



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



**TEDEN SREDOZEMSKO OBALE
IN MAKROREGIONALNIH
STRATEGIJ**

Izola, Slovenija
15. – 17. september 2025

**MEDITERRANEAN COAST
AND MACRO-REGIONAL
STRATEGIES WEEK**

Izola, Slovenia
15 – 17 September 2025



The safeguard of Venice and the MOSE system

Sebastiano Carrer - Thetis S.p.A.



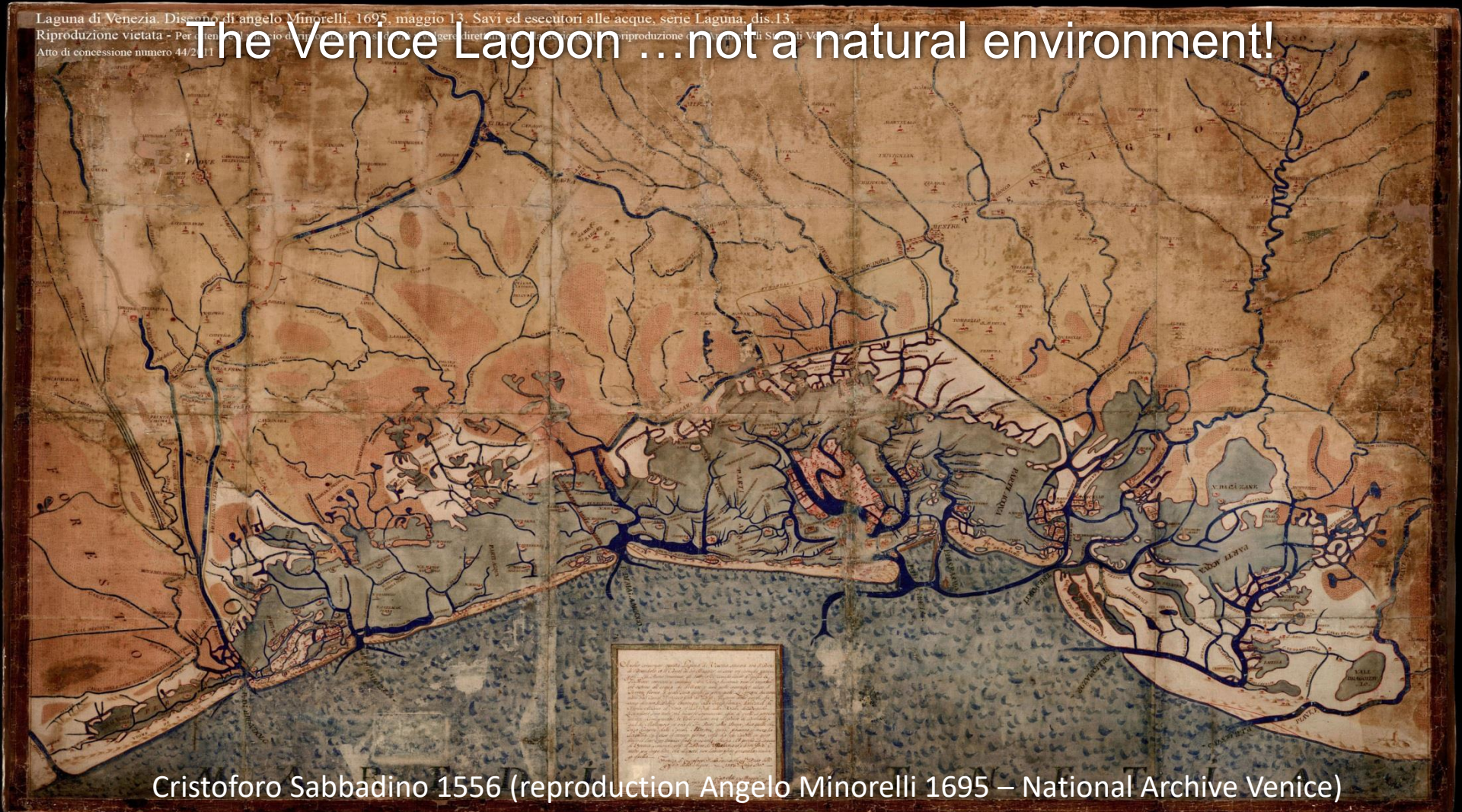
Izola, Slovenija
15. – 17. september 2025

Izola, Slovenia
15 – 17 September 2025



Laguna di Venezia. Disegno di angelo Minorelli, 1695, maggio 13. Savi ed esecutori alle acque, serie Laguna, dis.13.
Riproduzione vietata - Per informazioni rivolgersi al direttore generale della Direzione Regionale Venezia Venezia
Atto di concessione numero 44/2011

The Venice Lagoon ...not a natural environment!



Cristoforo Sabbadino 1556 (reproduction Angelo Minorelli 1695 – National Archive Venice)



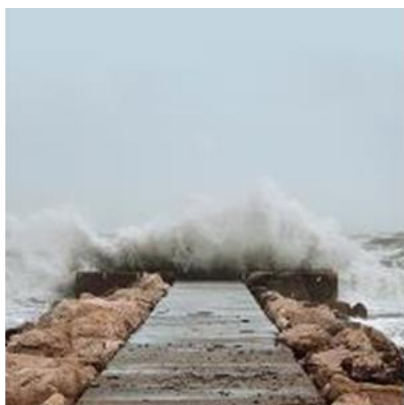
The Venice Lagoon today ...a complex environment

- World heritage city
- Industrial site Porto Marghera
- 108 municipalities in drainage basin

- Tourism
- Mobility
- Port facilities and logistics
- Environmental protection
- Climate change



