

PARTNERSHIP, BUDGET AND DURATION

Coordinator



Italian National Institute for Environmental Protection and Research

Partners



REGIONE DEL VENETO



MINISTERO INFRASTRUTTURE E TRASPORTI
PROVVEDITORATO INTERREGIONALE OO.PP.
VENETO-TRENTINO ALTO ADIGE
FRIULI VENEZIA GIULIA



Università
Ca' Foscari
Venezia



IPROS
INGEGNERIA
AMBIENTALE

Veneto Region - Environmental Protection Department

Interregional Superintendency for Public Works in Veneto, Trentino Alto Adige, Giulia

University Cà Foscari of Venice

IPROS Environmental Engineering s.r.l

Budget info

Total amount: 3'315'130 Euro

Eligible budget: 3'286'630 Euro

% EC Co-funding: 74,13% of total eligible budget

Duration

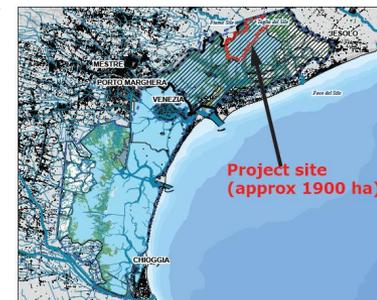
Start: 01/09/2017

End: 31/08/2022



Location

*Venice Lagoon
ITALY*



PROJECT BACKGROUND: DIFFERENT NATURAL AND ANTHROPOGENIC PRESSURES

Lagoon of Venice

CITY OF VENICE

SEVERE REDUCTION OF THE ECOTONAL
TRANSITION ZONE BETWEEN LAND AND
LAGOON, CHARACTERIZED BY A MARKED
SALINE GRADIENT

Adriatic sea

*First modern hydrographic map
based on surveys
of 1809 and 1811*

*D'Alpaos, 2010. Morphological
evolution of the Venice Lagoon
through historical and
hydrographic maps*

