

Policy solutions for management of contaminated sediments in the EU

— The Bagnoli Case Study

LIFE Sedremed - What is it?

SEDREMED is a project co-financed by European Union for the development of an innovative solution for the decontamination of polluted marine sites.

DURATION: Start: 10/2021 - End: 06/2025

PROJECT LOCATION: Bagnoli Bay, Naples, Italy

BUDGET INFO:

Total amount: 2,591,866€

% EC Co-funding: 55%



The site - Bagnoli Coroglio

1.

Mixed contamination of soils, groundwater and sediments from steelworks, asbestos, concrete and fertilizer/pesticide production

2.

200 Ha at land and 14 km² at sea are contaminated. Marine decontamination foresees intervention on 475.000 m³ of sediments

3.

Dismissed since 1990, previous decontamination plans have failed, over 500 million euros already spent. Now concrete results are being achieved through Invitalia's management.



Governance

Invitalia

Government
Commissary for
Bagnoli-Coroglio

PRARU (Plan for remediation
and urban regeneration of
Bagnoli-Coroglio)

Civil Society

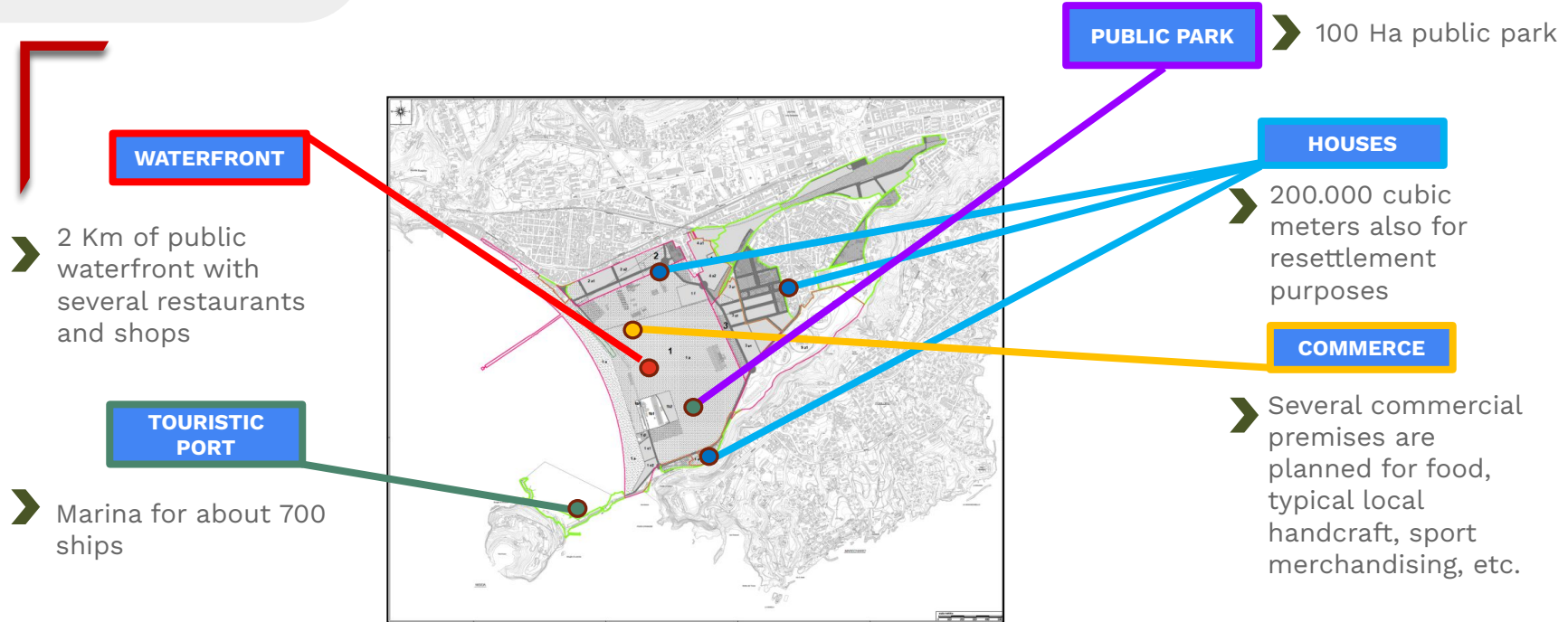
City of Naples



The site - Bagnoli Coroglio



Urban Regeneration



MDF AND THE BEACH

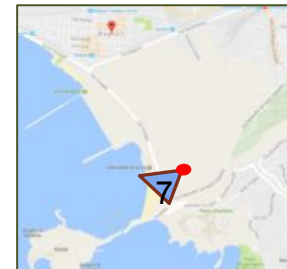


THE STEEL PLANT AND THE MDF





MARINA






Sediment - Dredging & Capping

Budget for dredging/capping:
100-120 million euros

Sediment volumes to be removed
= 234,768 m³

(from shoreline to -5m bathymetric depth)


VOLUMI RIMOZIONE SELETTIVA

CAMPIONE	0-0.5 [mc]	0.5-1 [mc]	1-1.5 [mc]	1.5-2 [mc]	Totale [mc]
	89.891	22.264	17.854	25.087	155.096
	48.878	22.252	8.542	-	79.672
	-	-	-	-	-

Capping surfaces

(from -5m to -7 m bathymetric depths = 163,431 m²
and buffering strip of 50m from -7m = 75,657 m²)