Floods - Sea storms - Erosion - Pollution - Eutrophication





TEDEN SREDOZEMSKO OBAL IN MAKROREGIONALNIH STRATEGIJ

Izola, Slovenija
15. – 17. september 2025

MEDITERRANEAN COAST AND MACRO-REGIONAL STRATEGIES WEEK

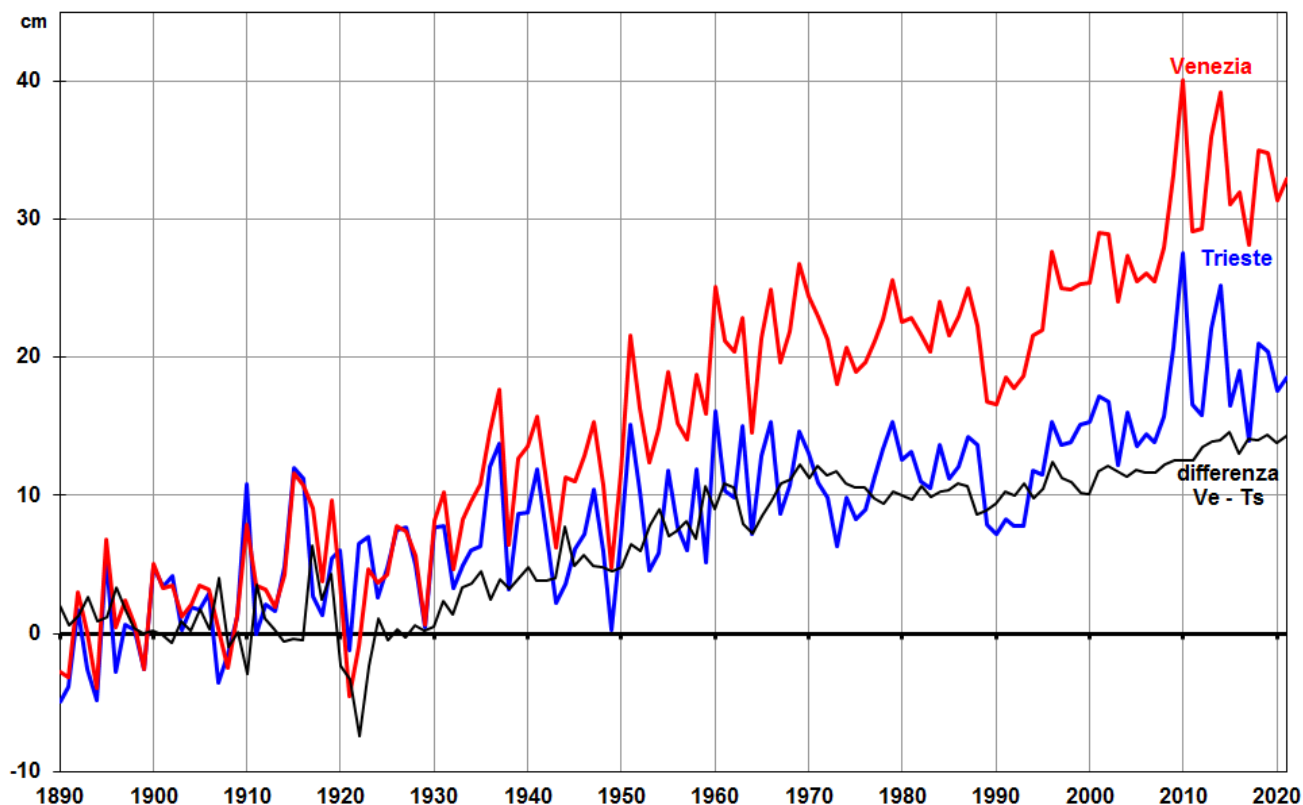
Izola, Slovenia
15 – 17 September 2025



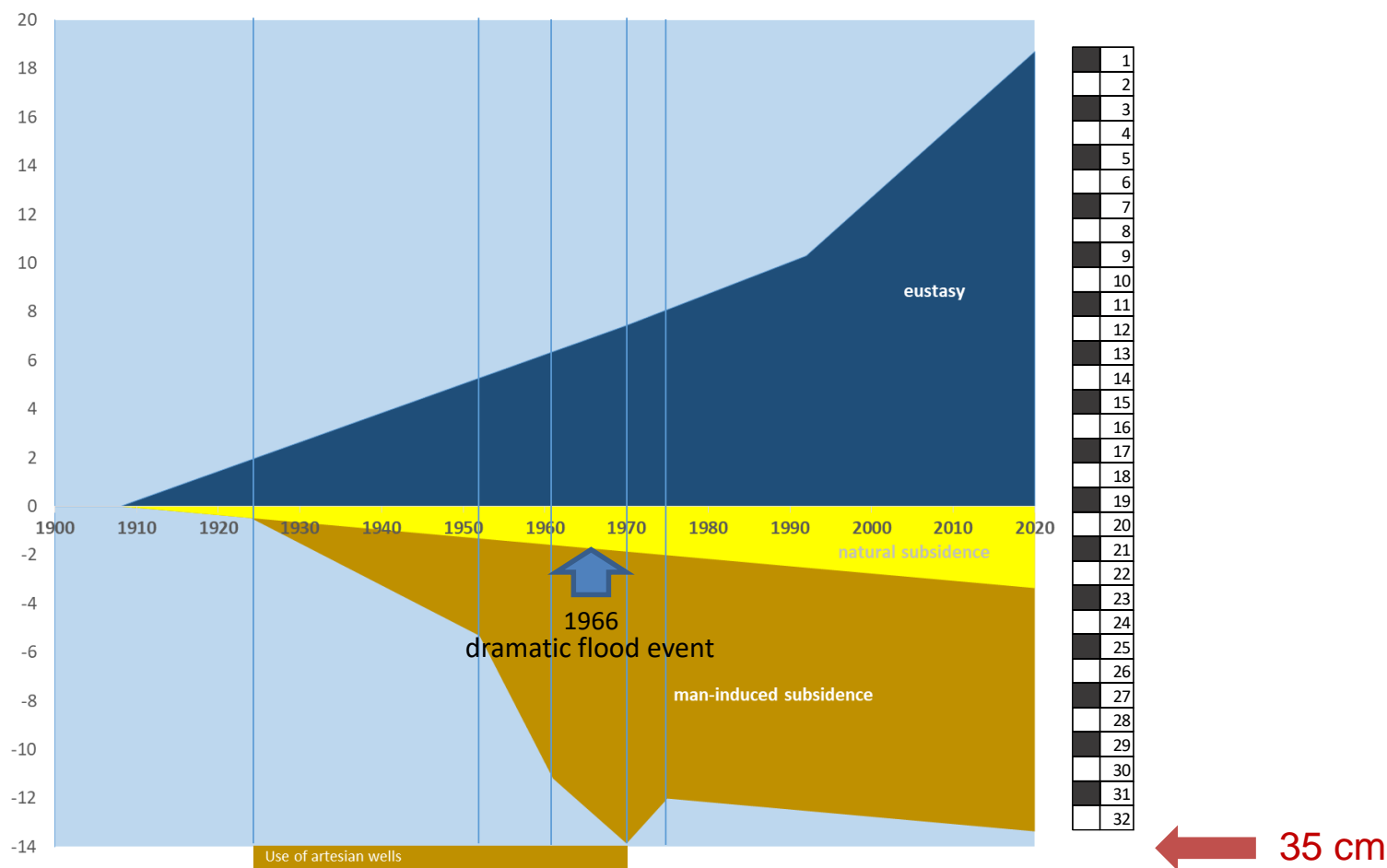
Centuries of adaptation



Sea level in Venice and Trieste



Relative Sea level rise - Eustasy and Subsidence





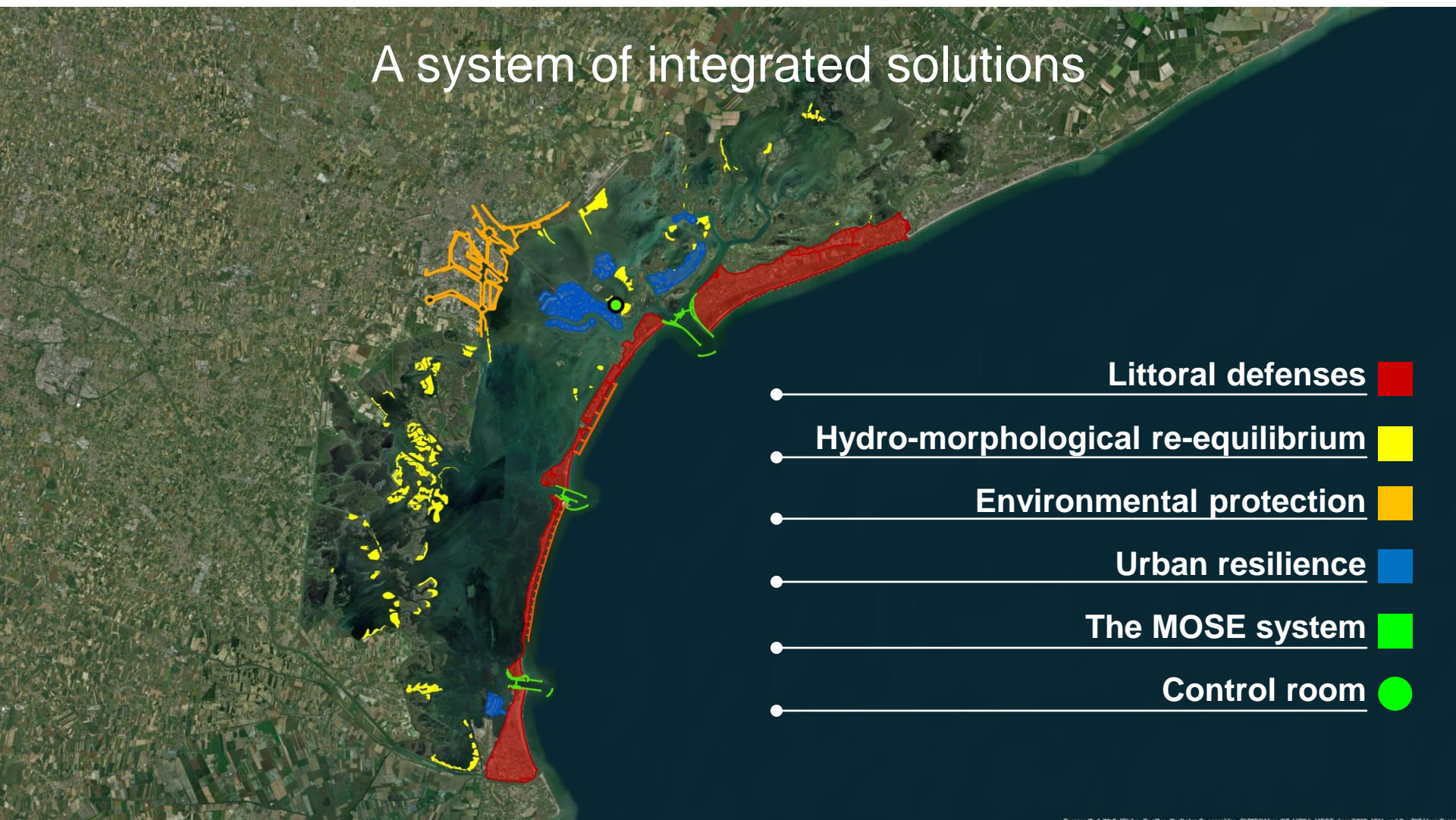
The Safeguard of Venice: a preeminent national issue

- The Italian State has guaranteed a special protection for Venice and its lagoon through a **special legislation**





