

La contabilità del Capitale Naturale applicata al verde urbano

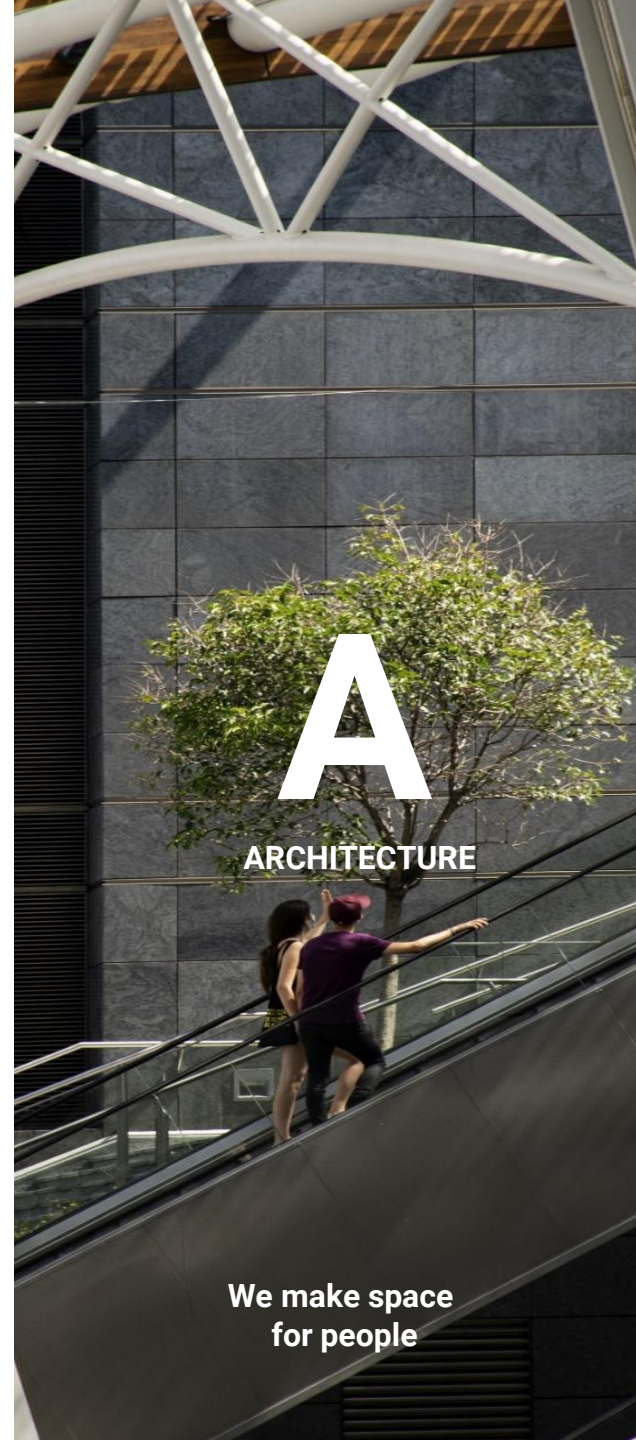
Andrea Balestrini, Head of LAND Research Lab®



L

LANDSCAPE

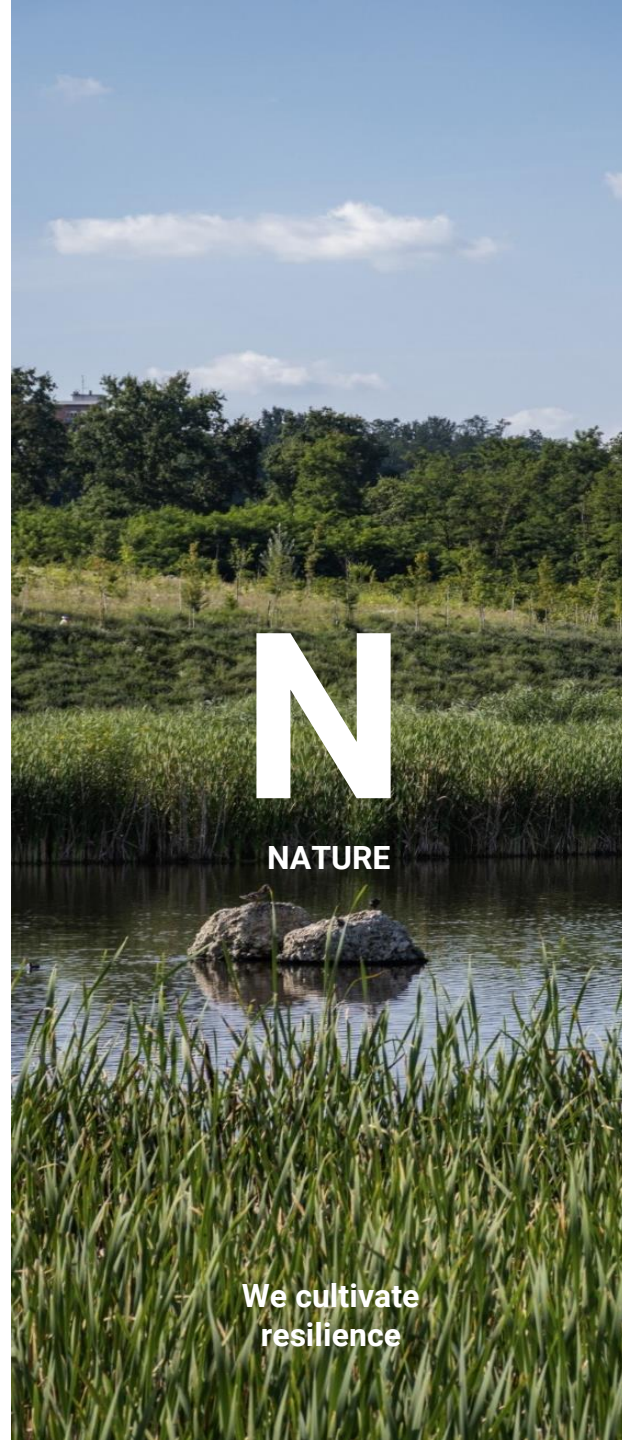
We work at every scale



A

ARCHITECTURE

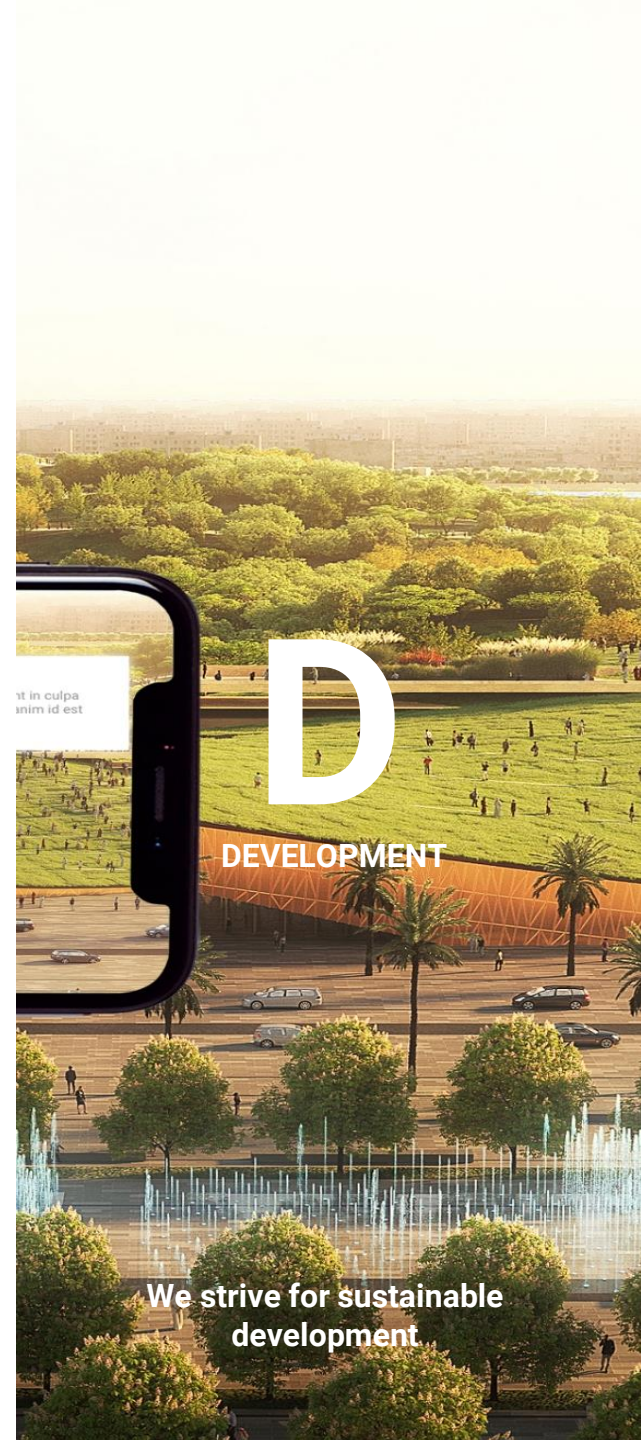
We make space for people



N

NATURE

We cultivate resilience



D

DEVELOPMENT

We strive for sustainable development



We create liveable spaces for a sharing society



+2500000 TREES PLANTED



+500 GREENER CITIES

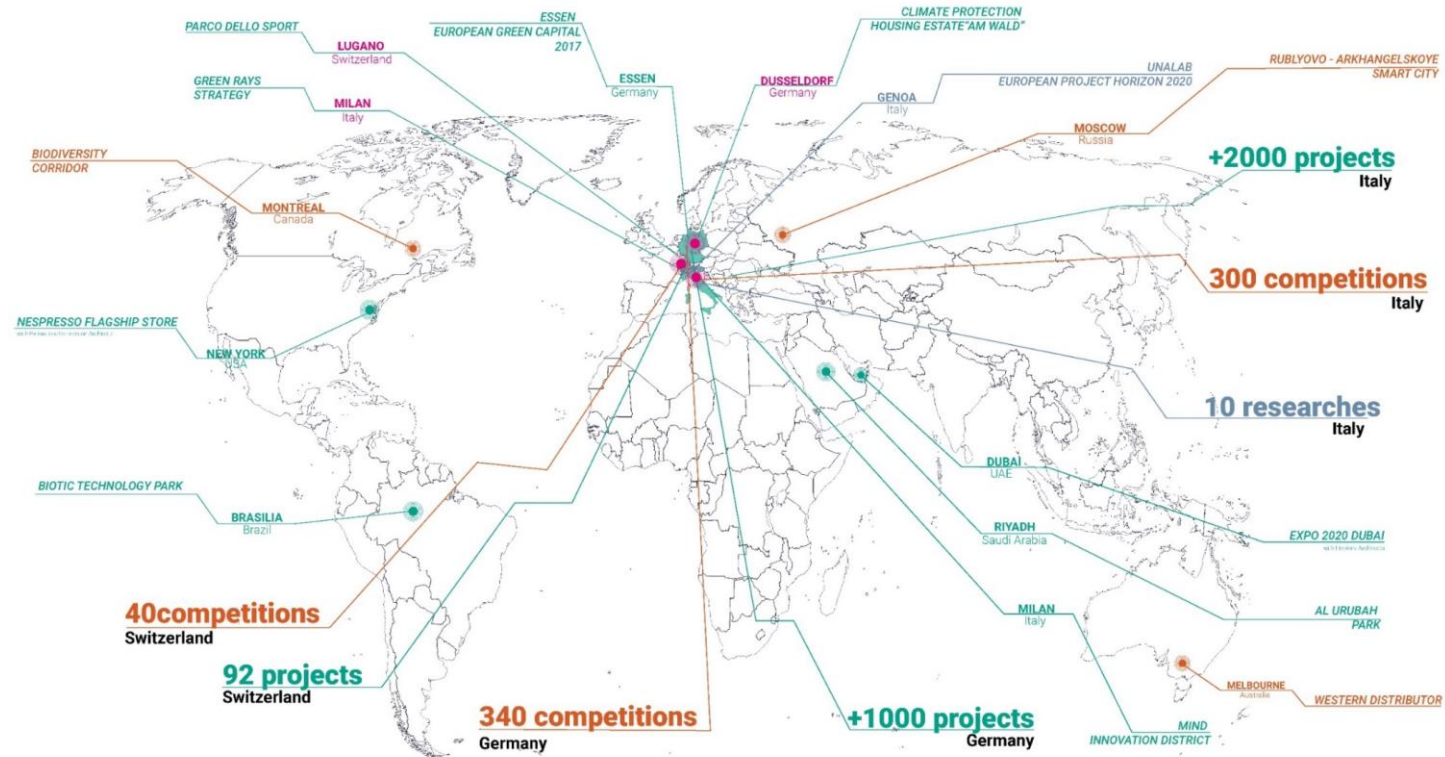


+22500 TONS OF CO² REMOVED

LAND

Milano-Lugano-Düsseldorf-Vienna

Where we reconnect people with nature



Last Update: 02.2022

Call for Nature



Source: European Commission

Living in the emergency

EIB Climate Survey

In **Eastern and Southern Europe**, more people feel the impact of climate change on their everyday lives.



Source: BVA for the European Investment Bank



Climate emergency: a new normal



Rheinland and NRW, July 2021



Lago di Como, August 2021



Valle del Po, June 2022



London, June 2022



France, Summer 2022

European Biodiversity Strategy 2030

La strategia per la biodiversità mira a portare la biodiversità europea sulla via del recupero entro il 2030, a beneficio delle persone, del clima e del pianeta.

- Azioni
- Creare una rete più ampia di aree protette terrestri e marine in tutta l'UE.
- Avviare un piano di ripristino della natura nell'UE
- Introdurre misure per consentire il necessario cambiamento trasformativo
- Introdurre misure per affrontare la sfida globale della biodiversità



"Making nature healthy again is key to our physical and mental wellbeing and is an ally in the fight against climate change and disease outbreaks. It is at the heart of our growth strategy, the European Green Deal, and is part of a European recovery that gives more back to the planet than it takes away."

