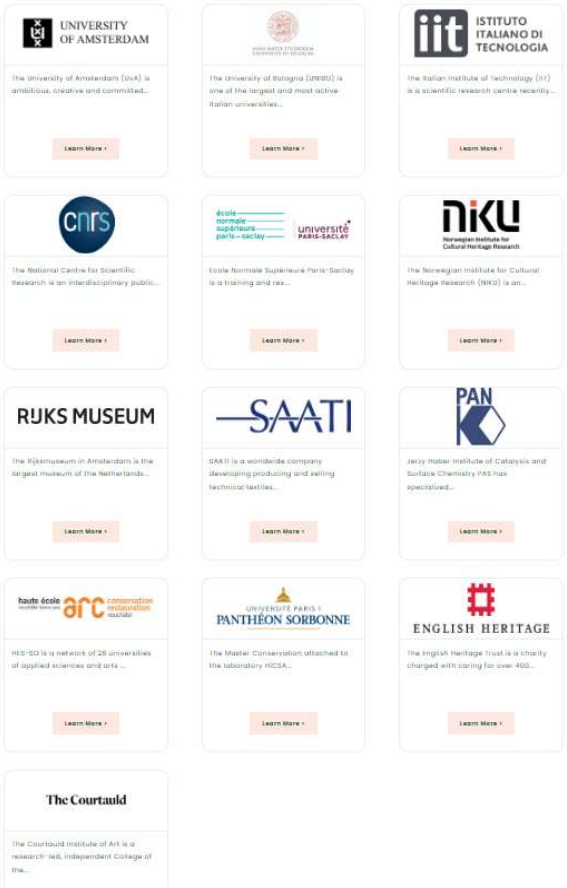


- 4 years
- 13 partners
- Horizon program
- European Green deal
  - 40% cut green house gas emissions
- Indoors
- Painted surfaces, silver, glass, steel, copper alloy, archaeological iron, stone, ceramic, parchment, wooden sculpture, furniture

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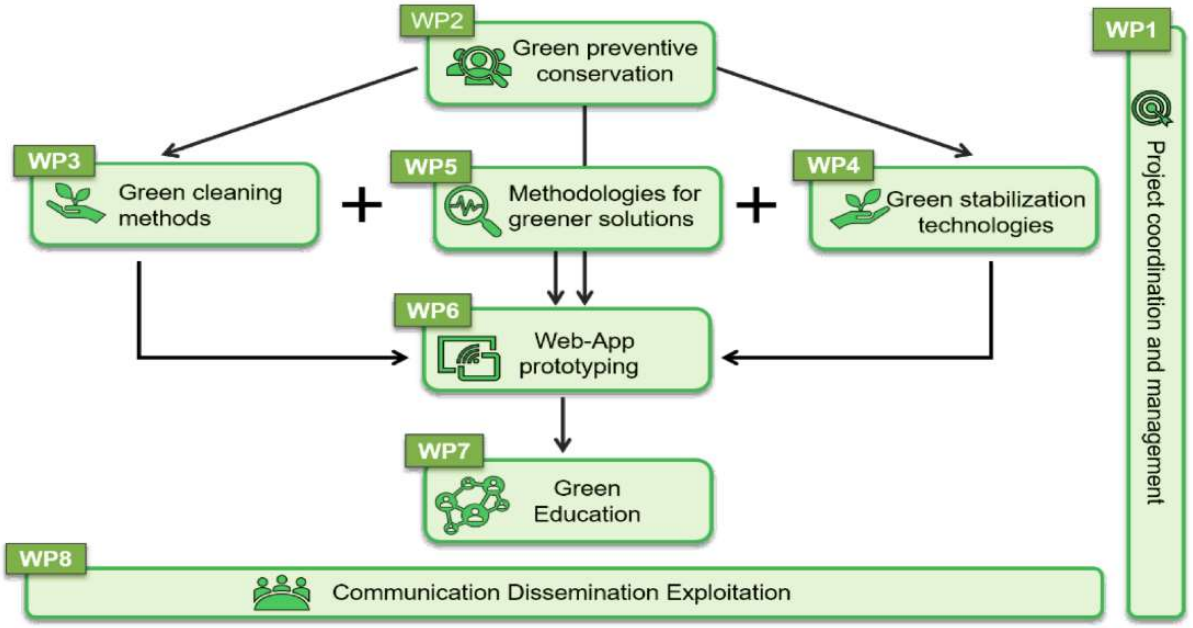
Risk 2.2 damage functions, 2.3 stability analyses, 2.5 studies + Herie Expansion

