



Vito Emanuele Cambria
LIFE PRIMED Project Manager
Sapienza University of Rome
coordinator@lifeprimed.eu
vitoemanuele.cambria@uniroma1.it

Zero-emission **water-distribution networks** to assist the **ecological recovery of Mediterranean forest ecosystems** impacted by extreme weather events



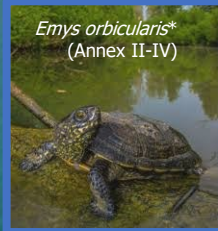
Project funded with the contribution of the European Commission under the LIFE programme



MEDITERRANEAN COSTAL FOODPLAIN OAK WOODLAND

Bosco di Palo Laziale, Rome, Lazio, Italy (Natura 2000 site)

FOREST DIEBACK A MULTI-FACTOR ISSUE

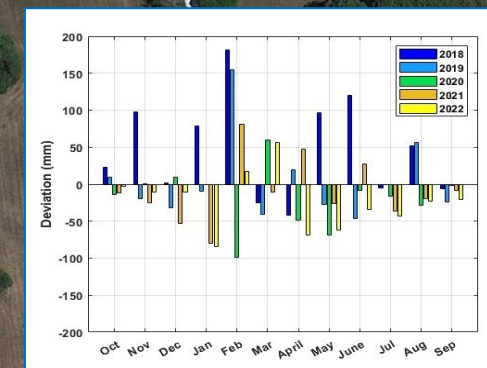
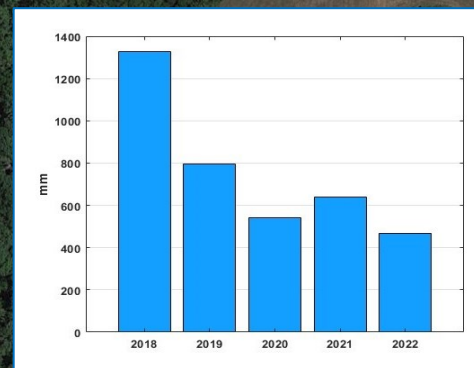
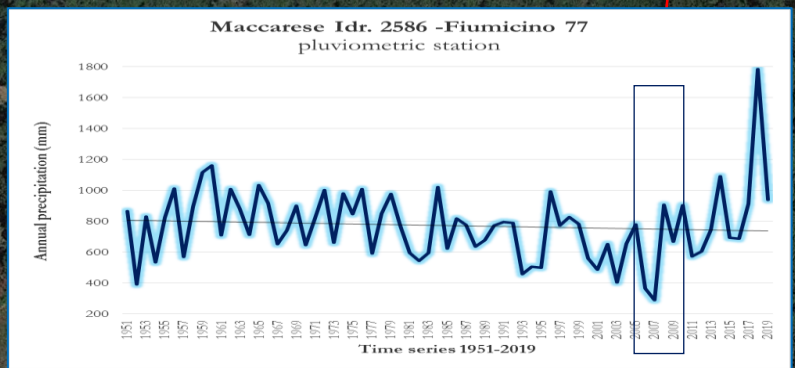
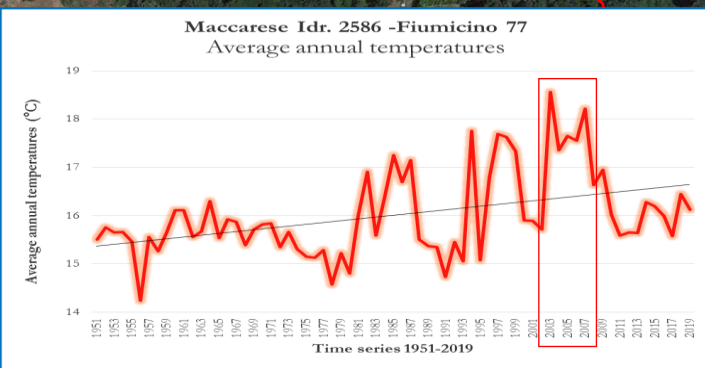