INDUSTRIAL ZONE

AIRPORT

CITY OF VENICE

**DIFFERENT NATURAL AND
ANTHROPOGENIC PRESSURES**

Lagoon of Venice

Adriatic sea

*Hydrographic map
based on surveys
of 2000*

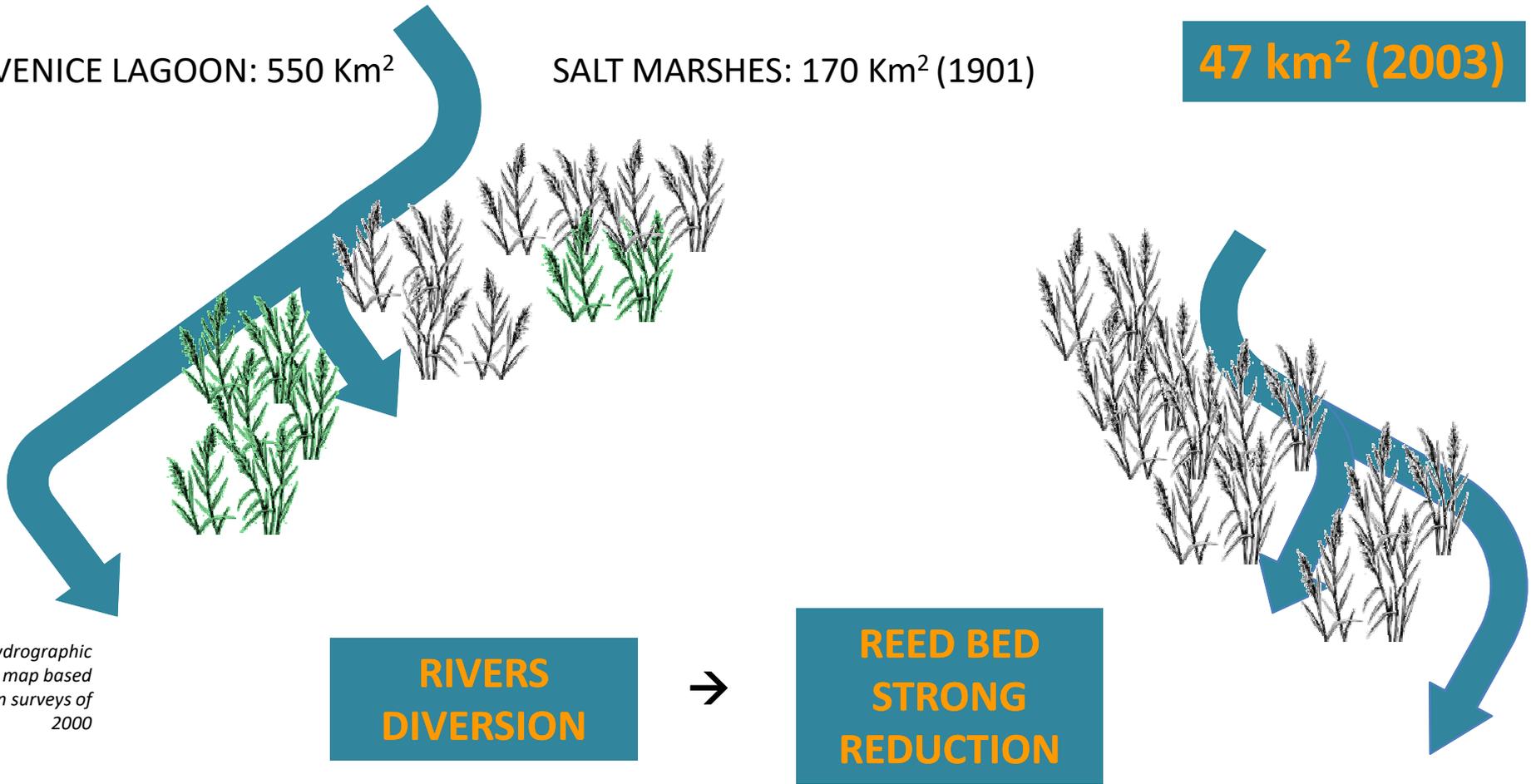


PROJECT BACKGROUND: RIVERS DIVERSION

VENICE LAGOON: 550 Km²

SALT MARSHES: 170 Km² (1901)

47 km² (2003)



*Hydrographic
map based
on surveys of
2000*

**RIVERS
DIVERSION**

**REED BED
STRONG
REDUCTION**



PROJECT MAIN OBJECTIVES

TO RECREATE THE **TYPICAL OLIGO-MESOHALINE** ENVIRONMENTS OF ESTUARINE TYPE

- to improve the **Degree of Conservation of Habitat 1150** * - Coastal lagoons in the Northern Lagoon of Venice, SCI IT3250031
- to reduce the **degree of eutrophication**, thanks to reed phytoremediation function;
- to improve the **status of bird species** included in annex I of Dir. 2009/147/EC, that use the reed environment during the winter period and /or for breeding, foraging or nesting;
- to increase the **presence of fish species** attracted by the presence of low-salinity environments;



POLICY IMPLICATIONS

“HABITAT DIRECTIVE” 92/43/CEE / “BIRDS DIRECTIVE” 2009/147/EC

improvement of **conservation degree of habitat and species** of Community interest

“WATER FRAMEWORK DIRECTIVE” 2000/60/EC

improvement of the **trophic state** of the habitat 1150* in order to contribute to the **achievement of the good Ecological status** in two water bodies within the Venice lagoon

2020 BIODIVERSITY STRATEGY

restoration of **salt gradient and reed bed surfaces** in order to contribute to the **increase of biodiversity** in the project area. Increasing of species included in Habitat and Birds Directives and other bird species of special conservation interest



PROJECT KEY ACTIONS: CONSERVATION ACTIONS

- 1) diversion of a **freshwater flow** (1.000 l/s) from the Sile river into the lagoon;
- 2) restoration of the **intertidal morphology** to sustain the reed development;
- 3) planting of ***Phragmites australis***;
- 4) transplantation of ***Ruppia cirrhosa***, ***Zostera marina*** and ***Zostera noltei***;



PROJECT KEY ACTIONS: CONSERVATION ACTIONS

1 HYDRAULIC WORKS

The Hydraulic works consist of two pipelines crossing the right embankment of the Sile river.

The diversion of a freshwater flow from the Sile river into the Lagoon will be gradually increased starting from 300 l/s to approximately 1000 l/s.

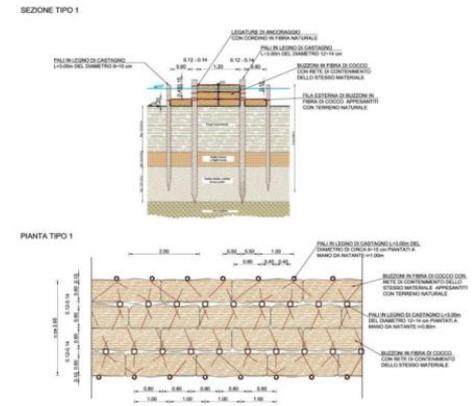
Works are supposed to be completed in March 2020.