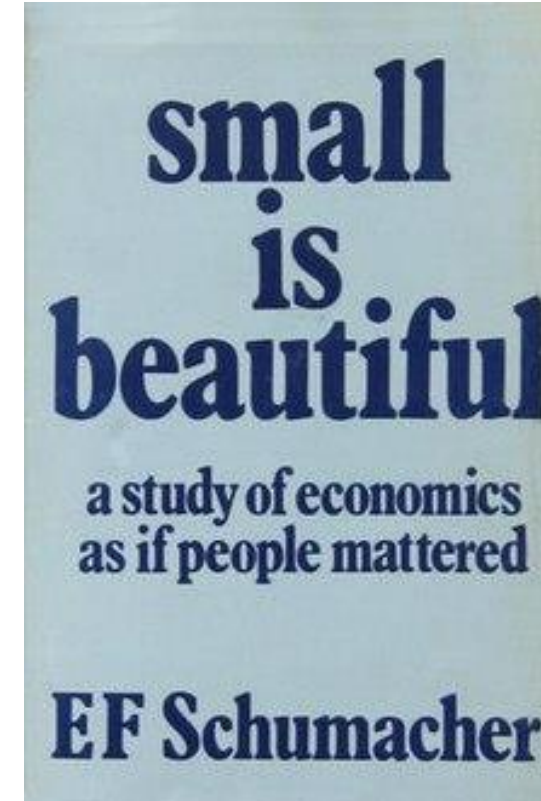
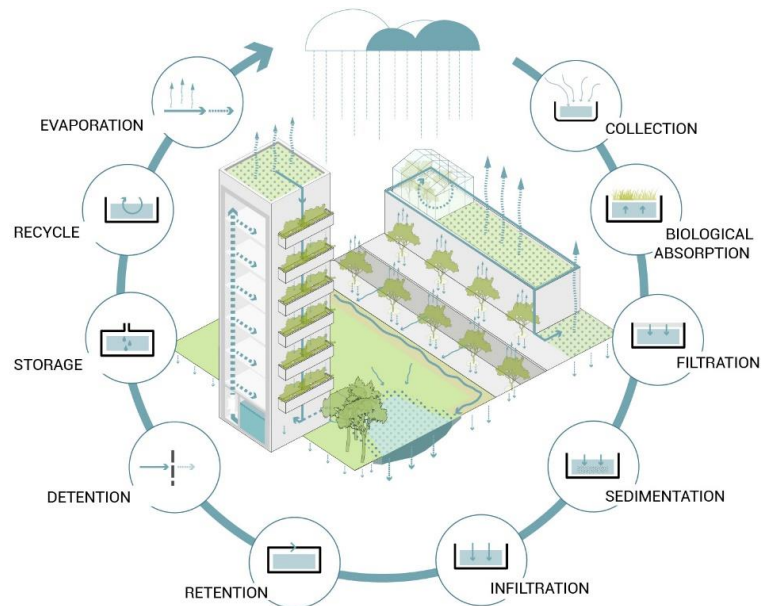
Ursula von der Leyen, President of the European Commission

<https://ec.europa.eu/environment/nature/biodiversity/strategy>

Origine del concetto di Capitale Naturale

Il termine "capitale naturale" è stato utilizzato per la prima volta come metafora dall'economista Ernst Friedrich Schumacher nel 1973 e ha così preso vita.

“ Let us take a closer look at this '**natural capital**'. First of all, and most obviously, there are the fossil fuels. No-one, I am sure, will deny that we are treating them as income items although they are undeniably capital items... ”



© 1973. Verlag Blond & Briggs.

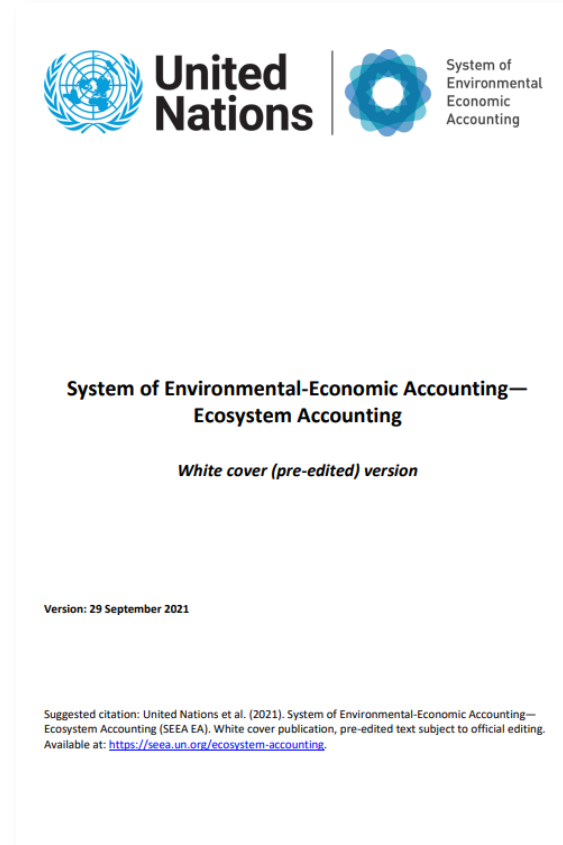
L'approccio di Unione Europea e Nazioni Unite

Natural Capital Accounting

m-services-biodiversity/en/



<https://ec.europa.eu/eurostat/en/web/products-statistical-reports/-/ks-ft-20-002>



<https://sea.un.org/ecosystem-accounting>

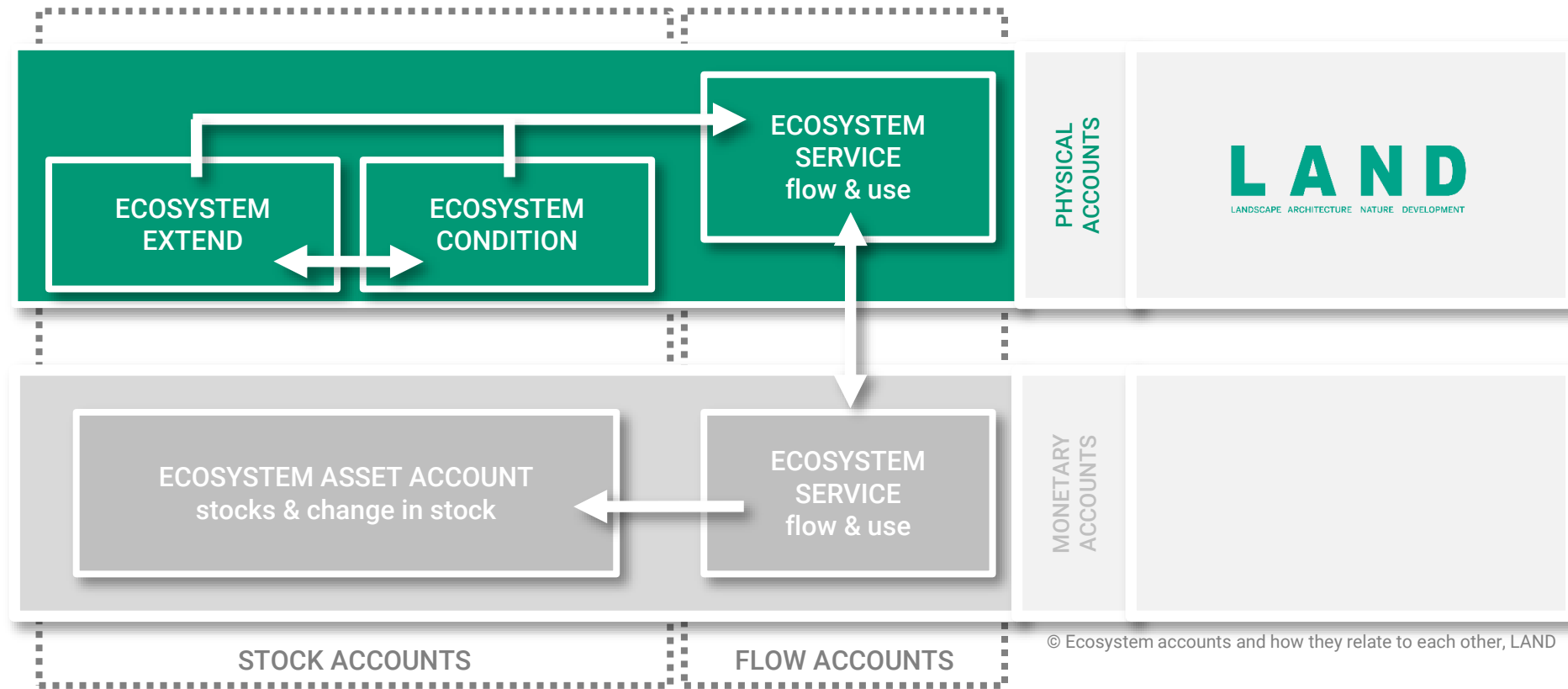


Quadro metodologico dell'approccio di LAND

Natural Capital Accounting



United Nations System of Environmental Economic Accounting



Learning from Nature



Biodiversity

Evapotranspiration

Cooling

Cleaning

Filtration

Retention

Infiltration

Urban green can help us!

The mitigation role of green areas



- ▶ “GUI* with a cooling capacity of 100 might lower the temperature of 3.5 °C in the Atlantic region, 4.8 °C in the Continental region and 6 °C in the Mediterranean region”

* Green Urban Infrastructure

Source: *Estimating the cooling capacity of green infrastructures to support urban planning*, L. Zardo, D. Geneletti, M. Pérez-Soba, M. Van Eupen (2017)



WORKING WITH NATURE

STREET AS A SHARED ECOSYSTEM

Adaptive Design
LAND Research Lab

28 °

microclimate
regulation

O₂

CO₂

tree line

biodiversity

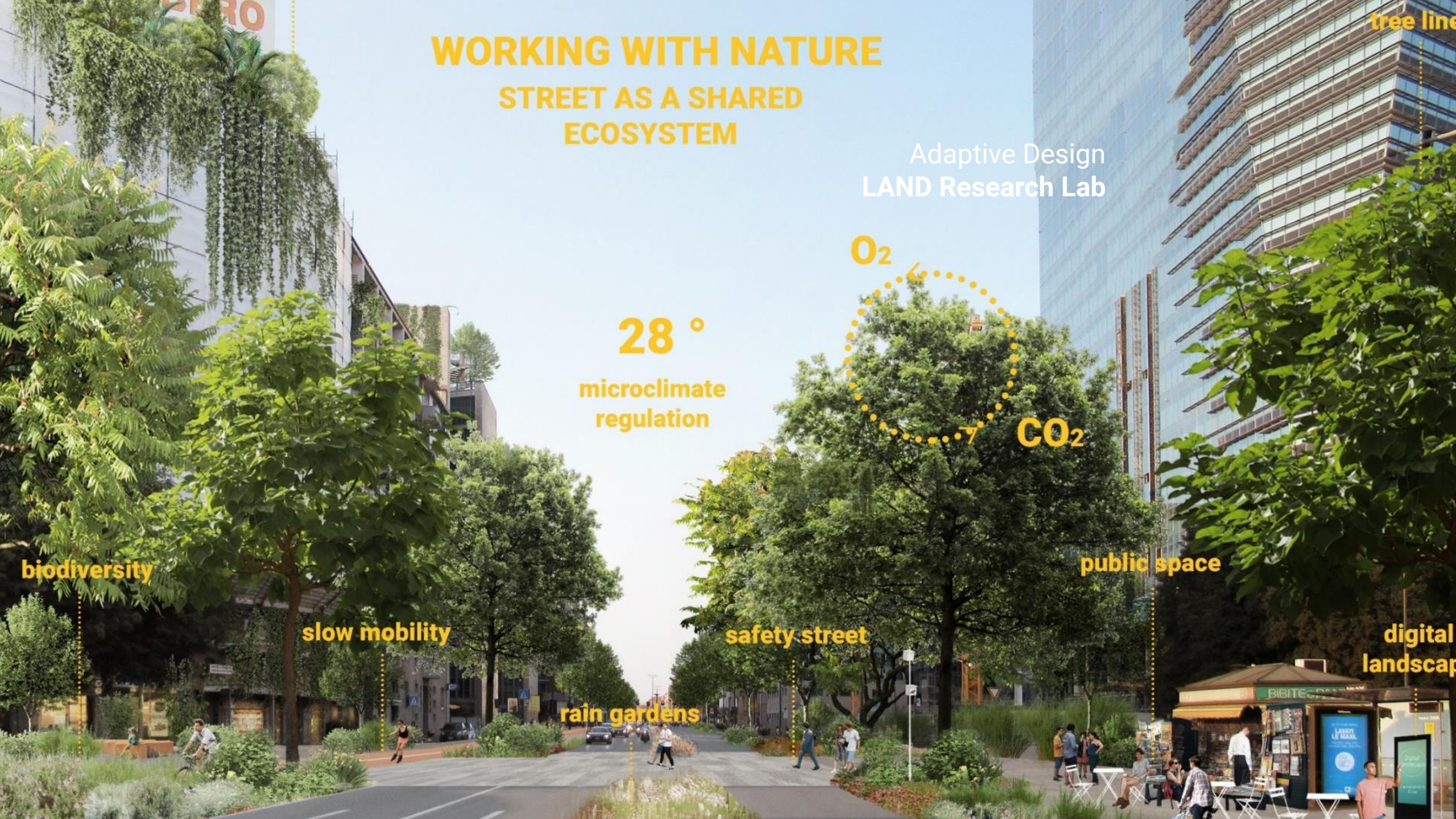
slow mobility

safety street

public space

rain gardens

digital
landscap



Verso la neutralità climatica e consumo di suolo zero

Natural Capital Accounting nel Real Estate



"Neutralità del degrado del territorio entro il 2030"