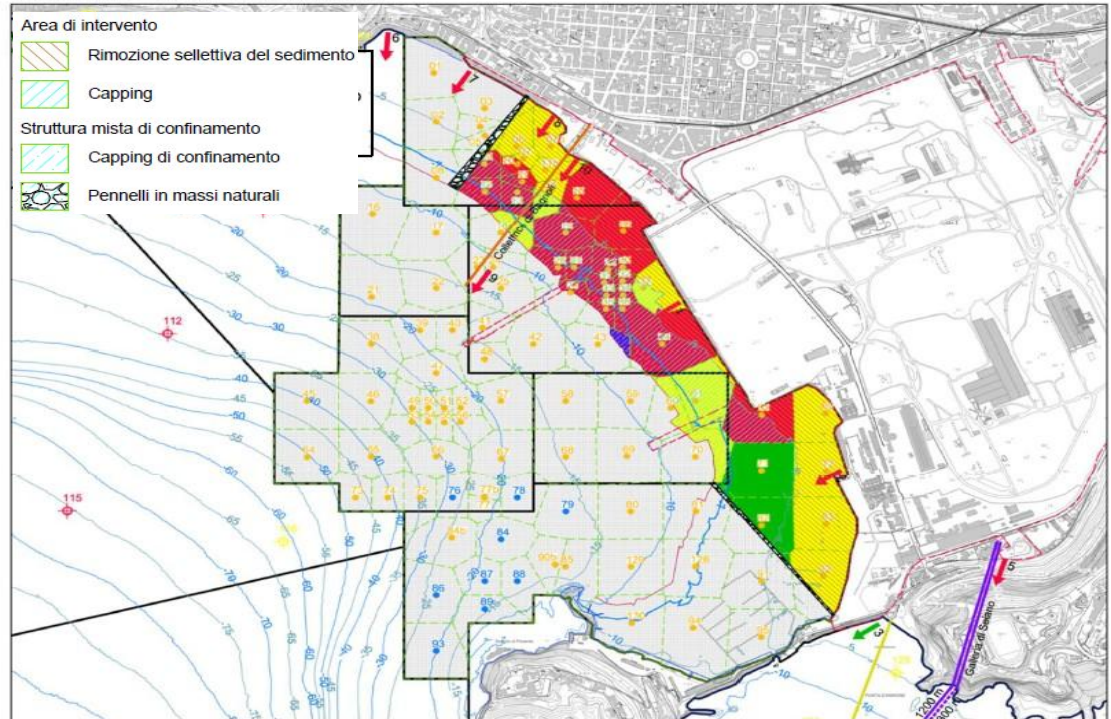
SUPERFICIE CAPPING TRA
ISOBATA -5 E -7

CAMPIONE	SUPERFICIE [mq]
	44.108
	119.323
	-

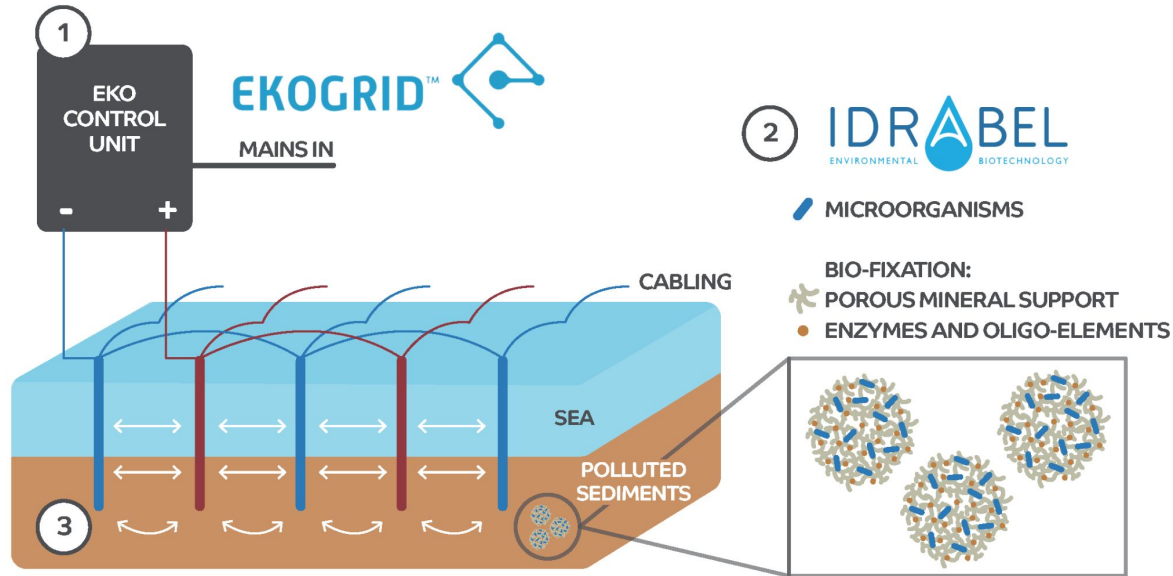
SUPERFICIE CAPPING FASCIA DI
50 m OLTRE ISOBATA -7

CAMPIONE	SUPERFICIE [mq]
	2.406
	31.977
	38.114
	3.160

Profondità 0 - 0.5 m - Scala 1:10000



The Life Sedremed Technology



Objectives of LIFE Sedremed

1.

Adapt the technologies for application in marine sediments and achieve maximum remediation efficiency

2.

Decontaminate polluted sediments to comply with EU and IT regulations

3.

Reduce environmental risks and decrease decontamination costs

4.

Deliver an environmental monitoring plan to be used during and after decontamination process

5.