A system of integrated solutions



Littoral defenses

Hydro-morphological re-equilibrium

Environmental protection

Urban resilience

The MOSE system

Control room



**TEDEN SREDOZEMSEKE OBALE
IN MAKROREGIONALNIH
STRATEGIJ**

Izola, Slovenija
15. – 17. september 2025

**MEDITERRANEAN COAST
AND MACRO-REGIONAL
STRATEGIES WEEK**

Izola, Slovenia
15 – 17 September 2025



Protection from sea storms

Reinforcement of the Pellestrina littoral

Before works





Protection from sea storms

Reinforcement of the Pellestrina littoral

After works



56 km littoral reinforcement
12 km coastal dunes restoration





Improved environmental resilience

Salt marshes reconstruction

Beginning of works





Improved environmental resilience

Salt marshes reconstruction

After works



16 km² reconstructed and naturalized
salt marshes

39 km protected salt marshes



TEDEN SREDOZEMSKÉ OBALE IN MAKROREGIONALNIH STRATEGIJ

Izola, Slovenija
15. – 17. september 2025

MEDITERRANEAN COAST AND MACRO-REGIONAL STRATEGIES WEEK

Izola, Slovenia
15 – 17 September 2025



Environmental protection

Securing of polluted areas



Before works





Environmental protection

Securing of polluted areas

After works



40 km industrial canals banks secured
7 former dumps secured

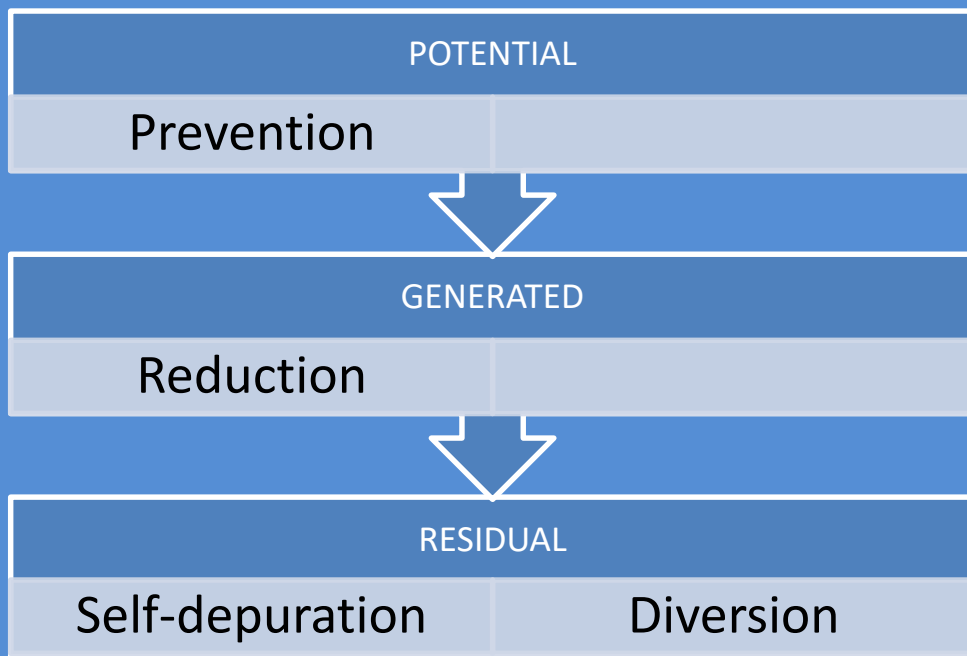
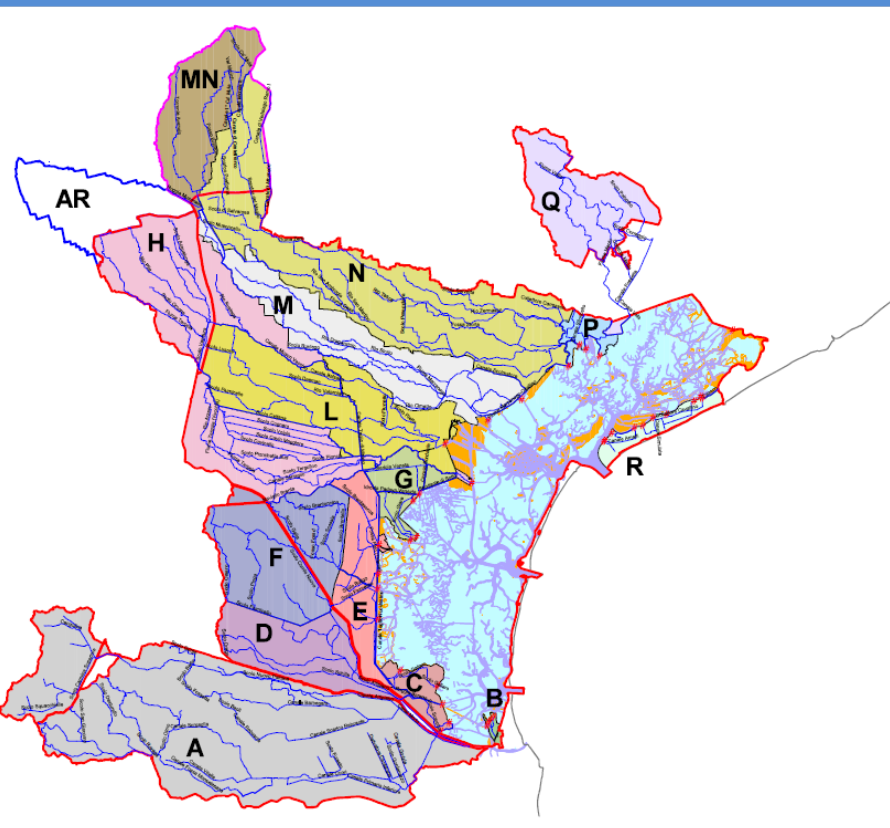
Plan for pollution abatement in the drainage basin