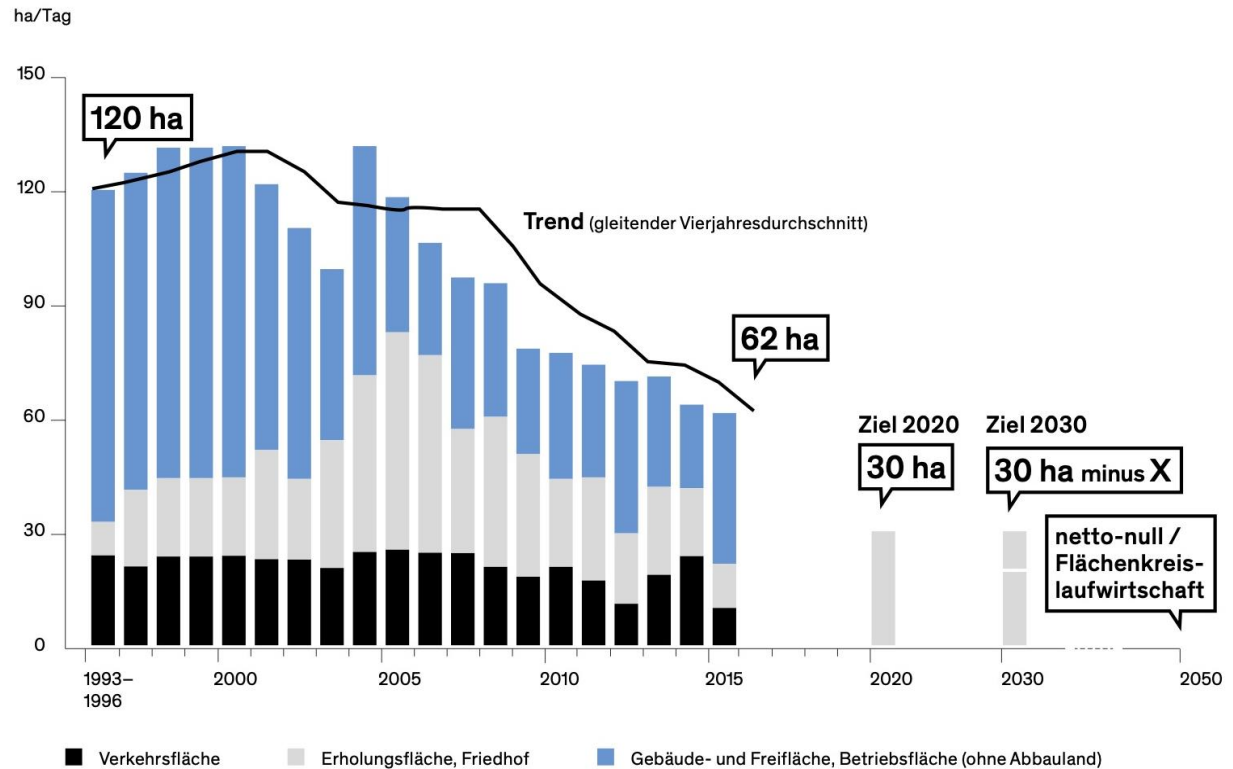


Tabella di marcia dell'UE per un'Europa efficiente sotto il profilo delle risorse:
Nessun ulteriore consumo netto di suolo dopo il 2050

Ziele noch in weiter Ferne

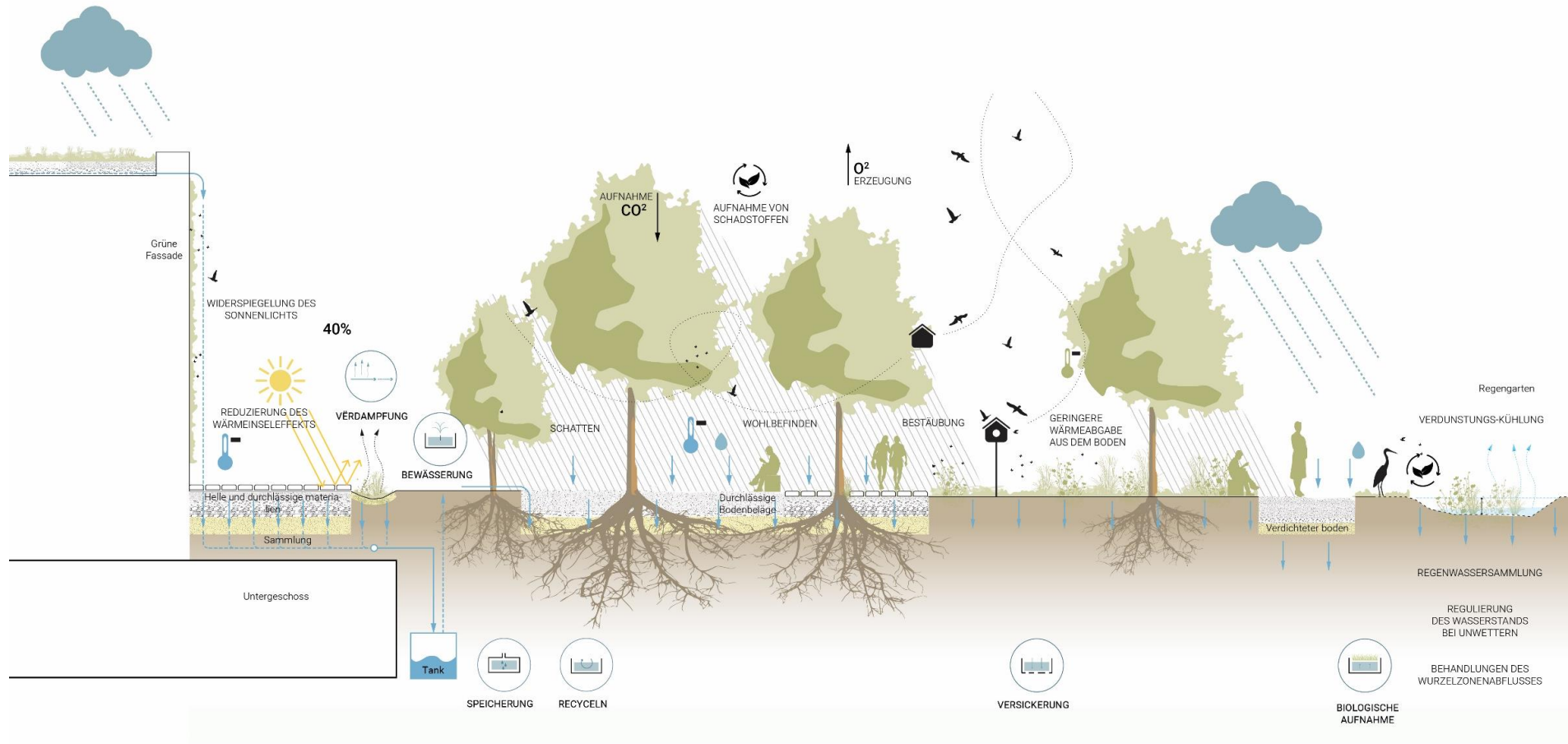
Täglicher Zuwachs und Zusammensetzung der Siedlungs- und Verkehrsfläche

Quelle: Umweltbundesamt: <https://tinyurl.com/y9kft5kp>, Zugriff: 11.2018



Concetto di paesaggio produttivo

Natural Capital Accounting nel Real Estate

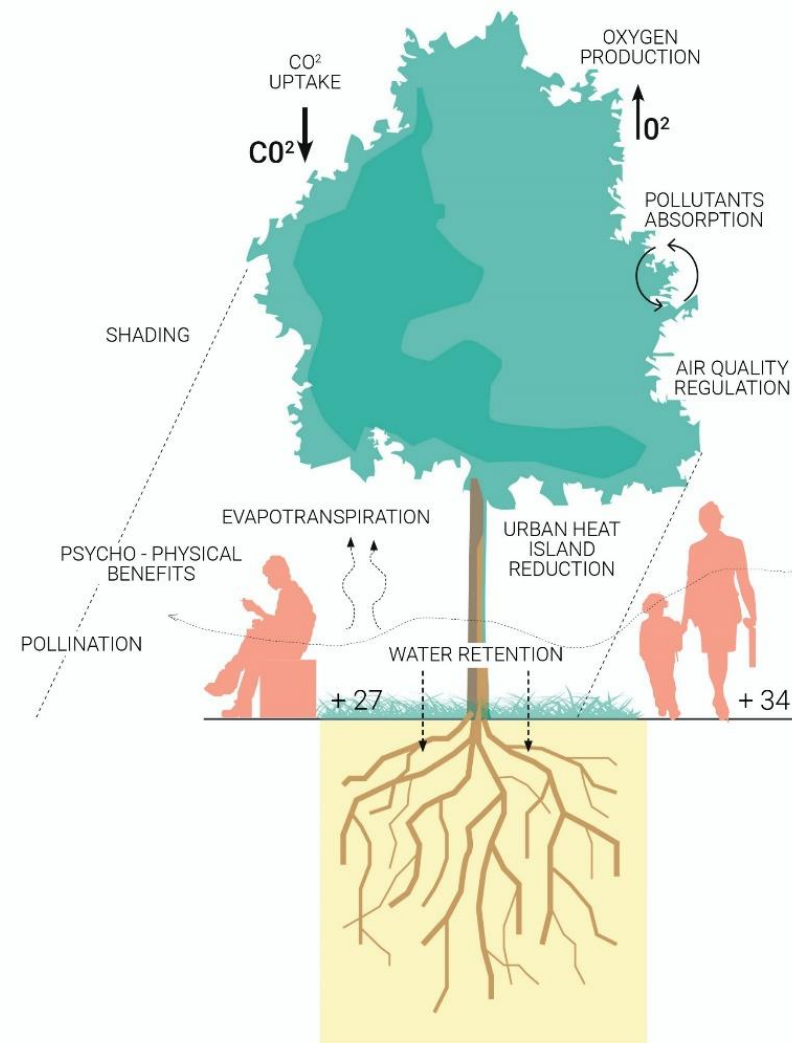
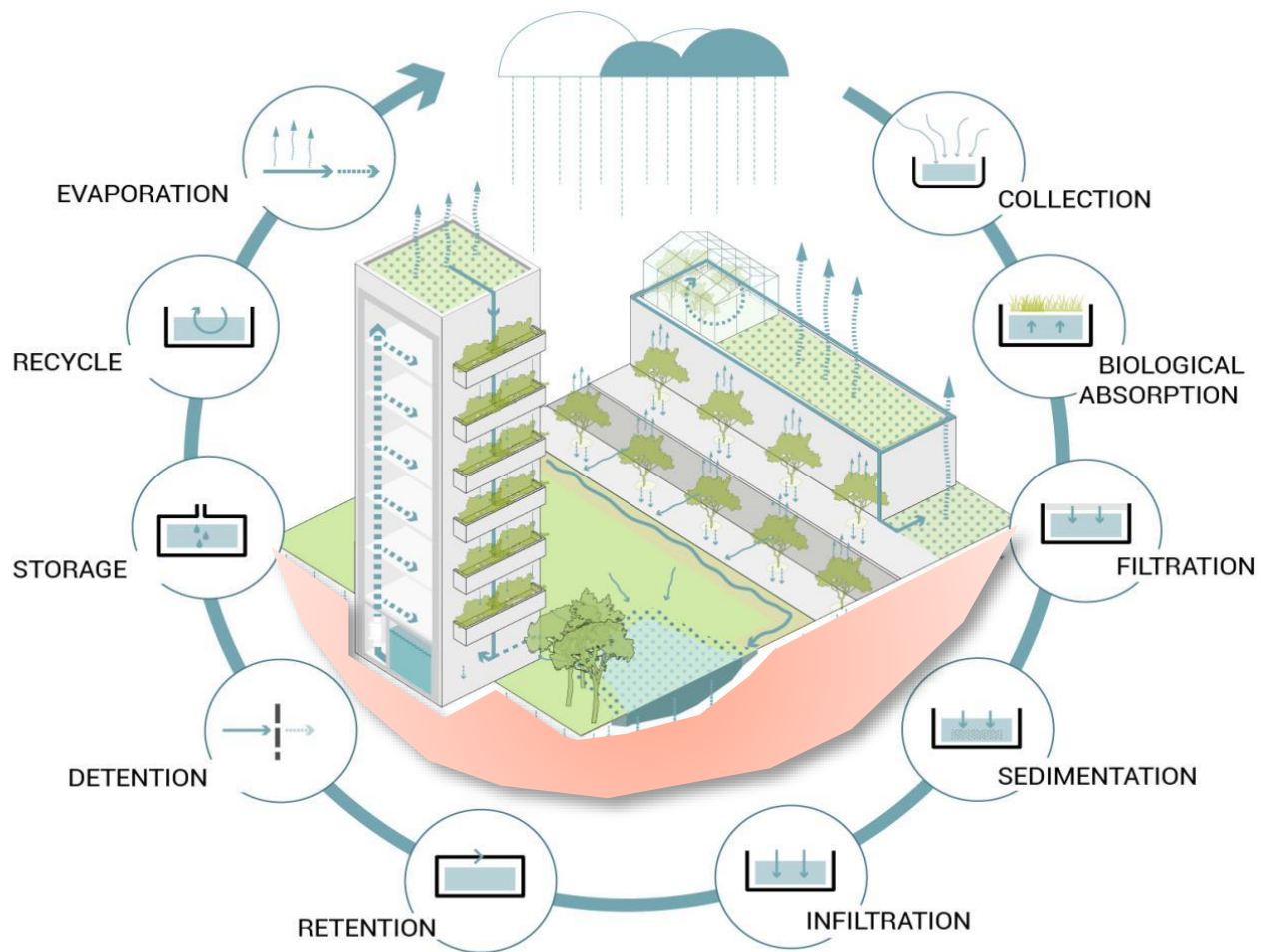


I servizi ecosistemici dello spazio aperto

Natural Capital Accounting nel Real Estate



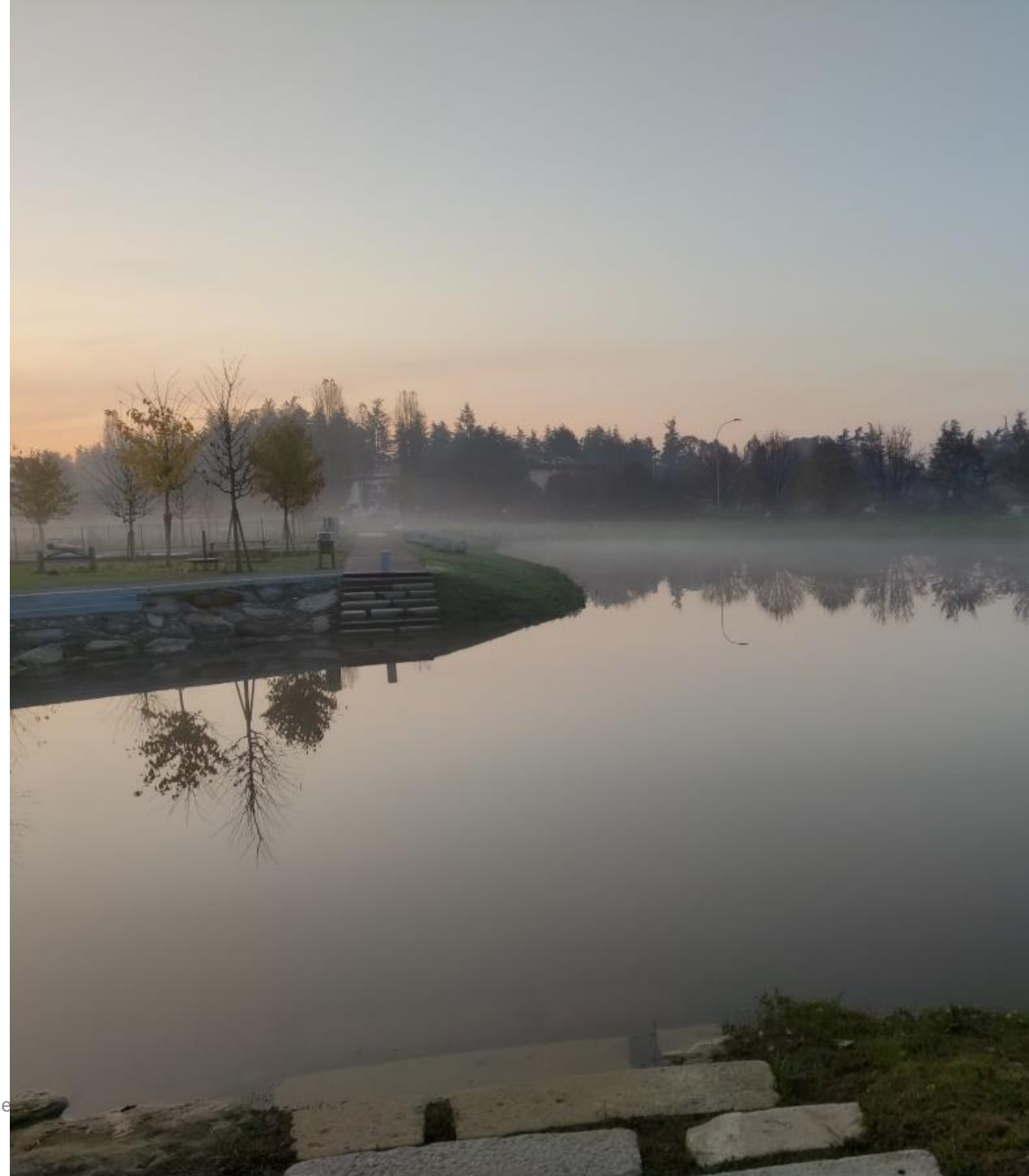
Integrazione delle infrastrutture verdi-blu



