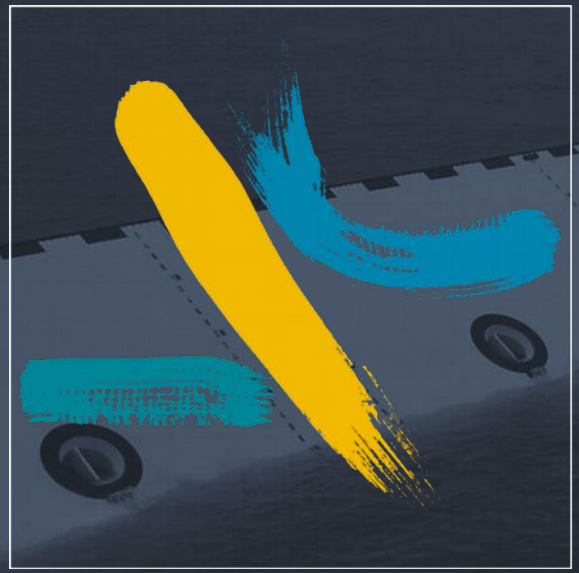
Ministero delle Infrastrutture e dei Trasporti / Provveditorato Interregionale per le OO.PP. del Triveneto / Consorzio Venezia Nuova



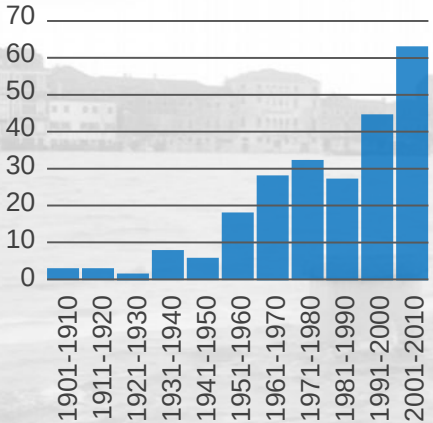
MOSE

Technology, development and innovation for coastal and environmental defence

The Venice Lagoon

The problems to face

Floods / Sea storms / Erosion /Pollution

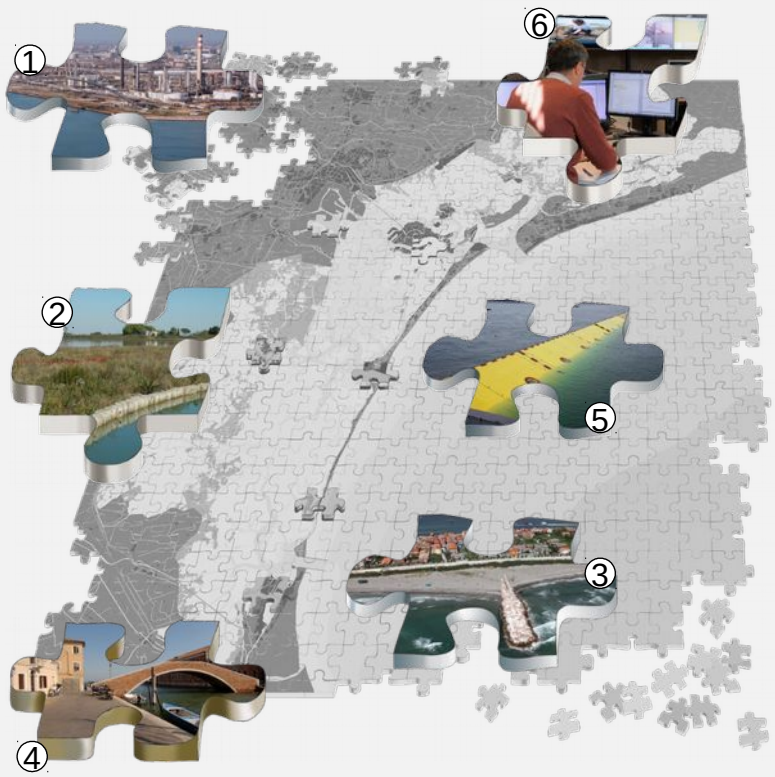


The task

The Italian State has guaranteed protection for Venice and its lagoon through a major environmental, coastal and urban protection plan: the Mose system

The Mose

An integrated solution for a complex environment



40 km industrial canal banks secured; **7** former dumps secured

16 km² salt marshes reconstructed and naturalized

56 km beaches reconstructed;
12 km coastal dunes restored and naturalized

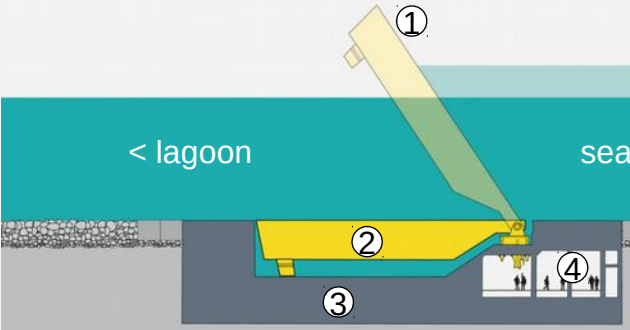
100 km urban embankments raised and reinforced

4 mobile barriers (92%) to protect from floods

Management and control

The Mose

Technology, development and innovation



1, Gate in operation
2. Gate in stand-by
3. Gate housing structure
4. Galleries for technical plants

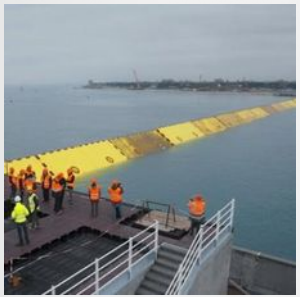
Lagoon inlets

Gate housing structure

Gate

Galleries
for technical plants

Hinge
(male and female
elements)



North Lido barrier
In operation

The Mose. Knowledge management

Management and maintenance activities

The implementation of the interventions for the defence of Venice and of its lagoon from the hydrogeological risk has entailed the development of a vast knowledge system that has gradually developed within the scope of safeguard activities and which must be preserved and maintained in order not to disperse an essential patrimony of multidisciplinary information.