REGIONE DEL VENETO

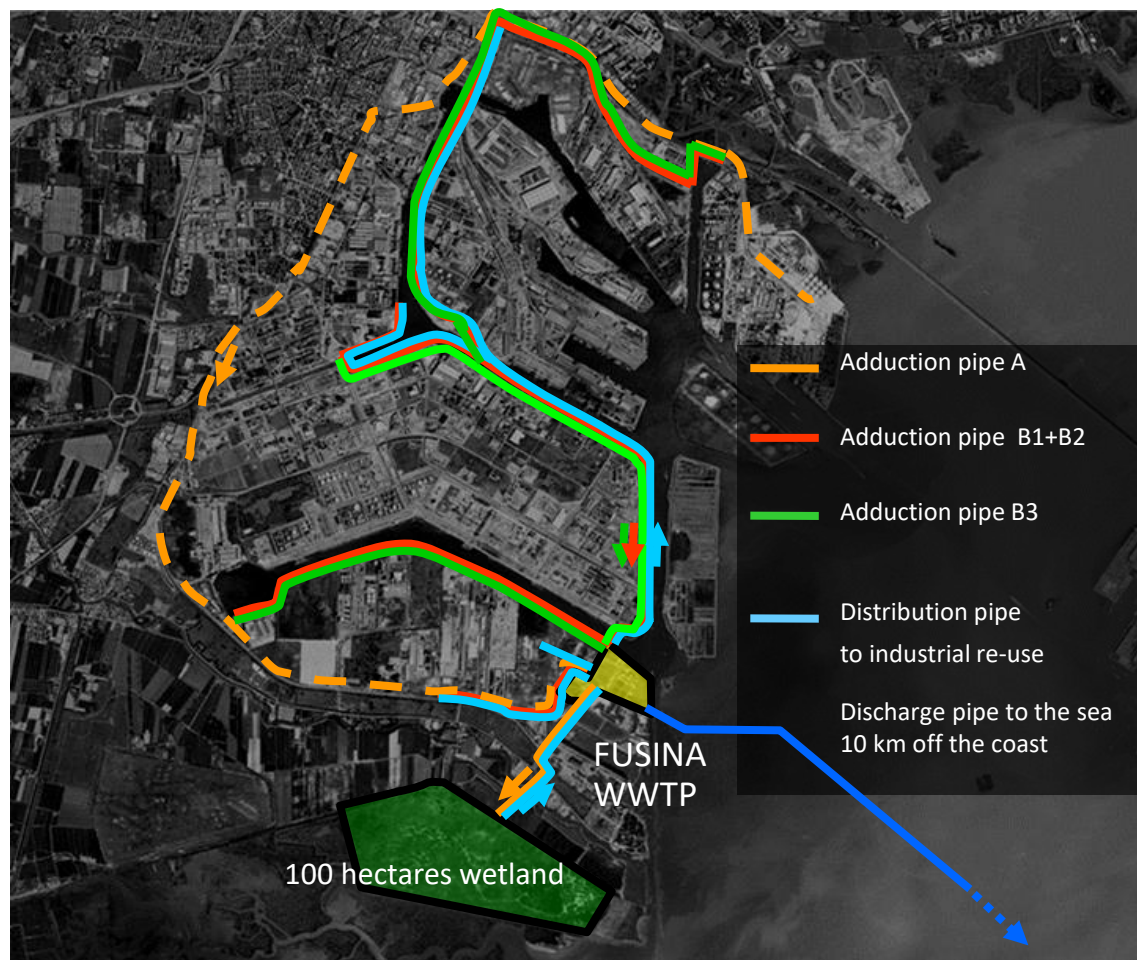
Point and diffuse sources of pollution

- Civil and diffuse urban
- Industrial
- Agricultural and livestock





Environmental protection – Fusina WWTP





Improved urban resilience - Chioggia



Raised shores —

Raised Paving —

Baby Mose Gates ●

130 cm



Izola, Slovenija
15. – 17. september 2025

Izola, Slovenia
15 – 17 September 2025



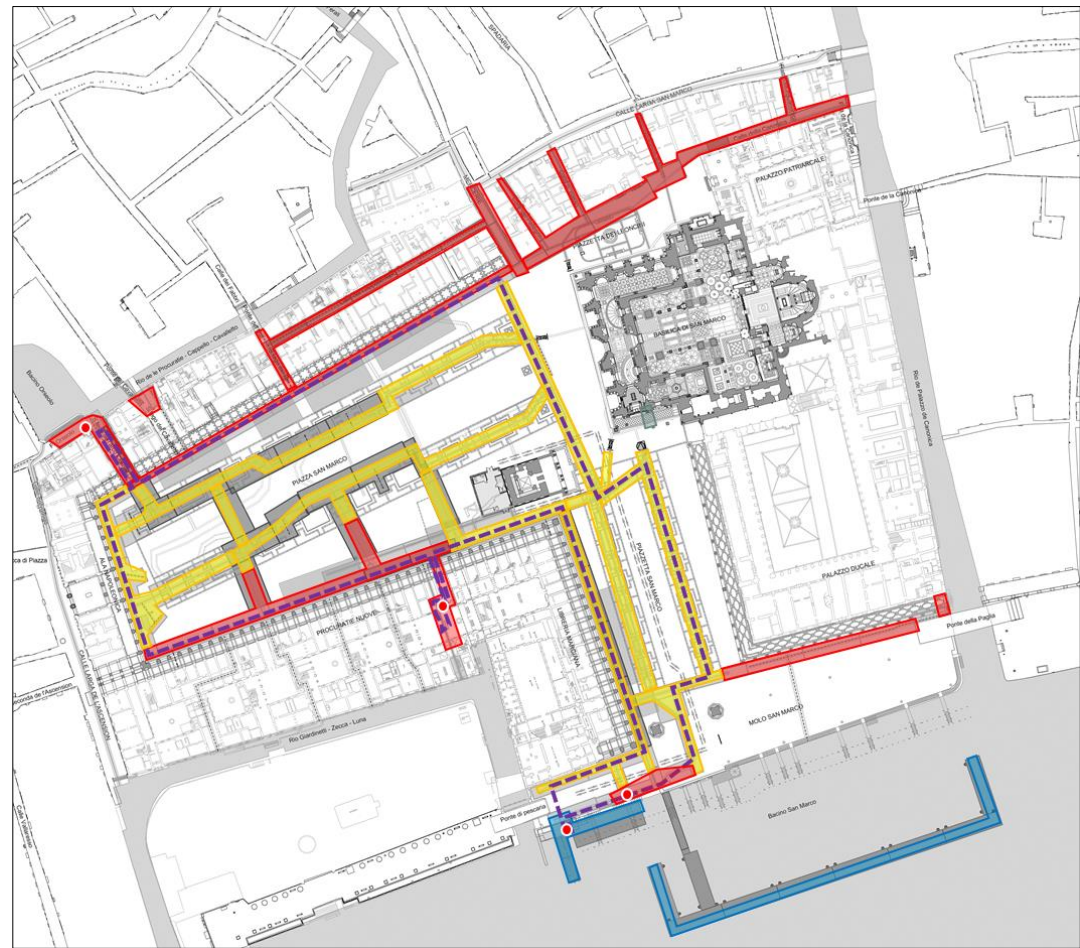
Improved urban resilience