Parco dell'Acqua Arcore



© LAND



Prese

Ospedale Policlinico Milano



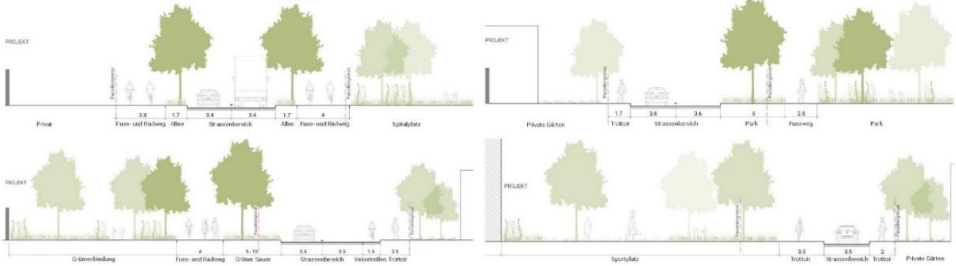
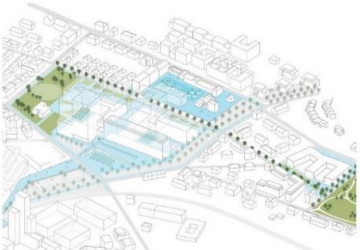
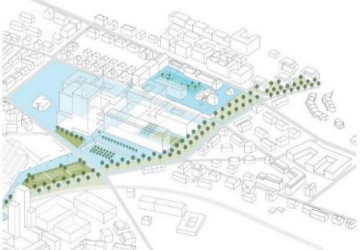
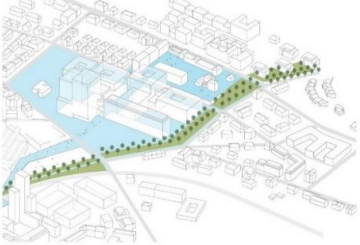
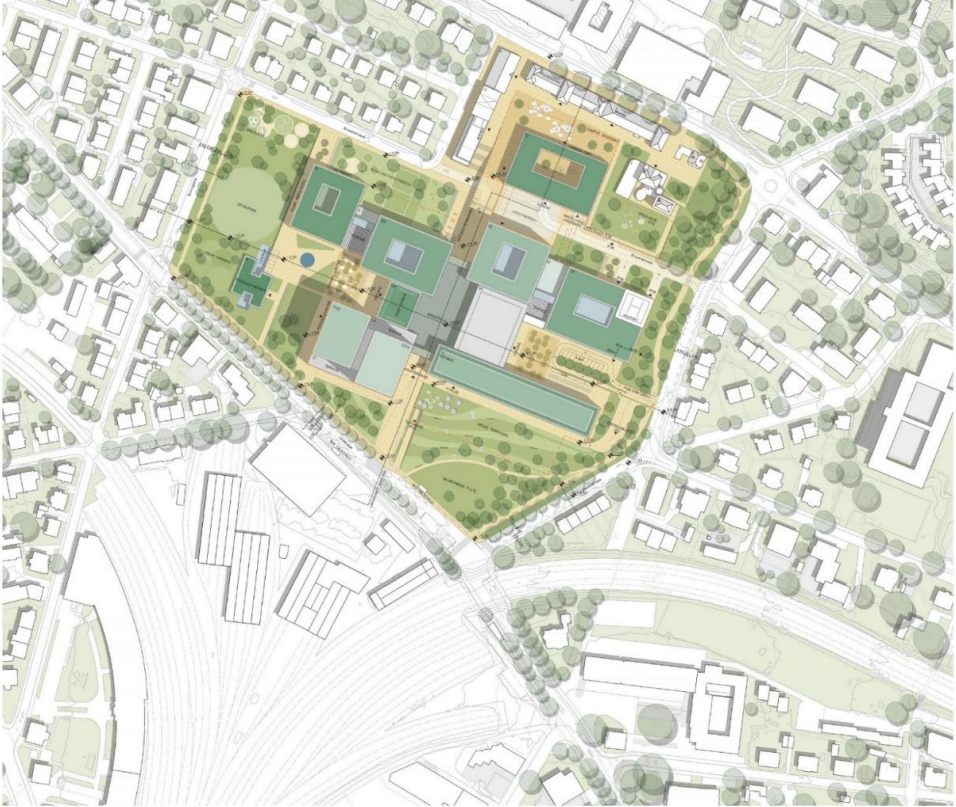
Ospedale Policlinico Milano



Bühler Innovation Campus



KSW Winterthur



Spitalcluster Lengg

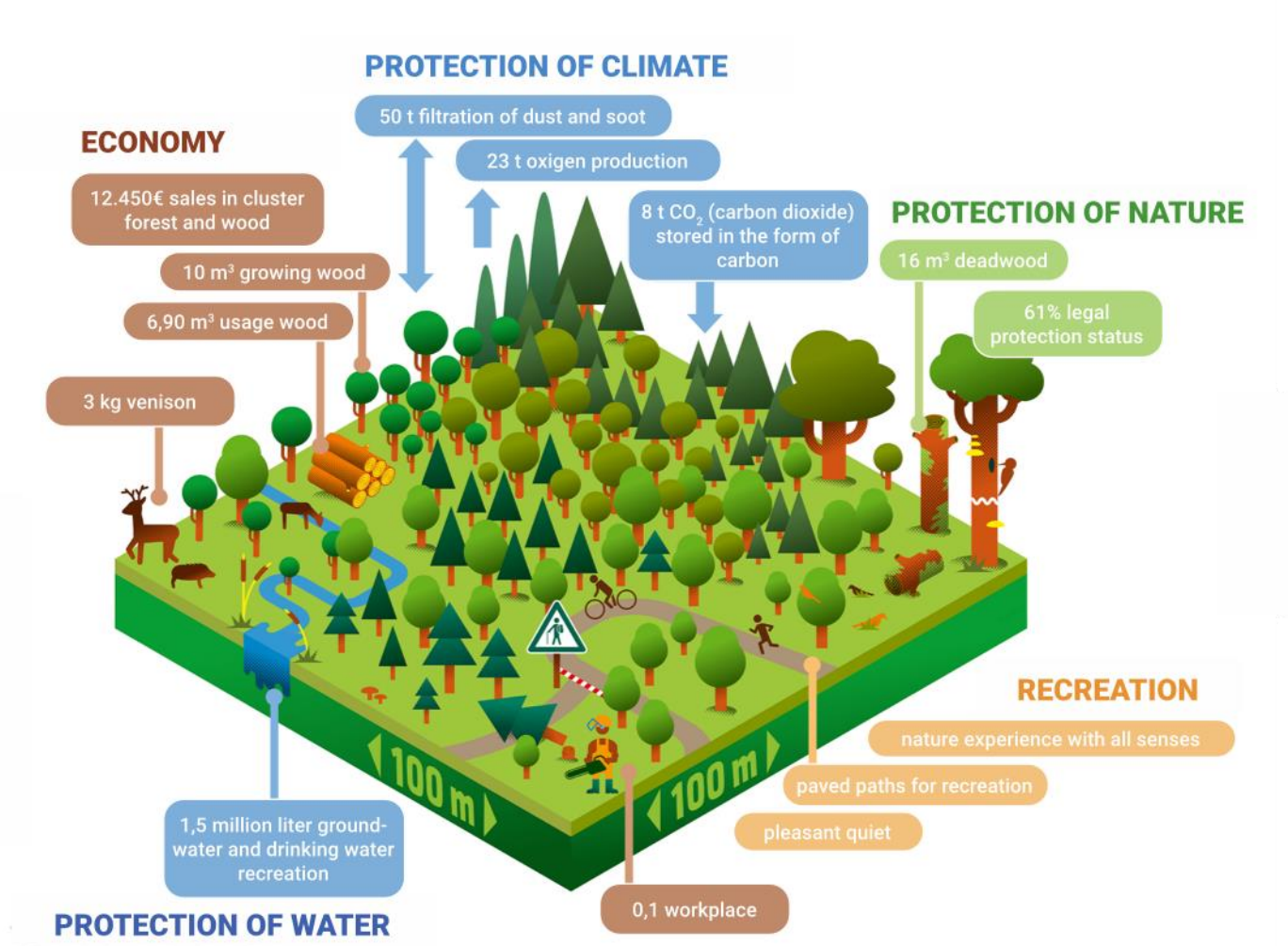


Raumwerk D - Coolstreet



Cosa significa valutare il Capitale Naturale?

Rendere visibili i benefici dei progetti degli spazi aperti

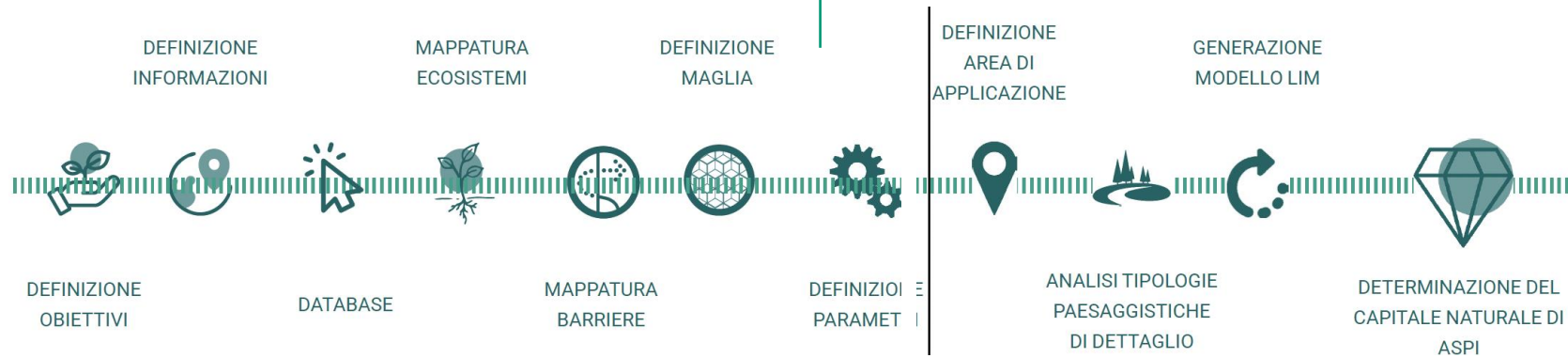


The roadmap and the 8th dimension

Natural Capital Accounting im Real Estate

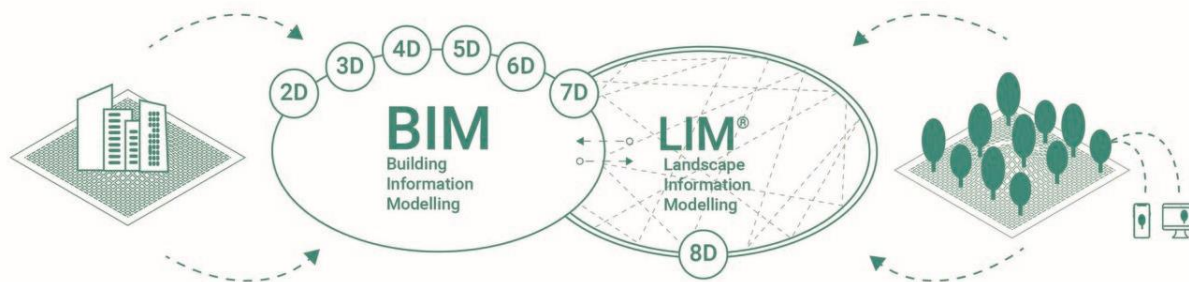
Phase 1: View & Analyze

Phase 2: Determining the value of natural capital



The LIM[®] dimension 8D environmental dimension

- 3D Existing conditions models
- 4D Scheduling
- 5D Estimating
- 6D Sustainability
- 7D Facility management
- 8D Environmental dimension