These information concern the design parameters and the construction methods of the defence system, but also the procedures for its correct use and the strategies for the control of the environment.
This huge know-how must be used for the development and application of an integrated program for the management and maintenance of the works (to ensure their full efficiency and proper functioning) and of the ecosystem itself (to govern its transformations, to protect its environmental values and to promote the ecological functions of the various components).

The Mose

Flexible management

The Mose system has been conceived to respond to hydraulic and environmental emergencies, considering all the constraints and resources of the territorial context in which the needs of safeguarding the lagoon are combined with those of socio-economic activities (first of all port facilities and fishing).

Thanks to the flexibility of the mobile barriers and of the operating rules, it will be possible to optimize the operating modes of the system in order to minimize the interferences on environment and on human activities.

The high waters can be faced with total closures of the inlets (exceptional tides) or with partial closures (more frequent tides).

Mose management

Set up of the operating rules

The management of the barriers involves coordination among the competent Bodies. The methods of collaboration and communication among the Subjects are being defined also thanks to special "technical tables".

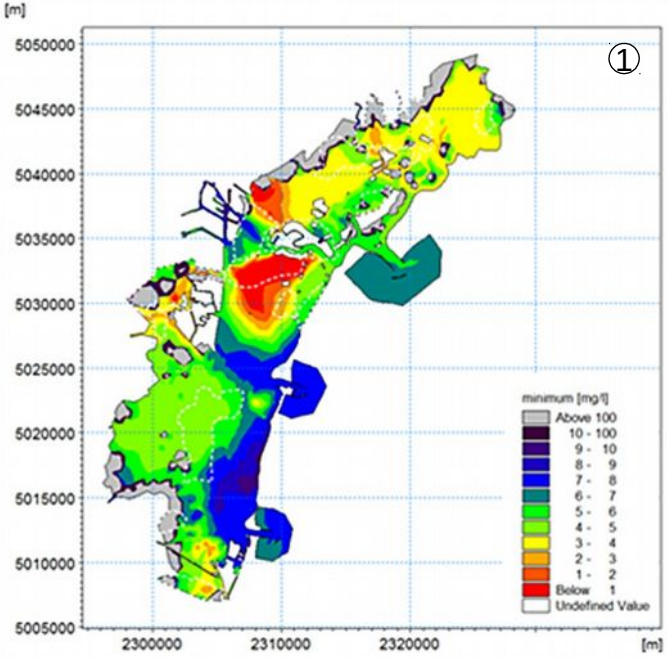
These tables aim to perfect the procedures to share information - through coded mode s- and to define the communication protocols (according to standard methods and emergency modes).

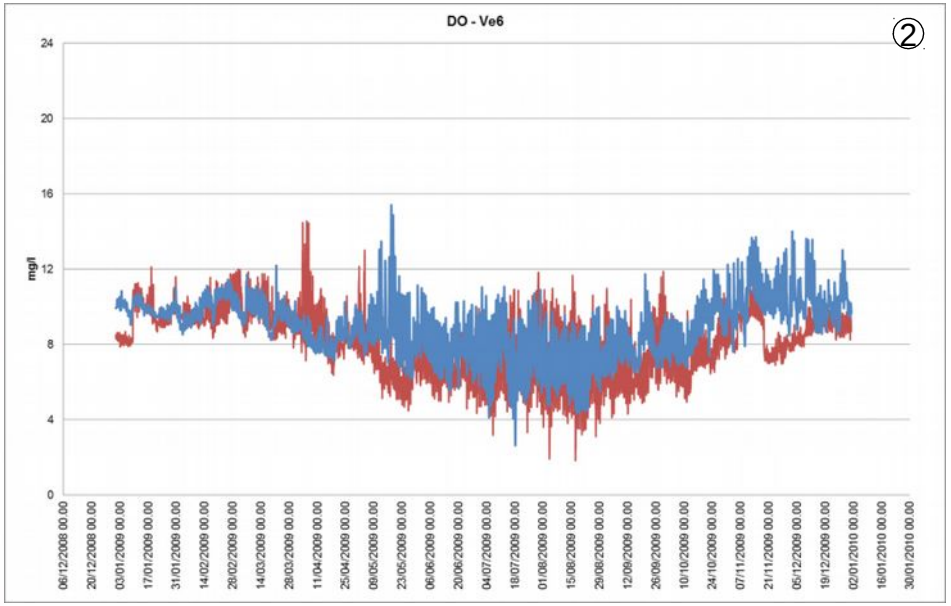
The communications regarding the operation of the gates concern all the subjects that use the lagoon and in particular the Bodies who play a public role (Local Civil Protection, Fire Brigade, Port Authorities, Trade Associations, etc.)

Mose management

New management mode

The possibility of operating the Mose barriers to increase water renewal in critical areas is object of investigations. Present results obtained through the trophic model suggest that significant increase in water renewal and hence in oxygenation of water column may be obtained especially in the areas close to the sub-basins borders





Trophic model of the Venice Lagoon

1. Dissolved oxygen minimum values forecast
2. Dissolved oxygen measured vs modelled