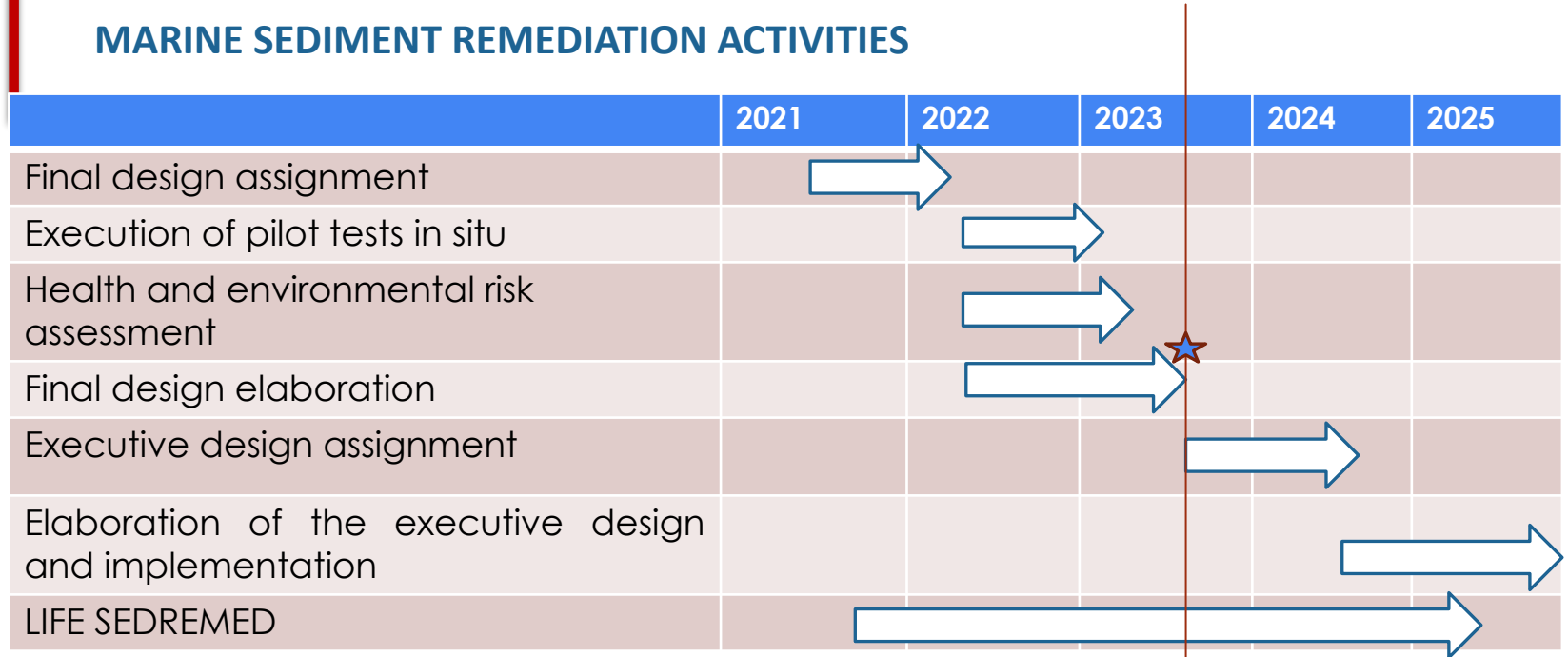
Develop a manual for replication in other contaminated coastal areas in Europe

6.

Manage the MEDREHUB in Bagnoli, a research center for the development of bioremediation technologies

Remediation intervention timelines

MARINE SEDIMENT REMEDIATION ACTIVITIES



★ FIRST EXPECTED DELIVERABLES FROM SEDREMED (ex-situ tests)

Life Sedremed Expert Roundtable (02/2023 in Brussels)

What happened and what's next?

The legislative issue EU

1.

No EQS limits is set for sediments, there is no common benchmark for sediment classification and management

2.

High degree of flexibility left to member states and diverging approaches/met hodologies on setting EQS and thresholds limits for site remediation

3.

MSFD states that MS should establish concentration limits through regional cooperation. Very difficult for the Mediterranean basin (non-EU countries involved)

4.