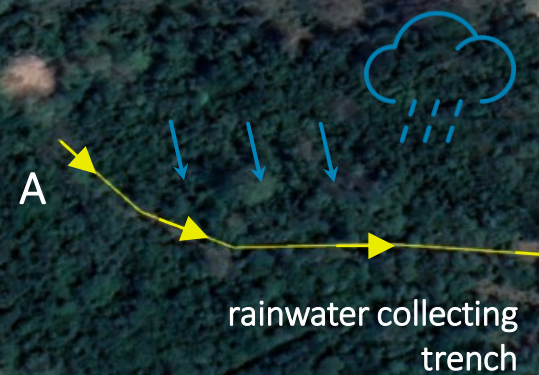


TRIGGERS

• Climate alteration

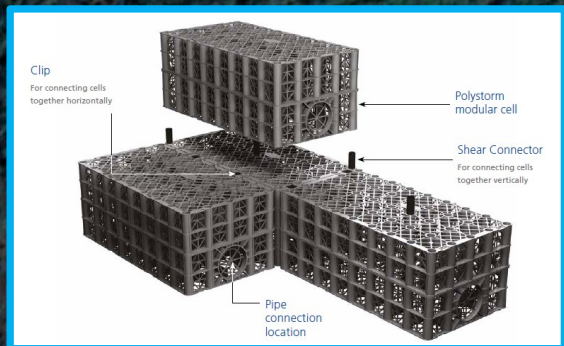
- 1951-2017: decades of increasing T and decreasing P
- 2003-2007: extreme heat in summer
- 2004: 40% of adult trees died
- 2015: 80% of the canopy lost
- 2018-2020: massive rainfall oscillation (from 1.328 mm in 2018 to 468 mm in 2022)
- 2018-2022: significant seasonal variation in precipitation («rain bombs» vs prolonged dryness)





rainwater collecting trench





A geo-cellular recycled plastic modular system for the retention, attenuation and infiltration of rainwater

-> CIRCULAR ECONOMY



Polystorm Access / Inspection





D Air/Soil/Tree response monitoring system



GOALS

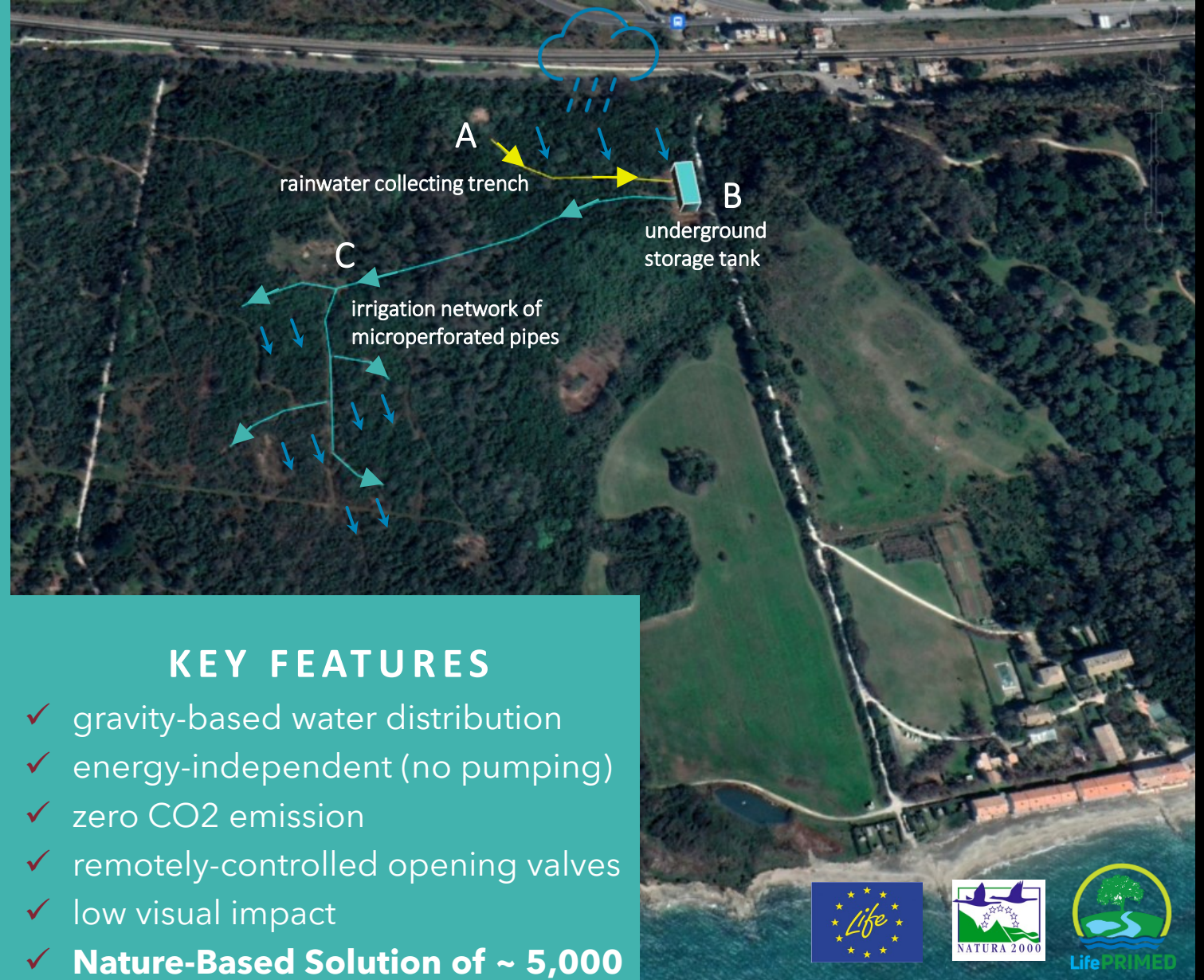
- ✓ To mitigate extreme soil aridity events for more resilient new forest vegetation stands
- ✓ To exploit topsoil flooding during excessive rainfalls through infiltration techniques
- ✓ To limitate excessive salt concentration in the topsoil

