

«Green ENGINEERING solutions: a new LIFE for SEDIMENTS And Shells»

S. Doni, E. Peruzzi, C. Macci, I. Rosellini, M. Di Leo, C. Vitone, M. Mali, R. Petti, G. Masciandaro

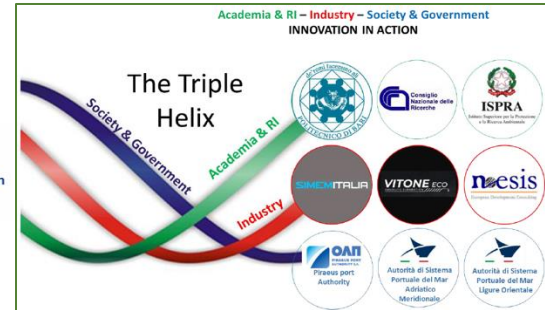
GREENLIFE4SEAS project

Start: 01/10/23 - End: 01/10/28

Total amount: € 3.930.225



Co-funded by
the European Union



PROJECT LOCATION



Barletta Port



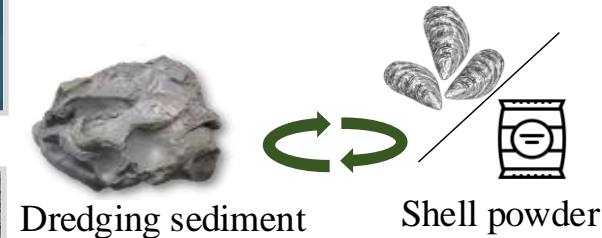
Bari Port



La Spezia Port

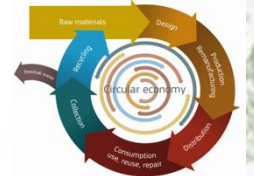


Piraeus Port



OBJECTIVE

In-situ recovery and reuse of dredged **sediments** and **shells**, as **secondary raw materials** for the realisation of **sustainable and innovative by-products** for building sector, through an optimised **mixing technology**

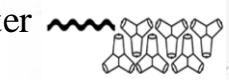


Stabilized
sediment

paving
blocks



breakwater
blocks



mass
stabilization



DREDGED SEDIMENTS

CER (EWC) 170505

**WASTES FROM DREDGING
ACTIVITY – SLUDGES**



In Europe the volume of **potentially contaminated** dredged sediments is estimated at 200 million cubic meters per year

SHELLS

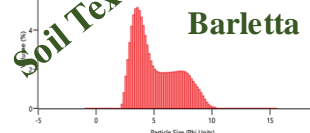
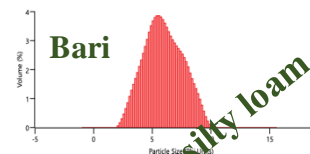
CER (EWC) 020103

**WASTES FROM AGRICULTURE,
HORTICULTURE, AQUACULTURE,
FORESTRY, HUNTING AND FISHING**



The global production of marine bivalves is approximatively 15 million tons per year. Many of the shells are disposed of illegally

Sediment characterization



Soil Texture: silty loam

	Bari	Barletta
pH	8,61	8,89
Electrical Conductivity (dS m ⁻¹)	55,0	34,9
Total Nitrogen (%)	0,14	0,20
Total Organic Carbon (%)	1,12	3,27
C/N ratio	8	16
Total Phosphorus (mg kg ⁻¹)	662	657
Cation Exchange Capacity (meq 100g ⁻¹)	22,5	13,7
Petroleum hydrocarbons (C>12) (mg kg ⁻¹)	1242	362

Remediation of contaminated sediments



selected microorganisms
organic nutrients
mineral salts
catalytic oligoelements
enzymatic components
natural growth factors

Landfarming process with bioactivators

Lab-scale Pilot-plant

**Monitoring of sediment
decontamination**

Serena Doni