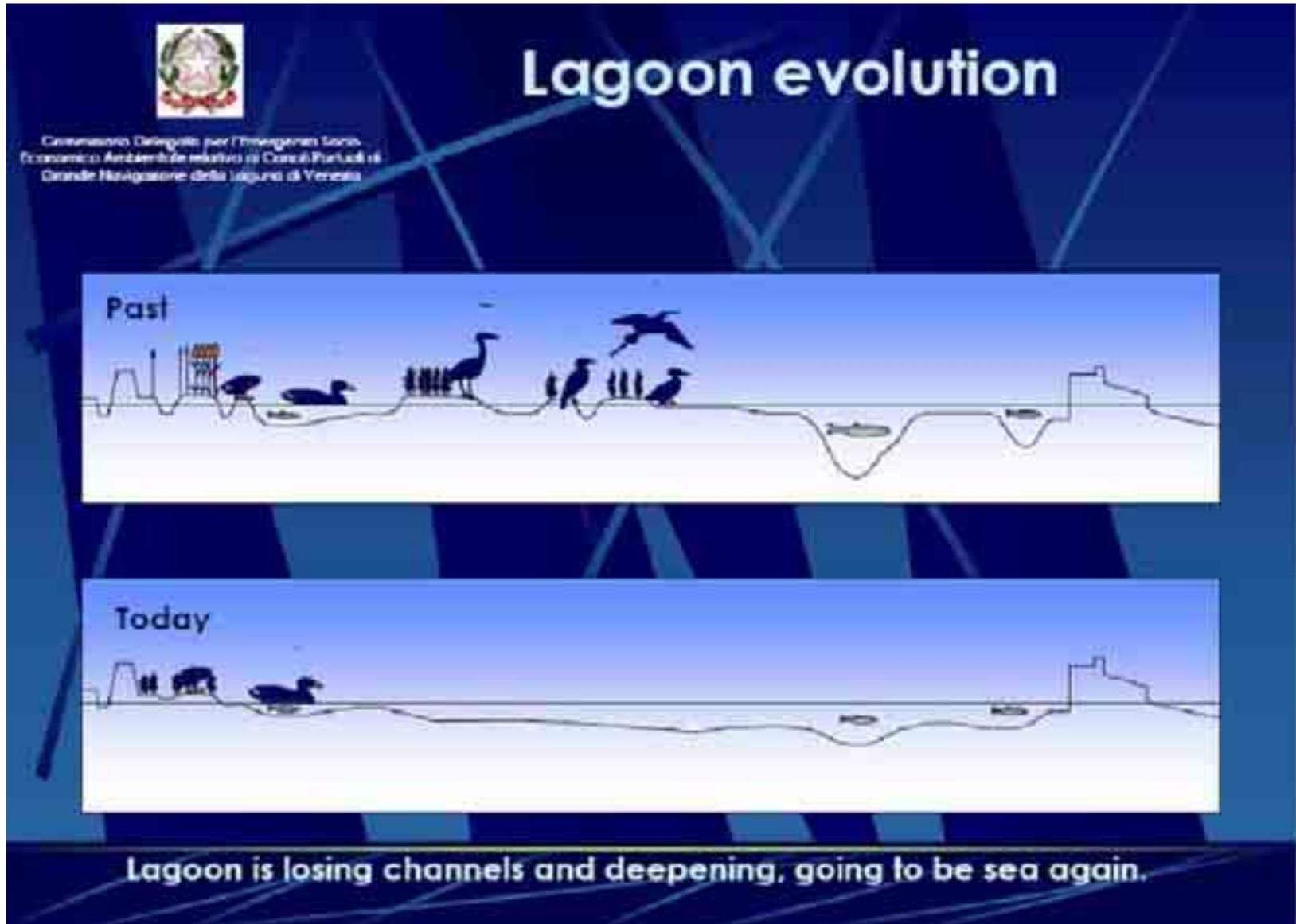
Detailed map of the Porto Marghera and Mestre area found inside a U.S. bomber of the Second World War



1960

Old and New Petrochemical Area (1960)





The diagram illustrates the 'Lagoon evolution' through two horizontal panels. The top panel, labeled 'Past', shows a lagoon with a complex network of channels and a high water level. It features silhouettes of various birds, including swans and herons, and a small structure. The bottom panel, labeled 'Today', shows the same lagoon with a significantly lower water level and a much simpler, less developed channel network. The text at the bottom of the diagram states: 'Lagoon is losing channels and deepening, going to be sea again.'