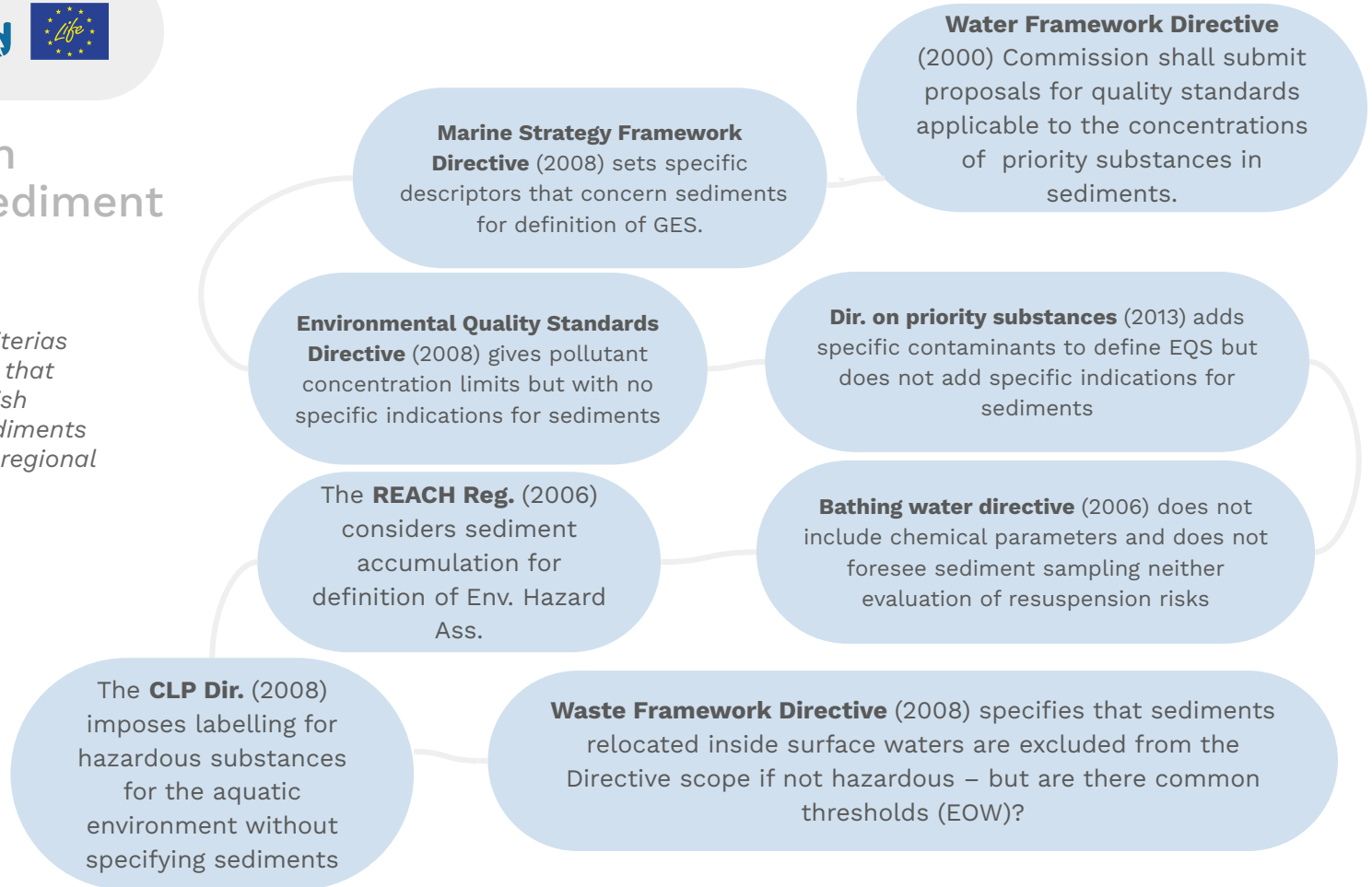
Bathing water directive does not include chemical parameters and analysis of sediments. WFD excludes sediment if considered non-hazardous (but unclear when they are in many MSs - EOW)



EU Legislation concerning sediment management

CD 2017/848 laying down criterias for MSFD descriptors states that Member States shall establish concentrations limits for sediments (D8) through regional or subregional cooperation.

EQS dir. does provide option for MSs to derive EQS for sediments but it wasn't implemented by all MS



The legislative issue IT

1.