Chioggia, Baby Mose Gates





The protection of S.Marco square and insula 70-110 cm





Defence barriers

Mobile, invisible gates



Venice

Lido inlet

Lagoon

Malamocco inlet

Chioggia inlet

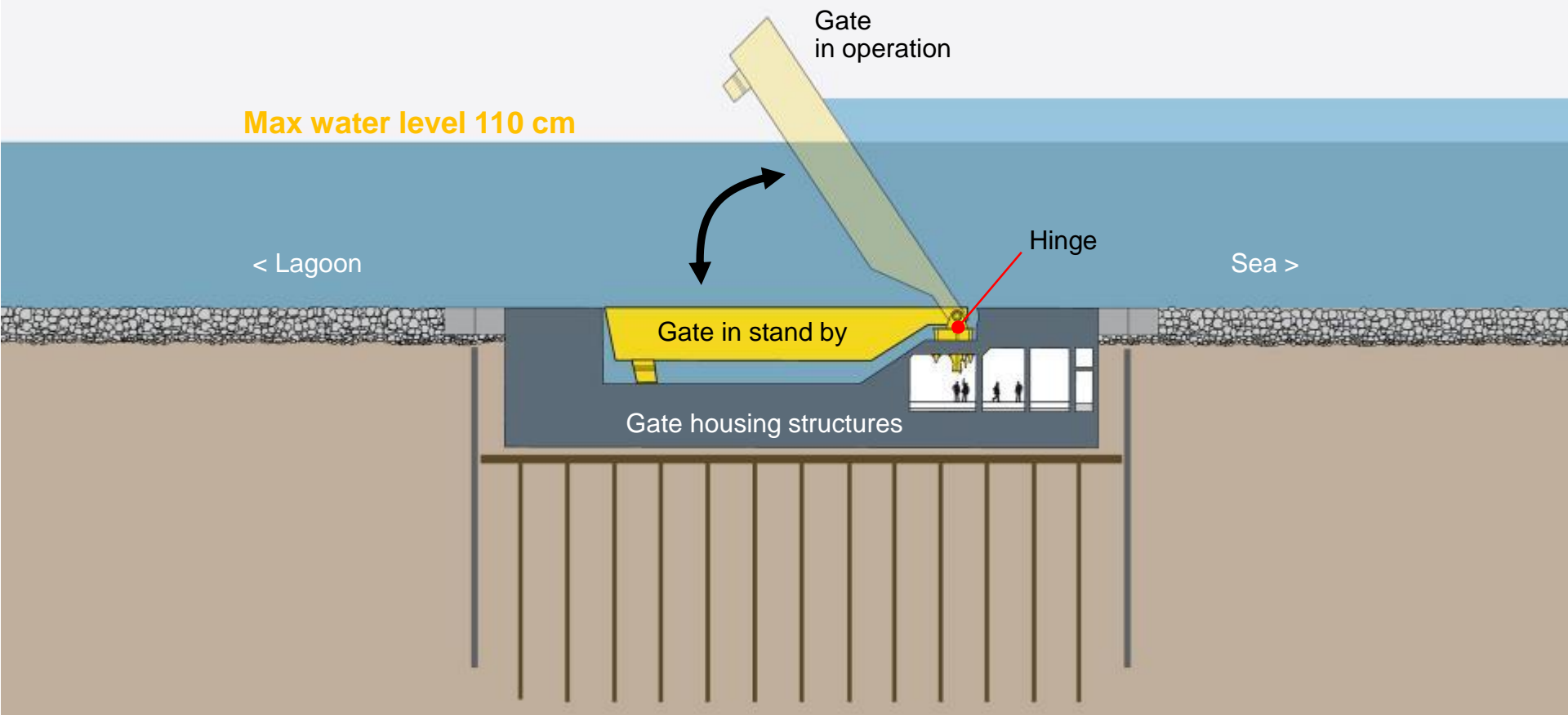
4
rows of gates

78
gates in total

1.6 km
total barriers
extension



Defence barriers





North Lido - barrier in operation



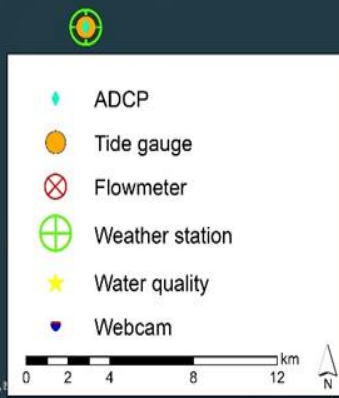
The MOSE system was utilized 108 times
since 03.10.2020