PROJECT KEY ACTIONS: CONSERVATION ACTIONS

2 MORPHOLOGICAL STRUCTURES

BIODEGRADABLE GEOTEXTILE
Dimension: 2.40 m
Top: 0.15 m a.s.l.



Two lines of modular elements, mainly biodegradables, placed on the lagoon shallow area in front of the freshwater intake area.

The first line is supposed to be completed in March 2020.

CONSERVATION ACTIONS PLANNING SUPPORTED BY NUMERICAL MODELLING

DIVERSION OF A FRESHWATER FLOW FROM THE SILE RIVER INTO THE LAGOON

**HYDRAULIC
WORK**

WHICH DISCHARGE?



STRUCTURES PROPERLY
ARRANGED IN ORDER TO
SLOW DOWN THE FRESH
WATER DISPERSION AND TO
FAVOR THE REED
DEVELOPMENT ACCORDING
TO THE PROJECT
CONFIGURATION

**MORPHOLOGIC
WORK**

WHICH CONFIGURATION?



PROJECT KEY ACTIONS: CONSERVATION ACTIONS

3 REEDBED TRANSPLANTATION

Planting of clumps (ca. 1000 of 10-15 cm in diameter) and rhizomes of *P. australis* over a total linear extension of approx. 10000 m.

Supposed to be performed in 2020 and 2021.



PROJECT KEY ACTIONS: CONSERVATION ACTIONS

4 AQUATIC ANGIOSPERMS TRANSPLANTATION

Transplantation of small clumps (approx. 1300) and rhizomes (approx. 2500) of *Ruppia cirrhosa*, *Zostera noltei* and *Zostera marina*, aquatic angiosperms species.

Supposed to be performed in 2020 and 2021.

PROJECT KEY ACTIONS: CONSERVATION ACTIONS EXPECTED RESULTS

➤ WATER SALINITY:

- 5 ha: shift from >30 psu (annual mean) to <5 psu;
- 25 ha: shift from >30 psu to <15 psu;
- 70 ha: shift from >30 psu to <25 psu.

➤ REED BED SURFACE:

- at the end of the project: from 30 to 50 ha;
- 5 years after the end: 60 ha.



PROJECT KEY ACTIONS: MONITORING ACTIVITY

- ✓ MONITORING OF THE COASTAL LAGOON HABITAT (BENTHOS, WATER, SEDIMENTS, MACROPHYTES, SALINITY, BATHYMETRY)
- ✓ MONITORING OF HALOPHYTIC HABITATS AND HABITAT OF TARGET SPECIES
- ✓ MONITORING OF TARGET ORNITHIC SPECIES
- ✓ EVALUATION OF ECOSYSTEM FUNCTIONS AND SOCIO-ECONOMIC ASPECTS

STAKEHOLDERS INVOLVEMENT – FISHERMEN AND HUNTERS

FISHERMEN AND HUNTERS, WHO REGULARLY USE THE SCI IT3250031, WILL BE INVOLVED IN THE **REED AND SEAGRASS TRANSPLANT ACTIONS** AFTER A TRAINING COURSE

STAKEHOLDERS INVOLVEMENT – GENERIC PUBLIC

TRAINING COURSE ON BIRDS SPECIES
RECOGNITION AND PHOTOGRAPHY
HUNTING

TO INCREASE KNOWLEDGE OF
ENVIRONMENT AND FOR INVOLVEMENT
AND SHARING OF PROJECT OBJECTIVES
AND RESULTS

STAKEHOLDERS INVOLVEMENT – DISSEMINATION

DISSEMINATION WITH PUBLIC EVENT,
LABORATORIES, ETC.: INVOLVEMENT AND
SHARING OF PROJECT OBJECTIVES AND RESULTS

STAKEHOLDERS INVOLVEMENT – REPLICABILITY

CALL FOR INTEREST

REPLICABILITY AND TRANSFERABILITY IN THE FRAMEWORK OF LIFE LAGOON REFRESH

The Replicability and Transferability (R&T) strategy consists of the following steps:

- call for interest at European level to identify potential R&T sites;
- selection of sites for R&T;
- visits to the Life Lagoon Refresh intervention site (costs covered by of Life Lagoon Refresh project);
- visits to each site selected for R&T (costs covered by of Life Lagoon Refresh project);
- preparation of scenarios for R&T of the project strategy/actions/methods in the selected sites;
- After-life R&T activities.

If you are interested you can:

- Download the Application form (<http://www.lifelagoonrefresh.eu>)
- Contact us via mail (lagoonrefresh@isprambiente.it)

**The call will
close soon!**