Lagoon evolution

Commissione Delegata per l'Emergenza Socio-Economica Ambientale relativa ai Canali Portuali di Grande Navigazione della Laguna di Venezia

Past

Today

Lagoon is losing channels and deepening, going to be sea again.



Pollution of navigational channels

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Erosion of contaminated soils and uncontrolled wastewater discharge

B2

B3

The slide features a dark blue background with a grid pattern. On the left, there is a photograph of an industrial facility with several tall smokestacks emitting white plumes. Below the photograph is a cross-sectional diagram of the ground. A yellow area at the bottom of the diagram represents a contaminated zone. A white line above the yellow area shows the ground surface profile, which is eroded in the center. Two horizontal arrows, labeled 'B2' and 'B3', point from the industrial area towards the ground profile. The 'B2' arrow is green and points to the surface, while the 'B3' arrow is yellow and points to the contaminated zone.

Contamination (1)

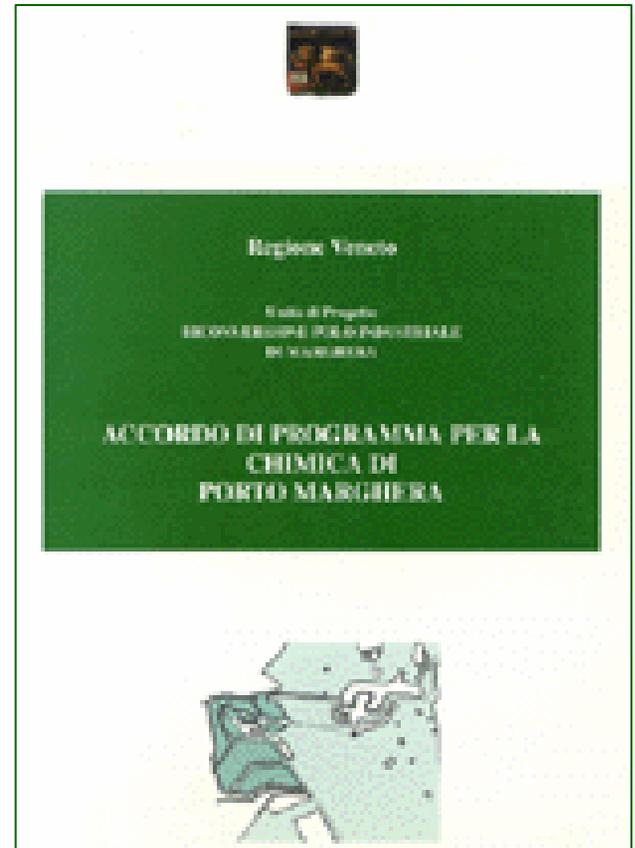
- Soil, subsoil, groundwater and sediments affected by contamination
- Different industrial activities led to different contaminants: mainly heavy metals, chlorinated hydrocarbons, petroleum hydrocarbons, Dioxins and Furans, PCBs, PAH, Normally Occurring Radioactive Materials (NORMs)

Review of the Voluntary Agreement (VA) (1)

- The “VA for the Chemical Industry of Porto Marghera” was signed on Oct. 1998 and approved by the President of the Italian Council of Ministers on Feb. 1999;
- In order to comply with the subsequent Decree of the Ministry of the Environment n. 471 on clean-up activities, issued in Dec. 1999 an “Integrative Act of the VA for the Chemical Industry of Porto Marghera” was subscribed on Dec. 2000 and approved by the President of the Italian Council of Ministers on Nov. 2001.

Review of the Voluntary Agreement (2)

- Main goal of the VA: construction and maintenance of the optimal conditions of co-existence between protection of the environment and development of the chemical industry;
- The VA was subscribed by Relevant Ministers, Veneto Region, Local Authorities, Labour Unions and also by the main companies of the Petrochemical Area;



Objectives of the VA

1. Remediation and protection of the environment through the application of emergency action and clean-up activities, reduction of the atmospheric emissions in the Lagoon and prevention of the industrial risk;
2. Development of industrial investments for the application of the Best Available Technologies to the industrial processes in order to achieve high technological standards of production, maintaining, improving and qualifying the occupational level.