Izola, Slovenija
15. – 17. september 2025

Izola, Slovenia
15 – 17 September 2025

Monitoring network

60 stations
~ 180 sensors



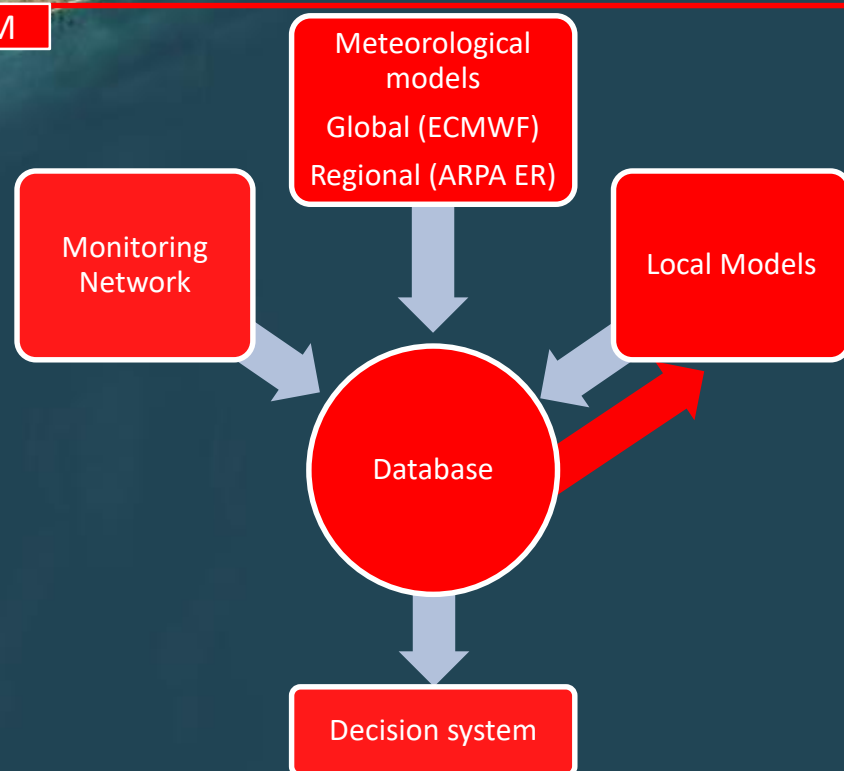


Control room and decision system

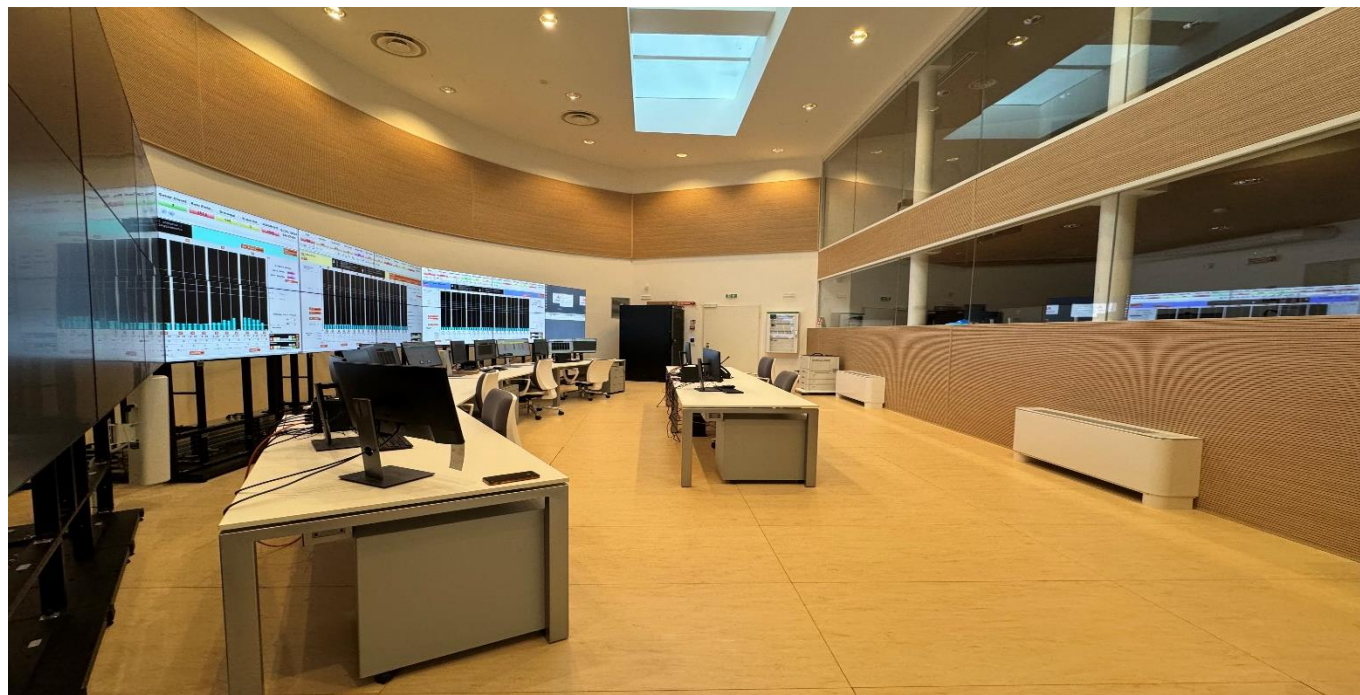
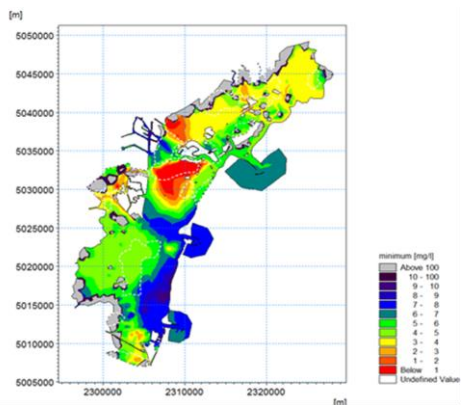
- Port Authority
- Coast Guard
- Municipalities
- Fire fighters...