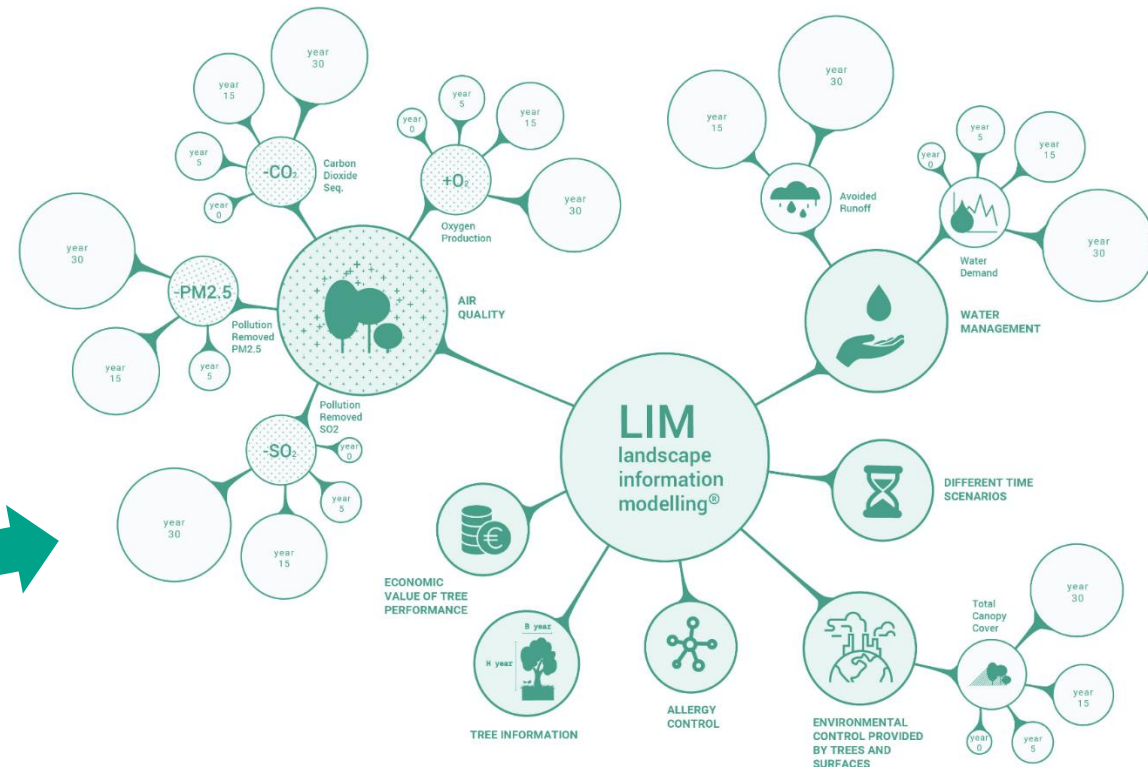
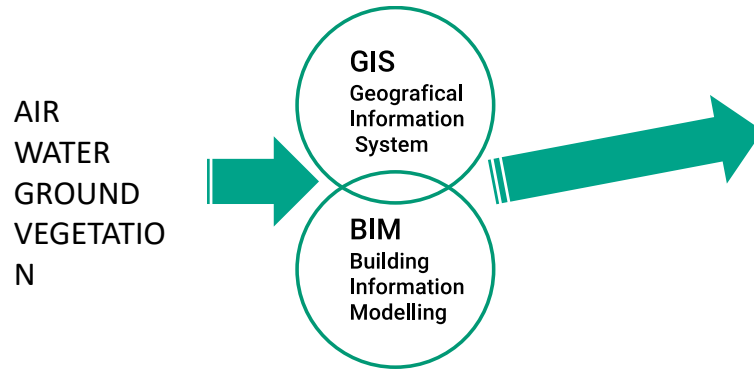
LAND Leading with LANDscape

Natural Capital Accounting im Real Estate

To make tangible the value of Nature in landscape projects, we adopted Natural Capital Accounting as a tool to measure changes in stock and flows of Ecosystem Services.



LAND | SUSTAINABLE DEVELOPMENT GOALS
 LAND supports the Sustainable Development Goals and contributes with its own Landscape Sustainability Strategy to achieve them within landscape projects.



Our NCA Process

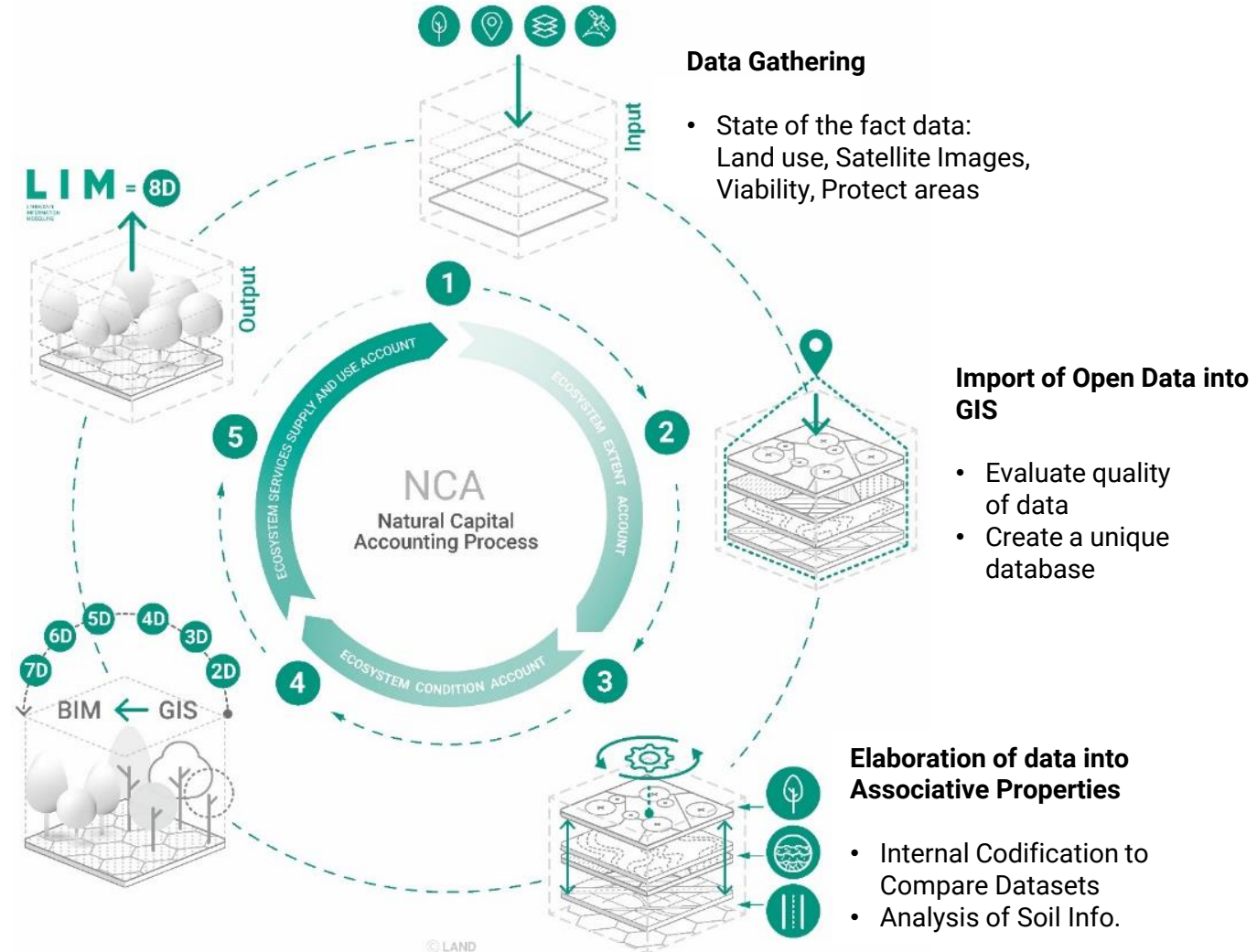
Measuring the impact of Landscape at every scale

LIM Output and Ecosystem Service Assessment

- Air Quality by Trees
- Water Storage
- Total Canopy Cover
- ...

Transfer of Dataset into BIM Structure within Revit

- Creation of 3D Model within LIM Parameters
- Analysis of Vegetation

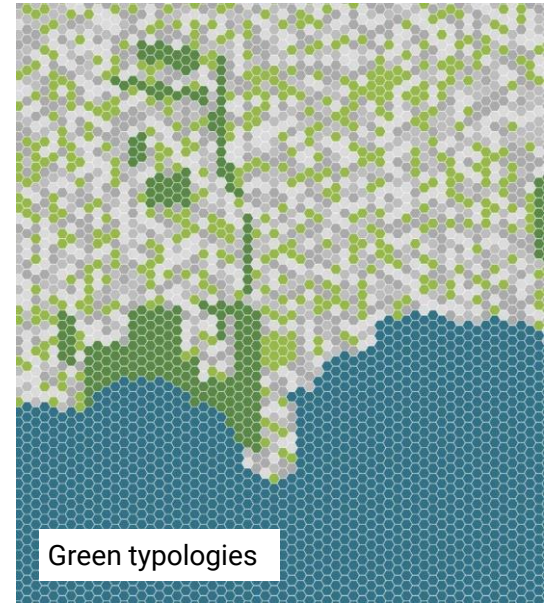
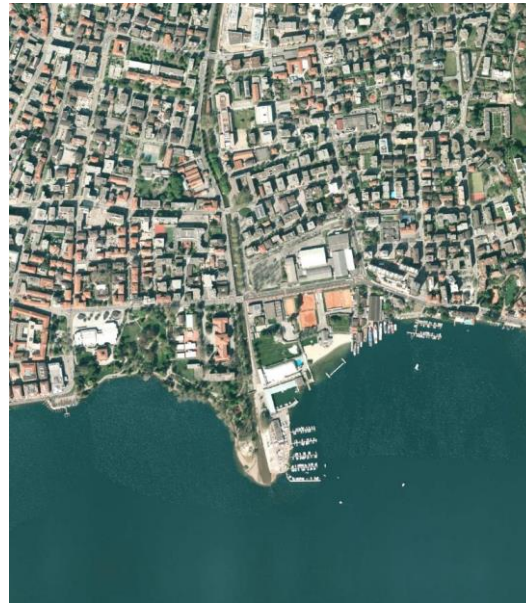
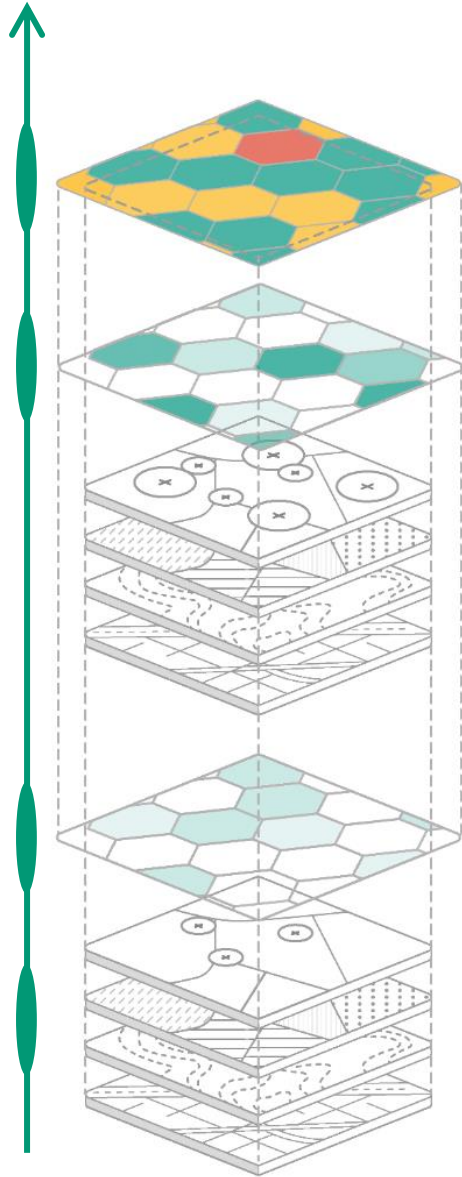