Mitigation WP3, WP4, 2.2

Adaption; WP3, WP4, WP 6, WP7, WP8

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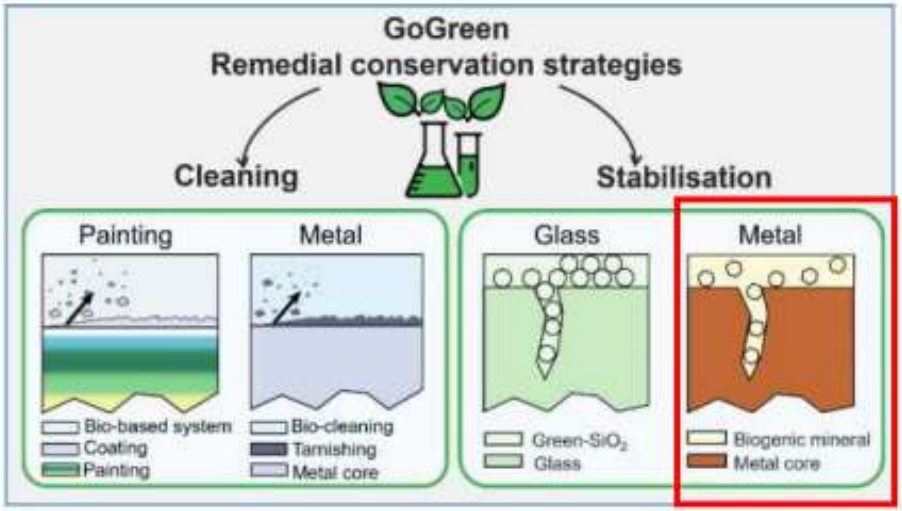
# WP4 Green stabilization technologies for iron and copper

- Aim: Biostabilisation (including consolidation) of heritage objects from metal as an alternative to the traditional environmentally unfriendly methods.
- Target: archeological iron and copper artifacts
- Test system: due to the difficulty of developing an artificially aged archaeological patina, the test system will be based on low cultural-value archaeological artifacts

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# WP4 Green stabilization technologies for iron and copper

- **conversion of existing corrosion products** into chemically stable biominerals using specific types of microorganisms
- investigation with cell filtrates of the mechanisms involved in **the assimilation of Fe(II)/(III) ions** and extracellular **production of oxalates/oxides**
- **chloride ions translocation** involving halophilic and white-rot fungi
- evaluation of **domestication of the studied microbes** to increase their production of biominerals or to remove chloride ions.
- **Aging to determine suitability for future climate**

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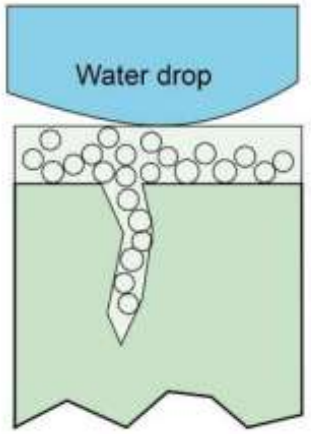
# WP4 Green stabilization technologies for glass

1. **Avoid toxicity**
2. **Repair glass with glass**
3. **Surface stabilization, no aspect alteration**




→ Consolidation of flaking layers in corroded glass

→ Consolidation of glass affected by crizzling

→ Improvement of hydrophobicity

**Pros:**

- Material compatibility (silica-on-silica)
- Tunable rheological behavior
- **Tunable composition (markers)**
- Non toxic

**Cons:**

- Refractive index depends on NPs concentration
- Cross-linking reactions after application
- Slow process
- Can't be removed

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