In Italy's sediment specific classification and thresholds values have been developed only in specific legislation regarding dredging

2.

In the presence of a site with contaminated sediments, but without the need for dredging (e.g. Bagnoli) what limits should be referred to?

3.

National legislation on brownfields doesn't provide for the application of risk analysis to the sediment compound

4.

National legislation on balneability doesn't include chemical parameters



IT Legislation concerning sediment management

Ideally, a continent-wide «monitoring thresholds» (EQS) and classification system indicating guidelines and BATs for sediment management could facilitate a sustainable approach for restoration activities.

Subsequently, in national legislation and at site-specific level the health and environmental risk analysis could be applied to sediment.

D.lgs 219/2010 states that for substances where EQS are not specified for sediments or biota the EQS limits set for surface waters in the IT Environmental Act can be applied (and set monitoring obligations).

D.lgs 172/2015 updates the substances list and indicates EQS limit concentrations for sediments in mg/Kg. It fails to indicate a specific methodology to define restoration threshold and consequent management guidelines.

DM 172/2016 and **173/2016** only apply in the case of dredging, so in the presence of a site with contaminated sediments, but without the need for dredging (e.g. Bagnoli) what limits/methodology should be referred to? Sediment quality threshold defined in national legislation (D.lgs 172/2015) do not indicate a «restoration threshold» or a methodology to derive them. It consequently fails also to provide classification and guidelines for sediment management.

DM 56/2009 and **DM 260/2010** efficiently determined EQS for some substances also for sediments, it states that over the limit corrective actions need to be undertaken for the retrieval of an acceptable quality status.

DM 172/2016 lays down methodologies and technical norms for dredging operations in SINS (Sites of National Interest) but does not indicate concentrations limits to guide the approach.

DM 173/2016 Defines dredged sediment classes according to pollutant concentrations (chemical and ecotoxicological approach), it defines management measures and final destinations for dredged sediments in function of the class assigned to the dredged sediment.

EU Best Practices

SE

Established sediment-specific EQS for 8 substances. Developed a detailed methodology for defining on a site-specific basis the details of intervention processes

NL

Similar process to Sweden. Focuses on integrating site-specific conditions, experts judgment and reuse option for dredged sediments (mainly applied for waterways management)

BE

Integrated sediment in other distinct policies (sediment interconnection). Developing digital tools for sediment mapping and simulation of interventions to choose best remediation approach



Continuous MS consultation process to gather inputs from the field regarding classification and management of contaminated sediments (both for inland and coastal waters) beyond regional cooperation. Look for the window of opportunity and act.

4 potential solutions to the legislative gaps

1.

Define sediment EQS at EU level by amending the EQS and Priority substances directive. Apply them solely as “monitoring thresholds”

2.

Define an EU classification system that indicates management guidelines and BAT for contaminated sediment. Possibly with indications to prioritise low-cost and low-risk interventions.

3.

Clearance of reg. for handling of dredged sediments. Clarifying when sediments are considered as hazardous in order to provide EU-level indications on management and reuse opportunities (EOW) in the circular economy framework

4.

Integration of chemical parameters in the monitoring of bathing waters and for sites with contaminated sediments develop a monitoring system for evaluation of resuspension/recontamination risks of the waters

«At national and site-specific level apply the environmental and health-risk analysis (based on the new EU framework) to define mitigation and remediation actions (BATNEEC approach)»

Visit our website for more info on our research!



Technological and policy solutions
for the management of
contaminated sediments in the EU

Executive Summary

Industrialisation has caused significant pollution across Europe, and a key challenge today is the remediation of pollutants that have accumulated in the sediments of rivers and coastal areas.

Last month, EU and national representatives met in Brussels

Regarding policy challenges, the current legal frameworks are fragmented across the EU, and Member States address the challenges with diverging approaches. In some Member States, policy has been driven by the necessities of sector-specific interventions such as dredging and capping for navigation and

DISCOVER MORE



Any questions?

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