Develop scenarios
for urban planning

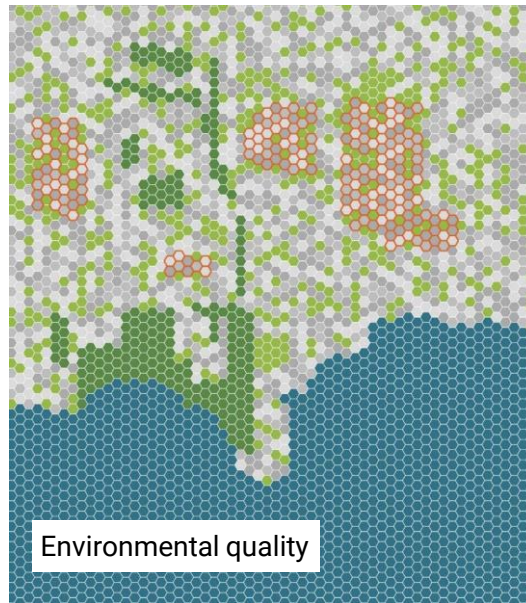
Identify
challenges

Quantify
ecosystem
services

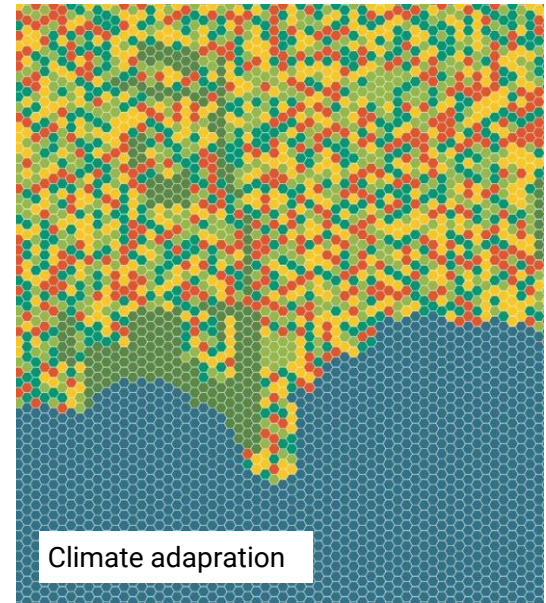
Mapping
natural capital



Green typologies



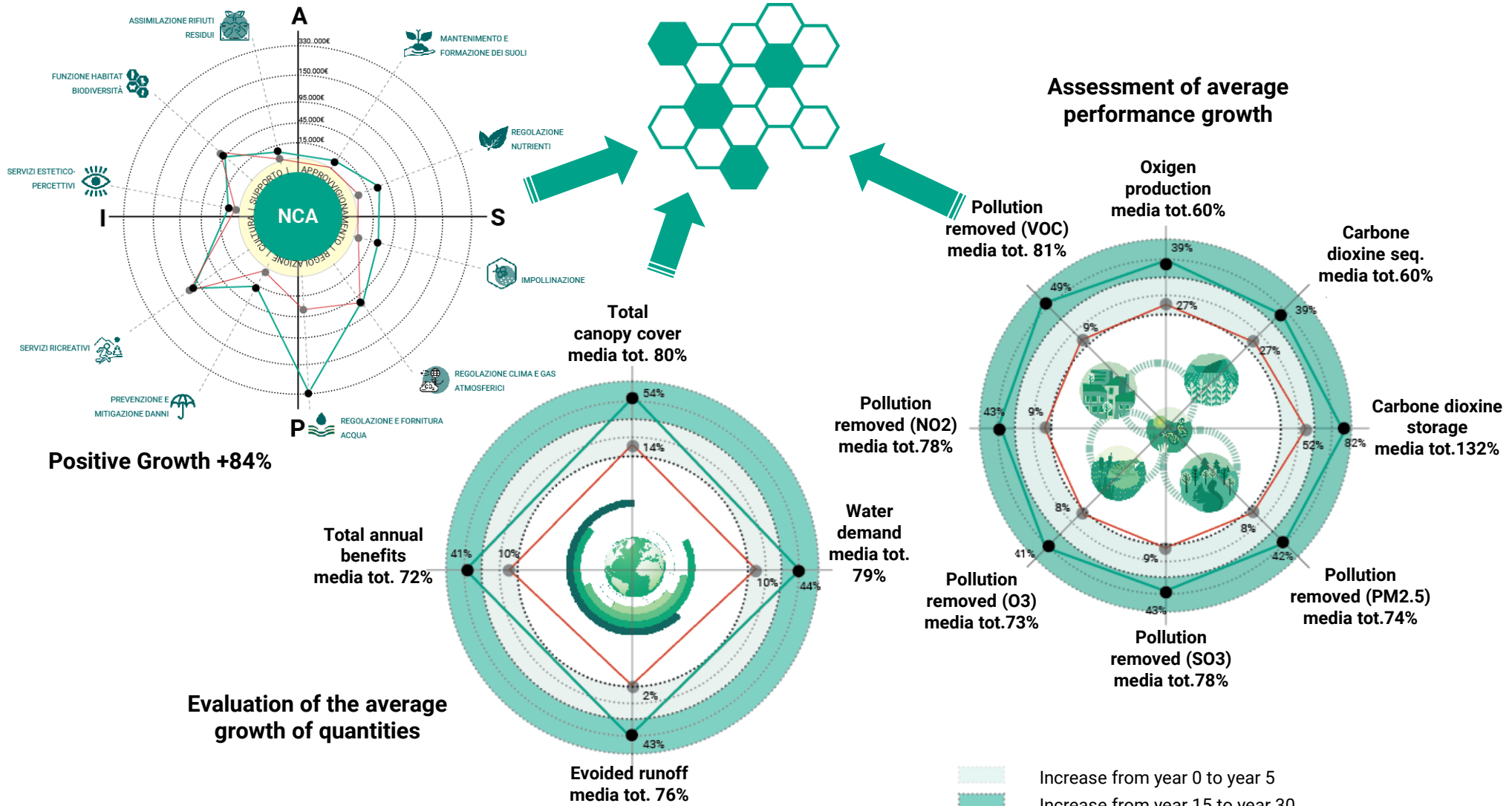
Environmental quality



Climate adaptation

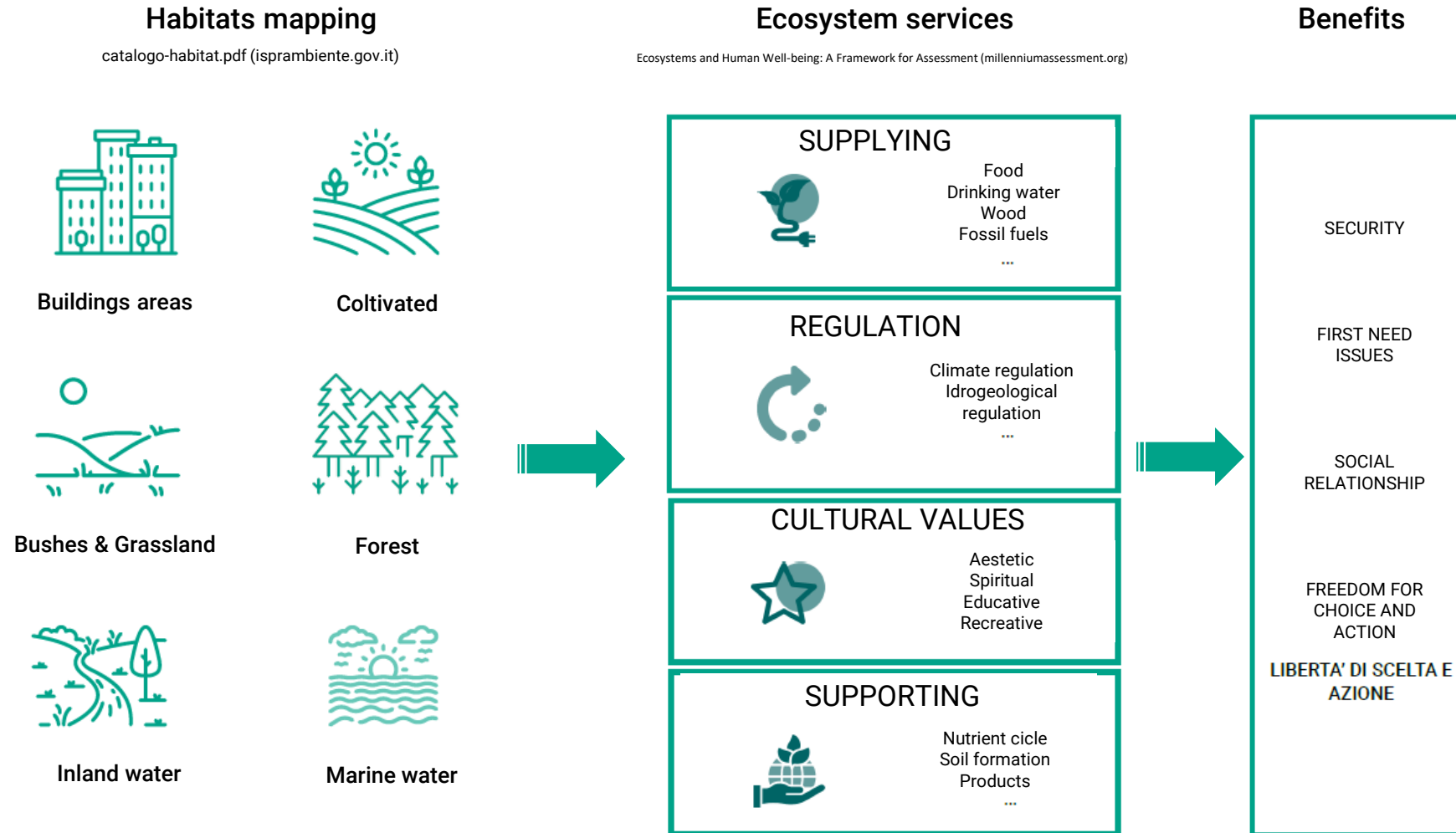
Tree evaluation

Natural Capital Accounting im Real Estate



LANDscape Analysis

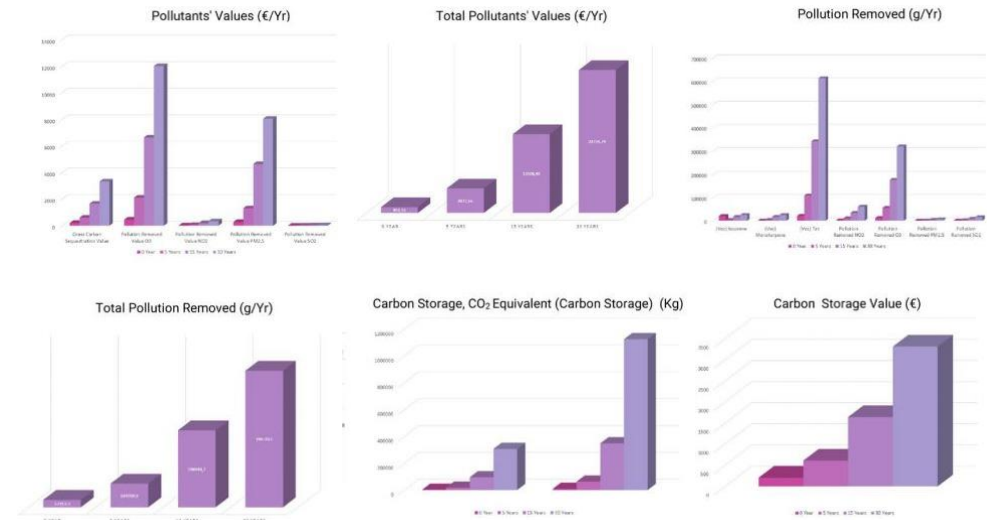
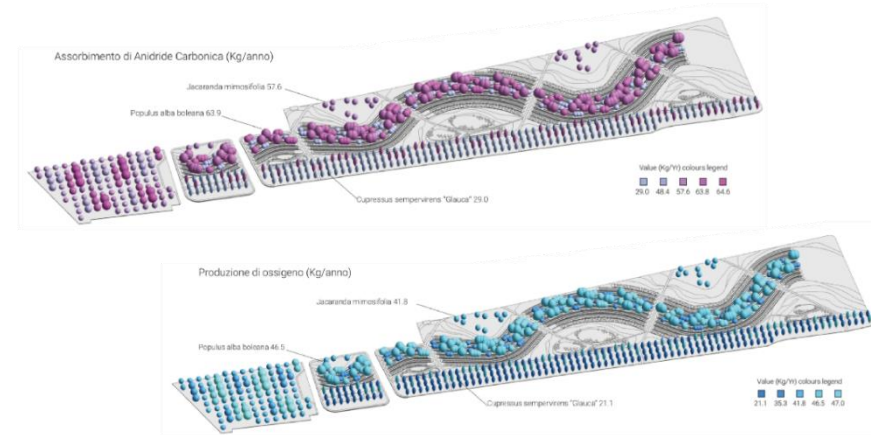
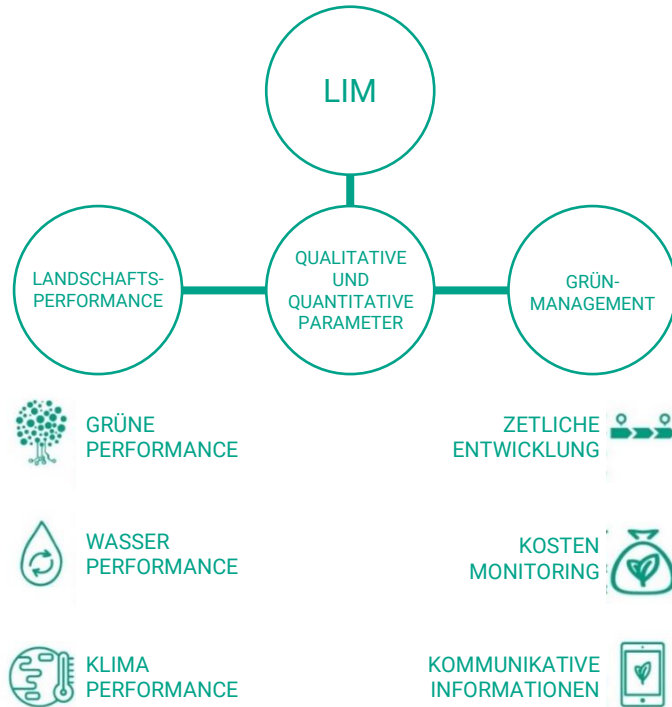
Natural Capital Accounting im Real Estate



Working with LIM

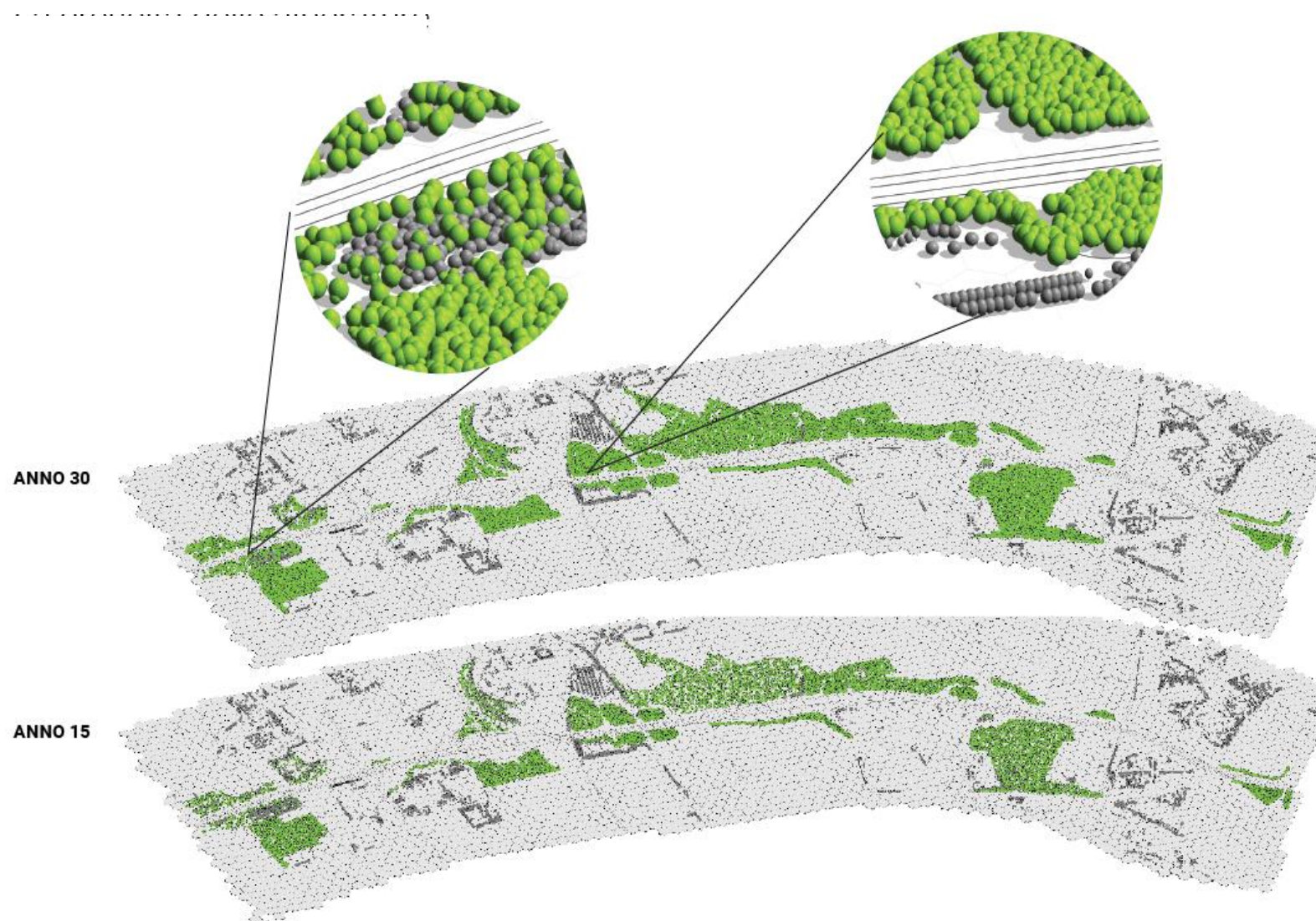
LAND NCA – Erkenntnisse als Schlüssel zum Landscape Design Code

LIM makes the value contribution of ecosystem services visible, measurable and tangible.