Actors (Public)

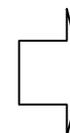
Ministries of:

Environment, supported by relevant national agencies
 (e.g. APAT, ISS, ISPESL, ICRAM);

Industrial Activities;

Public Health;

Public Works



National

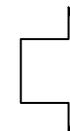
Veneto Region, through the regional EPA (ARPAV);

Venice Province;

Venice Municipality;

Venice Port Authority;

Ministry of the Public Works through the Venice Water
 Authority (Magistrato alle Acque di Venezia)



Local

Other Actors (Private Companies and Social Groups)

Industrial Union (Unindustria);
Chemical Industry Federation (Federchimica);
Labour Unions

National

Enichem;
EVC European Vinyls Corporation
Edison
Atofina
Crion
Sapio
Agip Petroli
ESSO
API

Ausimont
Montefibre
San Marco Petroli
Decal
Agip Gas
Ambiente S.p.A.
Esercizio Raccordi Ferroviari
Ente Zona Industriale di Porto Marghera
Petroven
Local citizenCommittes

Local

Tools (1)

Procedures: Public Discussions and Technical Meetings (Permanent Conference of Stakeholders, VA Technical Secretariat);

Strategies: Protocols and Guidelines (Master Plan, SIMAGE and additional protocols on environmental risk analysis, clean-up technologies, sediments management, ecc.);

Controls: constant monitoring activity assured on behalf of the Ministry of the Environment by the Environmental Protection Agency of Veneto Region (ARPAV) in co-operation with the CC.T.A. (Carabinieri for the Environmental Protection)

Tools (2)

- Master Plan – Goals
- Definition of the emergency actions;
- Development of a confinement strategy (51 km of sheet piles walls);
- Excavation of highly contaminated sediments (about 6.4 millions of cubic metres);
- Construction of wastewater treatment plants, landfills, etc.;
- Remediation of contaminated soil in order to achieve complete industrial recovery of the area



Tools (2)

Master Plan – Economic and Financial aspects

Estimated cost of the planned actions: over 1.800 millions of Euro: public and private participation;

Restoration of the area and subsequent urban planning needed in order to obtain high value uses (i.e. tourism, residential, commercial)

Performance Indicator(s) and Impacts (1)

ECONOMIC :

total industrial surface;

number of workers;

workers distribution in the industrial sectors;

raw materials and products.

SAFETY:

number of labour accidents;

frequency of labour accidents.

Performance Indicator(s) and Impacts (2)

ENERGY :

total energy consumption;

% use of thermal and electrical energy;

total energy production

EMISSIONS (Totals):

SO_x;

NO_x;

CO;

VOCs;

VC;

chlorinated compounds.

Performance Indicator(s) and Impacts (3)

WATER:

- total amount of water pumped from the lagoon;
- total amount of water discharged into the lagoon;
- total treated (groundwater, surface water)

WASTE:

- total hazardous waste produced;
- total non hazardous waste produced;
- total treated;
- total disposed;
- total recovered;

State of Implementation

- Starting from 2001 more than 1000 technical documents were examined by the public authorities;
- The preliminary characterization (100 m square grid) of the Petrochemical area was completed in 2003- 2004 together with the main emergency actions;
- A detailed characterization (50 m square grid) has been performed in order to develop the remediation projects;
- A great impulse to the confinement works (sheet piles walls) was given through the use of both public (Ministry of the Environment) and private (transactions) funds.
- The Ministry of the Environment approved the final remediation project for the Petrochemical Area (about 550 hectares) almost 20% of the site.

Lessons Learned and Conclusions (1)

- Voluntary agreement between government and industry have been increasingly used as a new policy tool to achieve environmental restoration and protection targets;
- Sanctions: are essential for the success of the VA in case of non-compliance (environmental damage costs can be charged to the polluters by the Ministry of the Environment if the legal action is supported by technical reports)
- Monitoring and verification of the goals of the VA require the full participation of all stakeholders and the co-operation among public, private and social actors;

Lessons Learned and Conclusions (2)

The co-ordination work of the Ministry of the Environment plays a fundamental role in the application of VA by proactively promoting and ensuring the involvement of all stakeholders, monitoring their activities over time;

The development of clean-up activities creates new jobs (environmental experts, consultants, ecc.);

Successful examples of residential/recreational re-use of the cleaned-up areas: Parco San Giuliano

Parco S. Giuliano



*reference: Venice
Municipality web-
site*