CONTROL ROOM

On site
operators



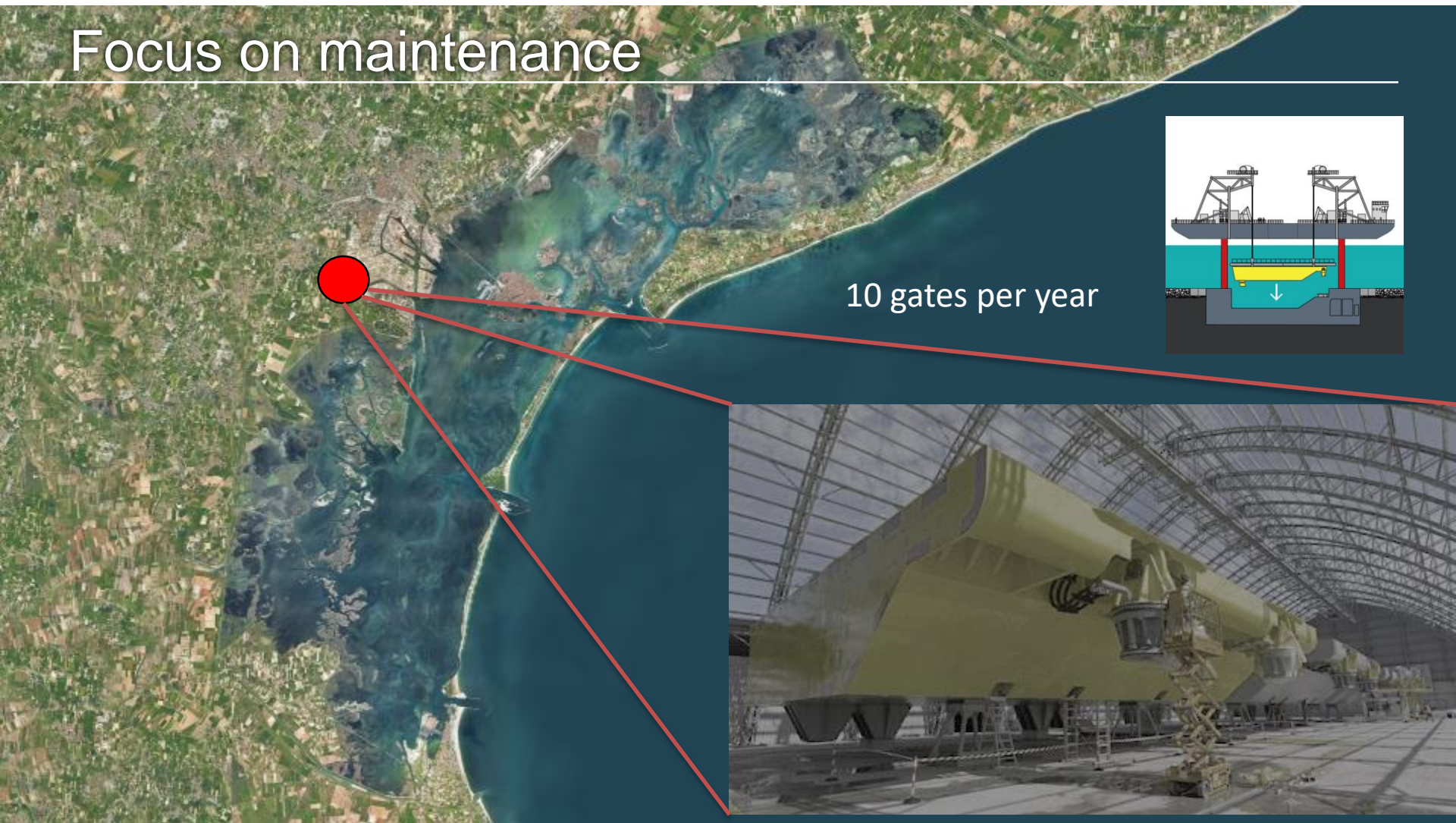
The control room



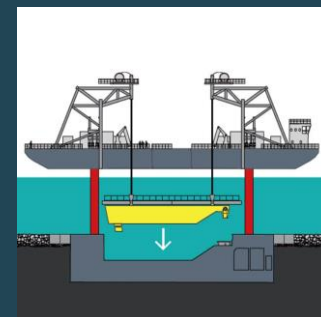
- High tide forecast in 120 h: operation team coverage 7/7 H10
- High tide event in 24 h: operation team coverage 7/7 H24