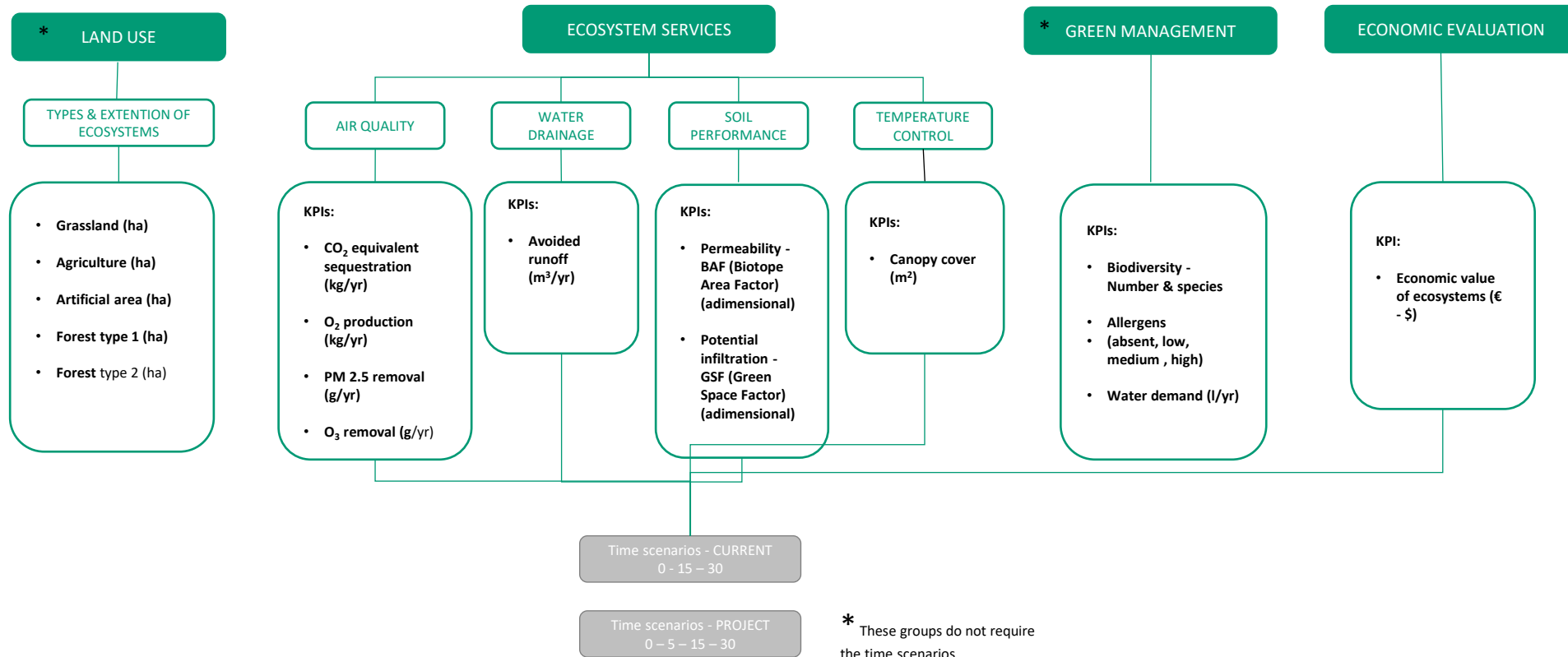
Accrescimento dinamico del Capitale Naturale della vegetazione

Previsione di crescita delle alberature dai 15 ai 30 anni dall'impianto



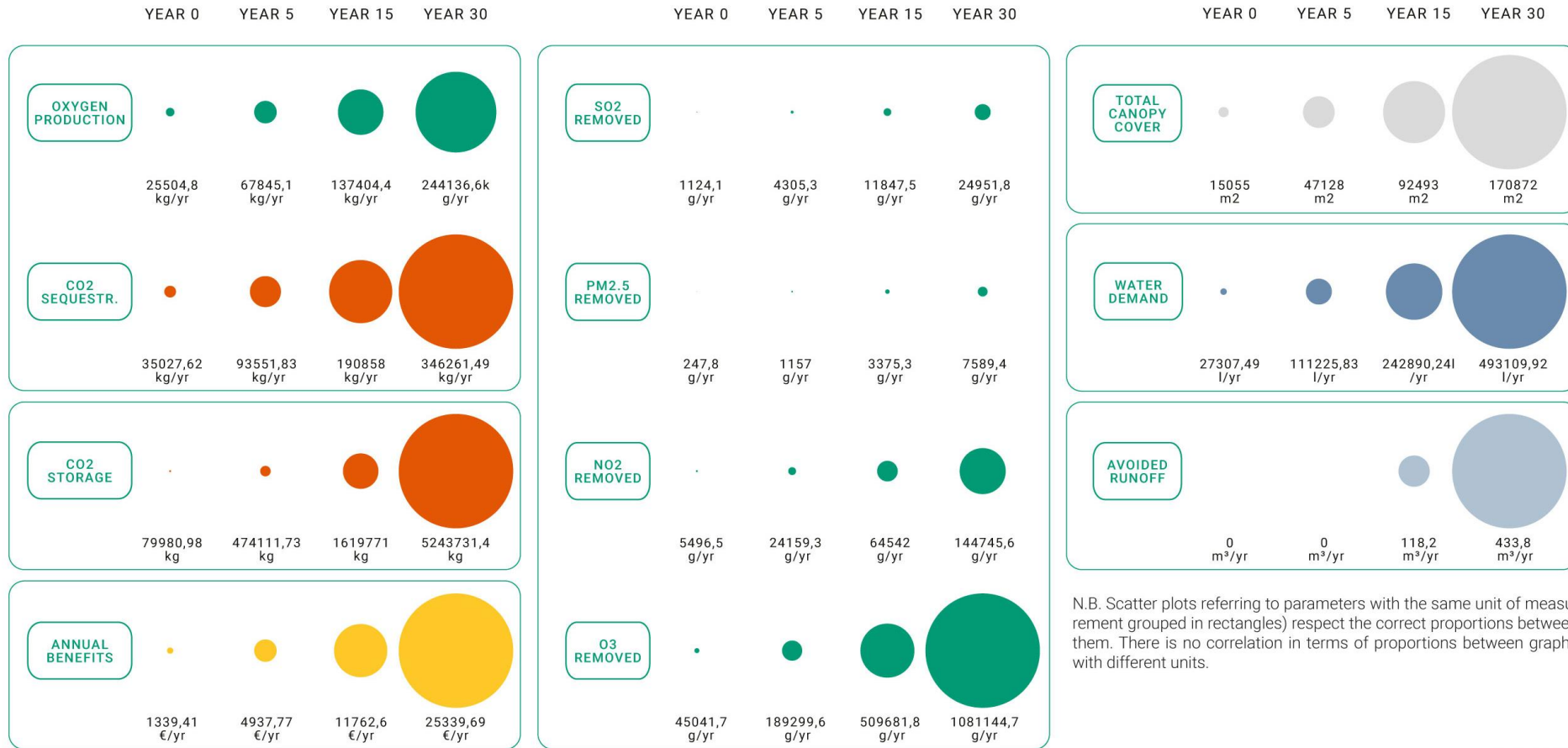
4 Main NCA Categories

Land-Use / Ecosystem Services / Green Management / Economic Evaluation



Ecosystemic values

Value increase in 5 -10 -15- 30 years



N.B. Scatter plots referring to parameters with the same unit of measurement (grouped in rectangles) respect the correct proportions between them. There is no correlation in terms of proportions between graphs with different units.