INTERDISCIPLINARITY

- ✓ Topographical survey for terrain slope detection
- ✓ Soil analysis for clay concentration & distribution
- ✓ Climate and weather analysis for tank sizing estimation
- ✓ Forest structural analysis and anti-fire path overlapping
- ✓ Habitat dynamism & composition assessment

KEY FEATURES

- ✓ gravity-based water distribution
- ✓ energy-independent (no pumping)
- ✓ zero CO2 emission
- ✓ remotely-controlled opening valves
- ✓ low visual impact
- ✓ **Nature-Based Solution of ~ 5,000 EUR/ha**





LIFE PRIMED (LIFE17NAT/GR/000511) - Restoration, management and valorisation of PRiority habitats of MEDiterranean coastal areas

Project funded with the contribution of the European Commission under the LIFE programme



PARTNERSHIP

Coordinator

Associated Beneficiaries



DURATION

6 ½ years

BUDGET INFO

Total budget: ca. 2 M

% EC Co-financing: 75% (ca. 1,6 M)



Facing controversial protection regimes

Second World War weapon clearance



clearance preparation for machine access obliges for tree cutting which is controversial!

metal detection

drilling

OBSTACLES

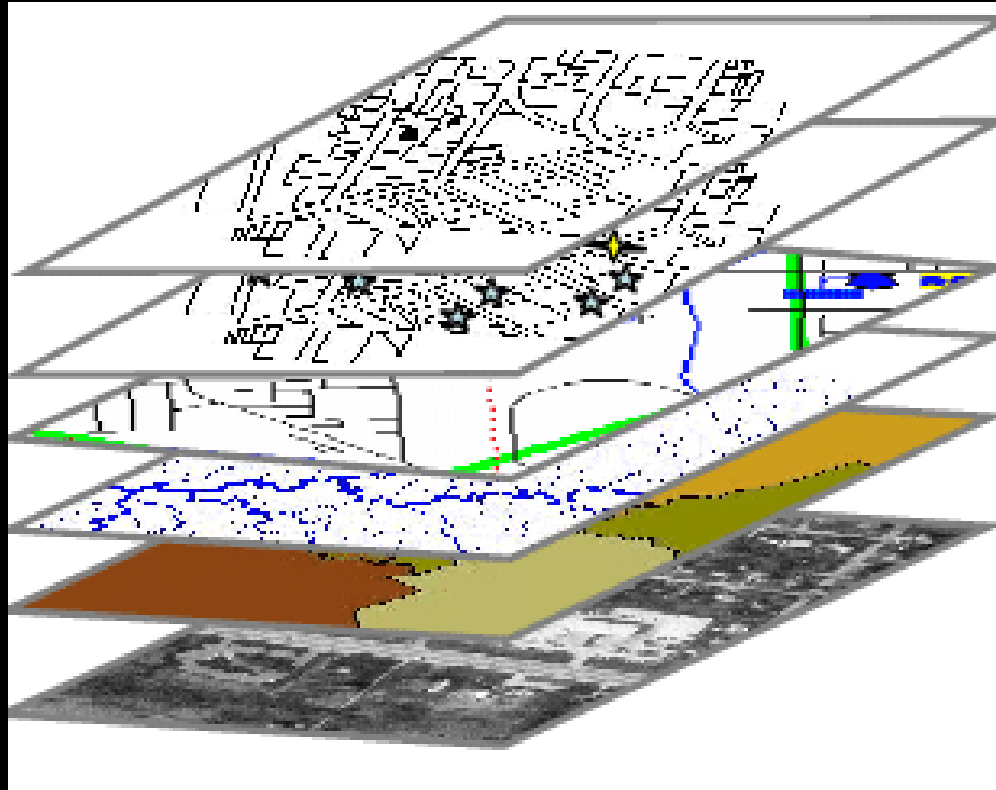
Facing controversial protection regimes

Archeological survey



Findings from Roman Age (!)

→ Natural, landscape and cultural heritages are key values in the Mediterranean region but at present **the authorisation process for nature restoration works causes significant constraints**



WWII protection regime (weapon clearance)

Landscape protection regime

Archeological protection regime

Nature protection regime:
Natura 2000

Intervention area: Palo Laziale

MAIN CONSTRAINTS

- 12 competent authorities had to be involved to proof feasibility and sustainability of the restoration works
- Mismatch about targets and means among different regulations (Habitats Directive vs Archaeological Superintendence prescriptions: no setting priority for nature and cultural conservation)
- Lack of dialogue among the competent authorities
- High risk of delay & fund wasting
- High risk of work stopping in case of findings
- Supplementary budget for inspections

→ **NEED FOR GUIDANCE/STANDARDS!**

THANKS FOR YOUR ATTENTION