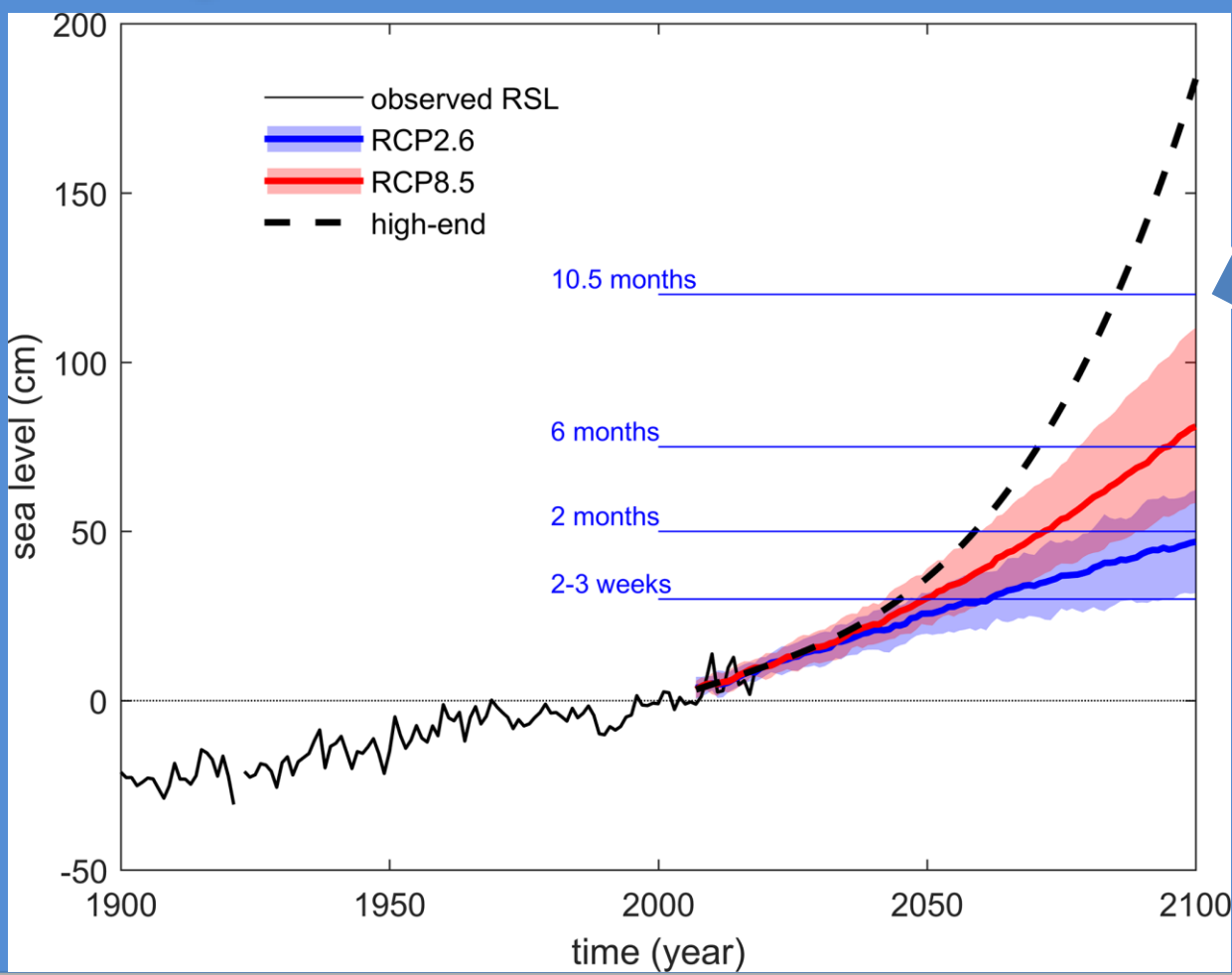
Focus on maintenance



10 gates per year



Projected relative Sea Level Rise



Time length of expected MOSE system activity!

Lionello, P., Nicholls, R. J., Umgiesser, G., and Zanchettin, D., 2021. "Venice flooding and sea level: past evolution, present issues, and future projections (introduction to the special issue)", Nat. Hazards Earth Syst. Sci., 21, 2633–2641

2.5 mm/y (1872 – 2023)

4.9 mm/y (1993 – 2023)

Ferrarin C, Bonaldo D, Bergamasco A and Ghezzi M (2024) Sea level and temperature extremes in a regulated Lagoon of Venice. Front. Clim. 5:1330388



Malamocco inlet – the lock





Progressively collecting to a centralized sewage system

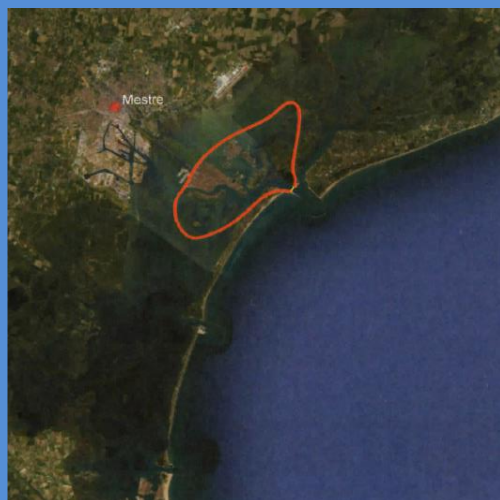


CITTA' DI
VENEZIA

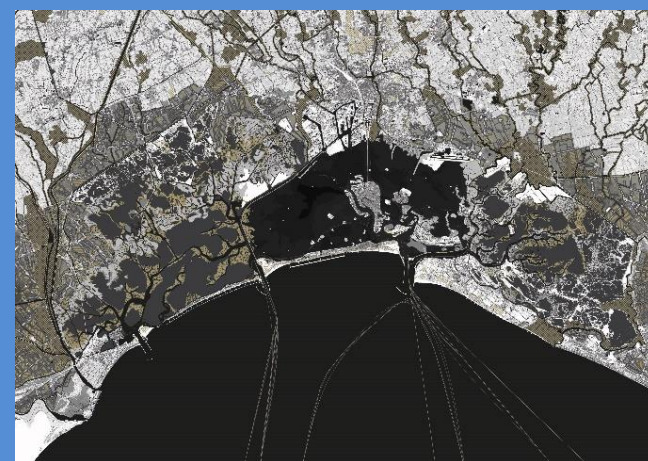


Visions ...after MOSE

Venezia Anno 3000
(Adami, 2021)



The Lake of Venice
(Fabbian & Centis
A scenario for Venice
and its lagoon,
2022)

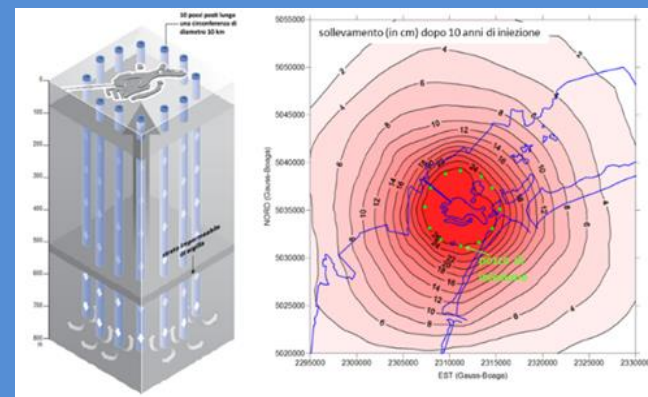


Innovation in
agriculture for
saline territories



(Thetis e Biosoil,
Progetti SAIA e SALT,
2024-2025)

Lifting the city



(Gambolati and Teatini "Venice Shall Rise Again. Engineered Uplift of Venice through Seawater Injection". Elsevier Insights, 2013)



TEDEN SREDOZEMSKÉ OBALE IN MAKROREGIONALNIH STRATEGIJ

Izola, Slovenija
15. – 17. september 2025

MEDITERRANEAN COAST AND MACRO-REGIONAL STRATEGIES WEEK

Izola, Slovenia
15 – 17 September 2025



Thank you!

Sebastiano.carrer@thetis.it





EU Strategy for the
Adriatic and Ionian Region
EUSAIR

**TEDEN SREDOZEMSKÉ OBALÉ
IN MAKROREGIONALNIH
STRATEGIJ**

Izola, Slovenija
15. – 17. september 2025

**MEDITERRANEAN COAST
AND MACRO-REGIONAL
STRATEGIES WEEK**

Izola, Slovenia
15 – 17 September 2025



Interreg



Co-funded by
the European Union

IPA ADRION

FACILITYPOINT



European
Commission



REPUBLIC OF SLOVENIA
**MINISTRY OF FOREIGN
AND EUROPEAN AFFAIRS**



REPUBLIC OF SLOVENIA
**MINISTRY OF COHESION
AND REGIONAL DEVELOPMENT**



REPUBLIC OF SLOVENIA
**MINISTRY OF NATURAL RESOURCES
AND SPATIAL PLANNING**



Občina · Comune di
IZOLA · ISOLA



Prosperity through Diversity



EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



EUSALP
EU STRATEGY FOR
THE ALPINE REGION



**Primorski
Tehnološki
Park.**