© LAND

NCA Tool

Portello Milano



North East Riyadh



Portello



RFI Bari - Nodo verde



Parco della Giustizia di Bari

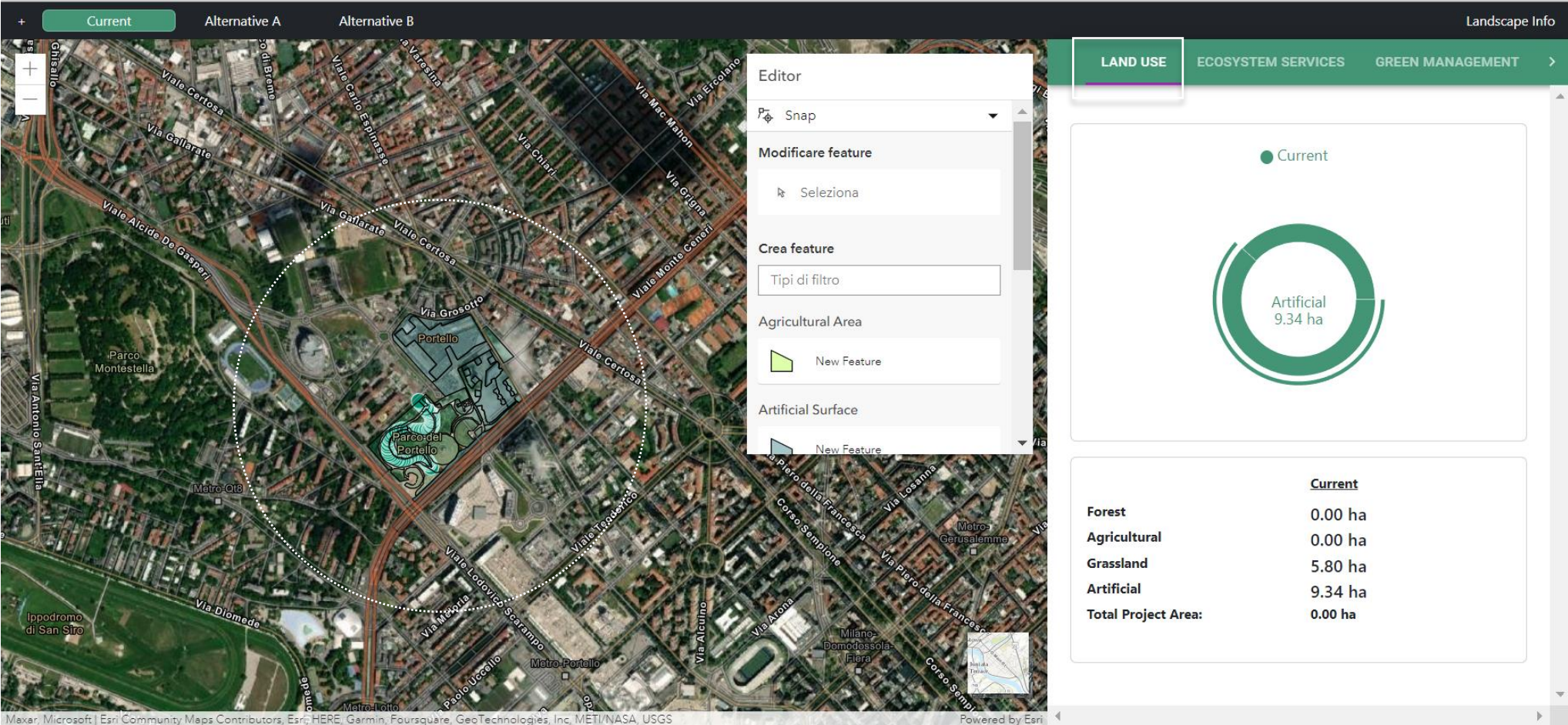




Parco Portello

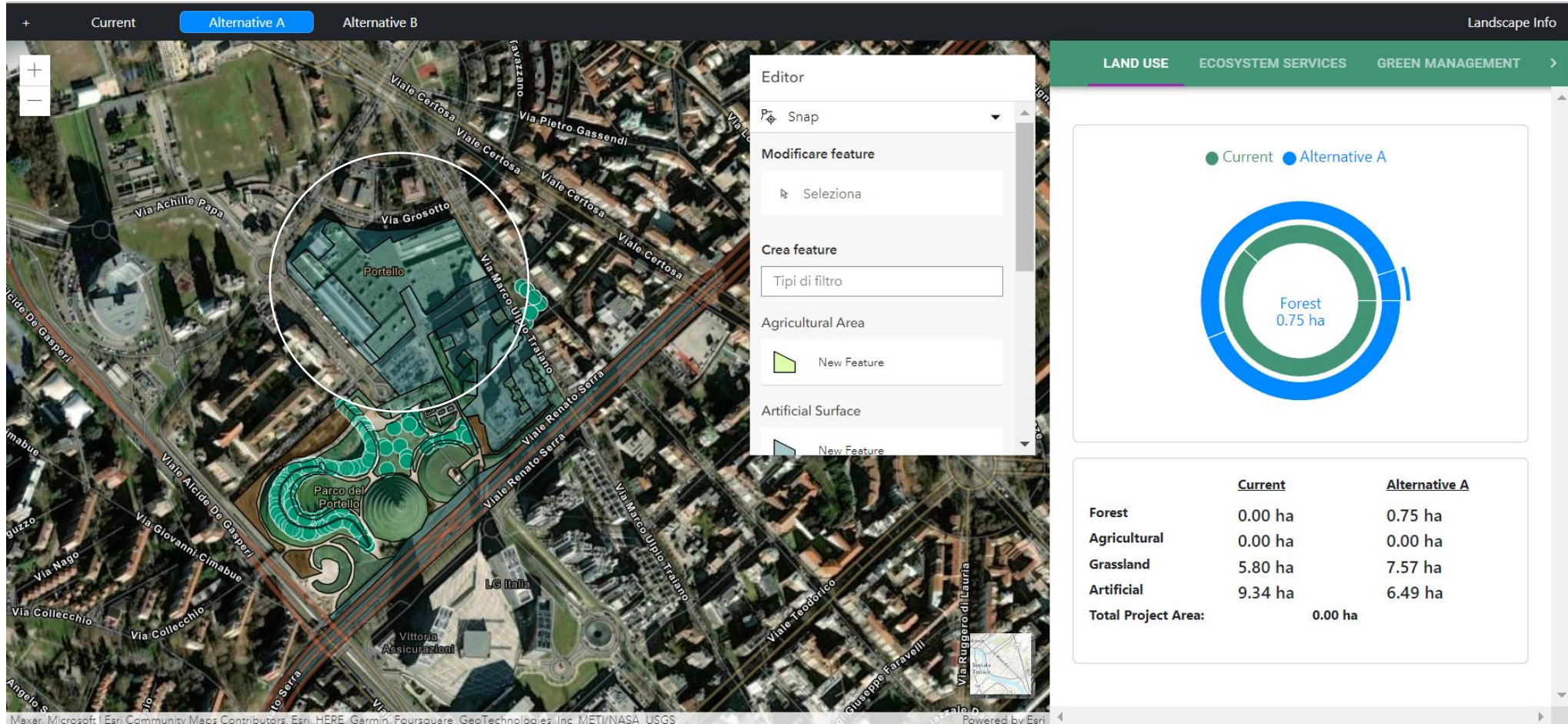
Geographic Location – Land Use

Portello Milano



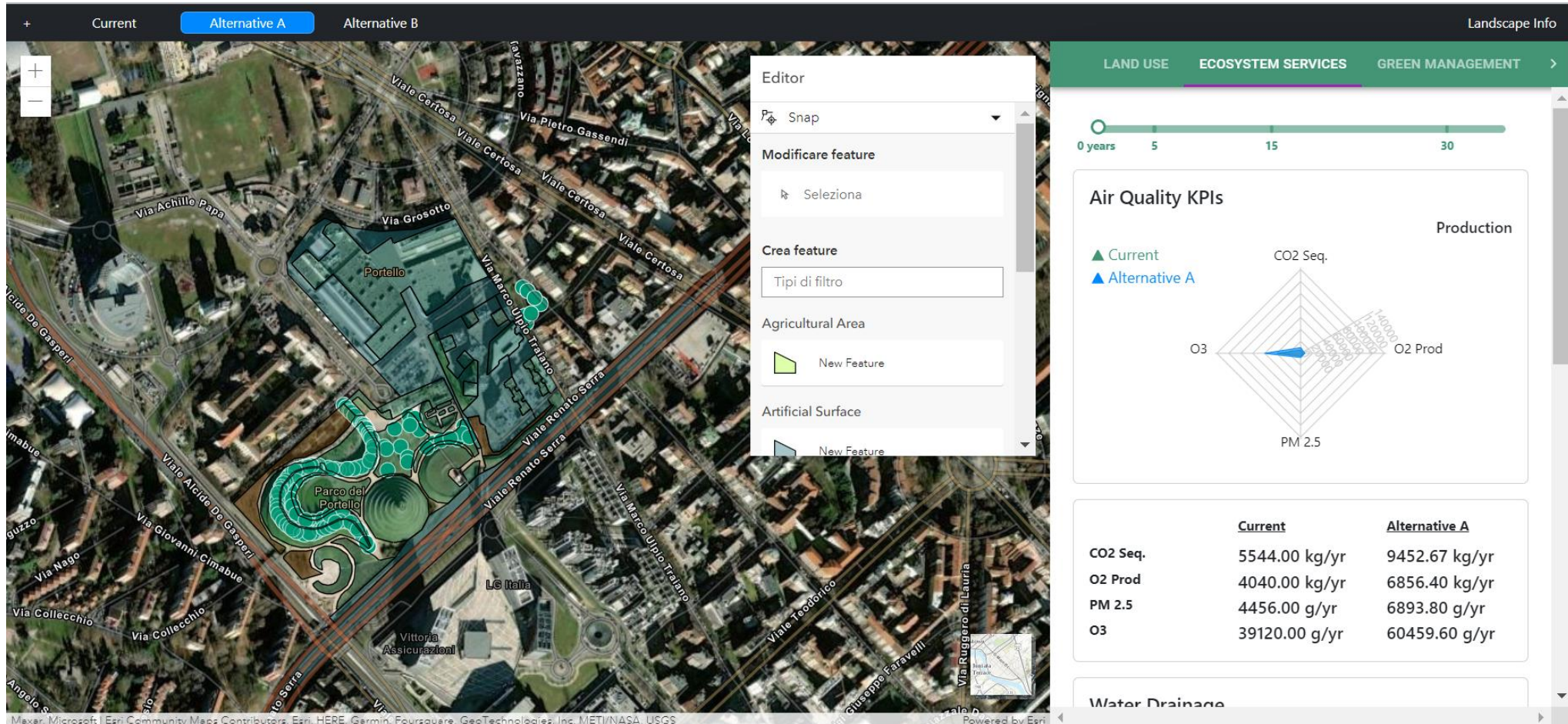
Adding a Green Roof– Land Use Data

Portello Milano



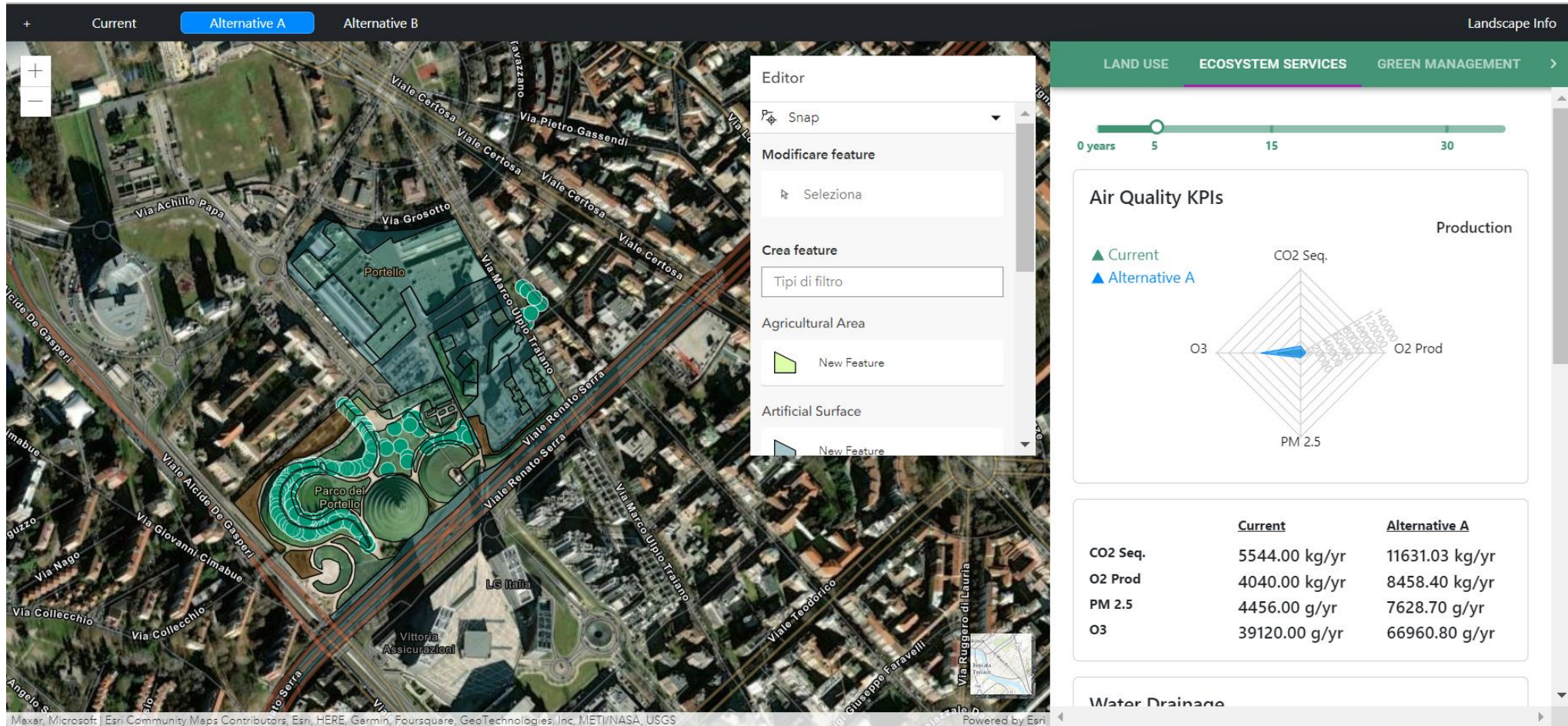
Green Roof – Ecosystemic Data

Portello Milano



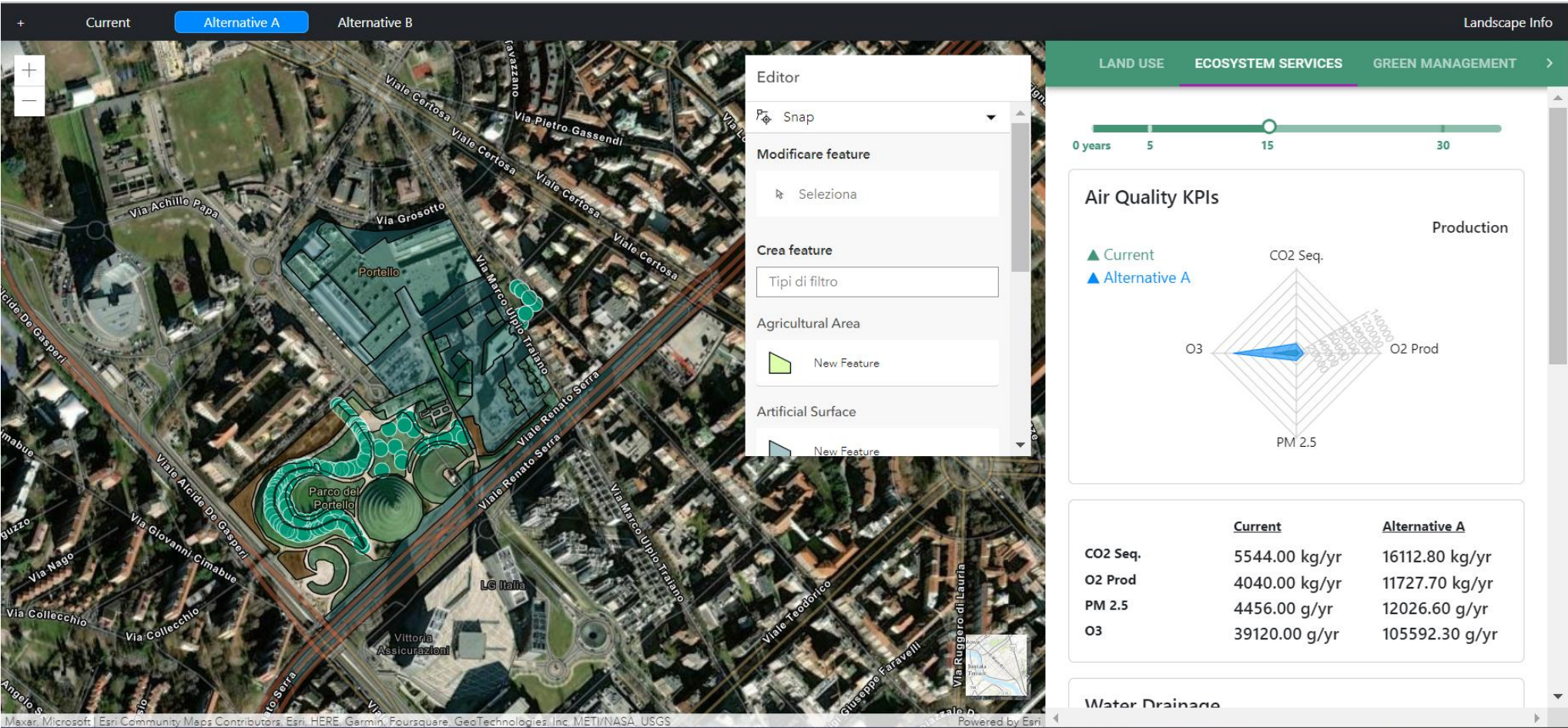
5 Year Preview – Air Quality

Portello Milano



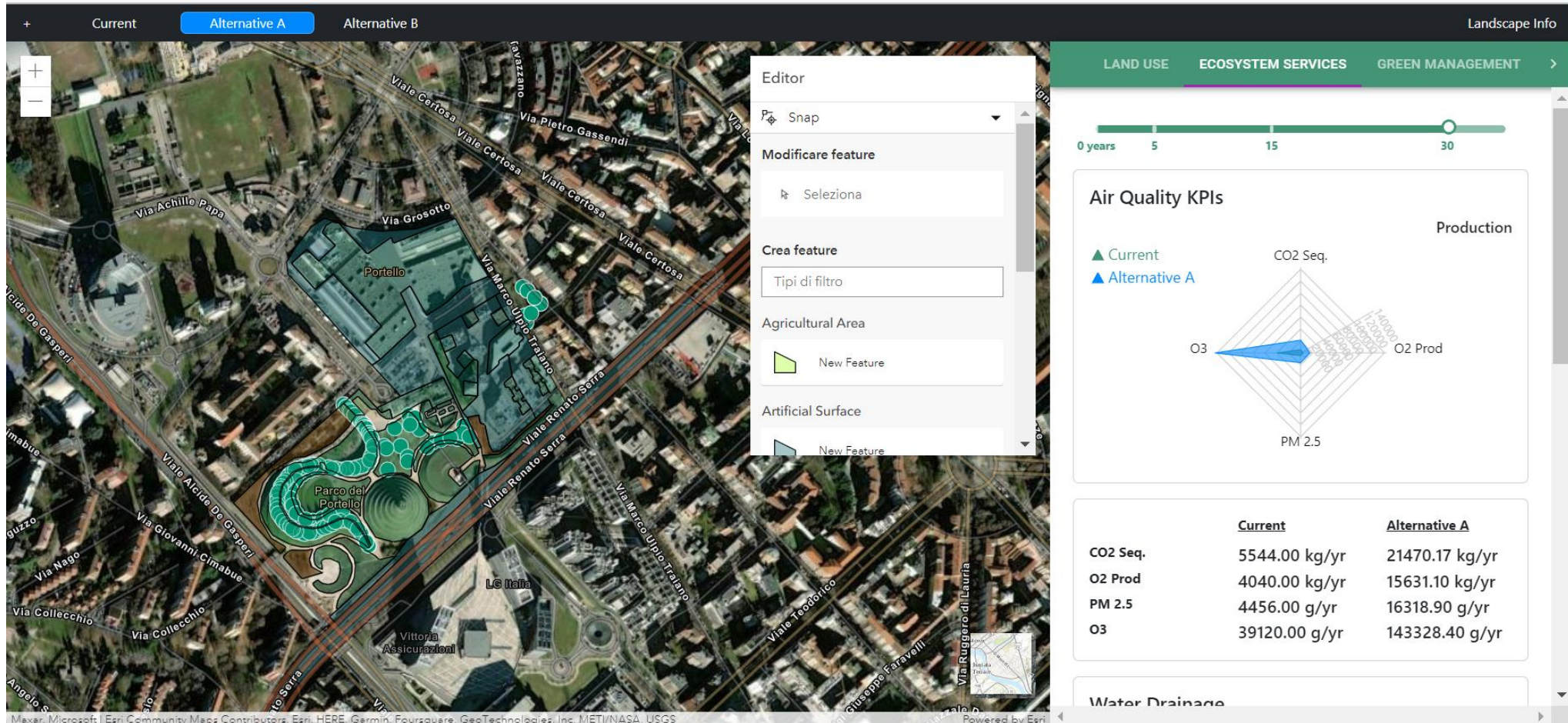
15 Year Preview – Air Quality

Portello Milano



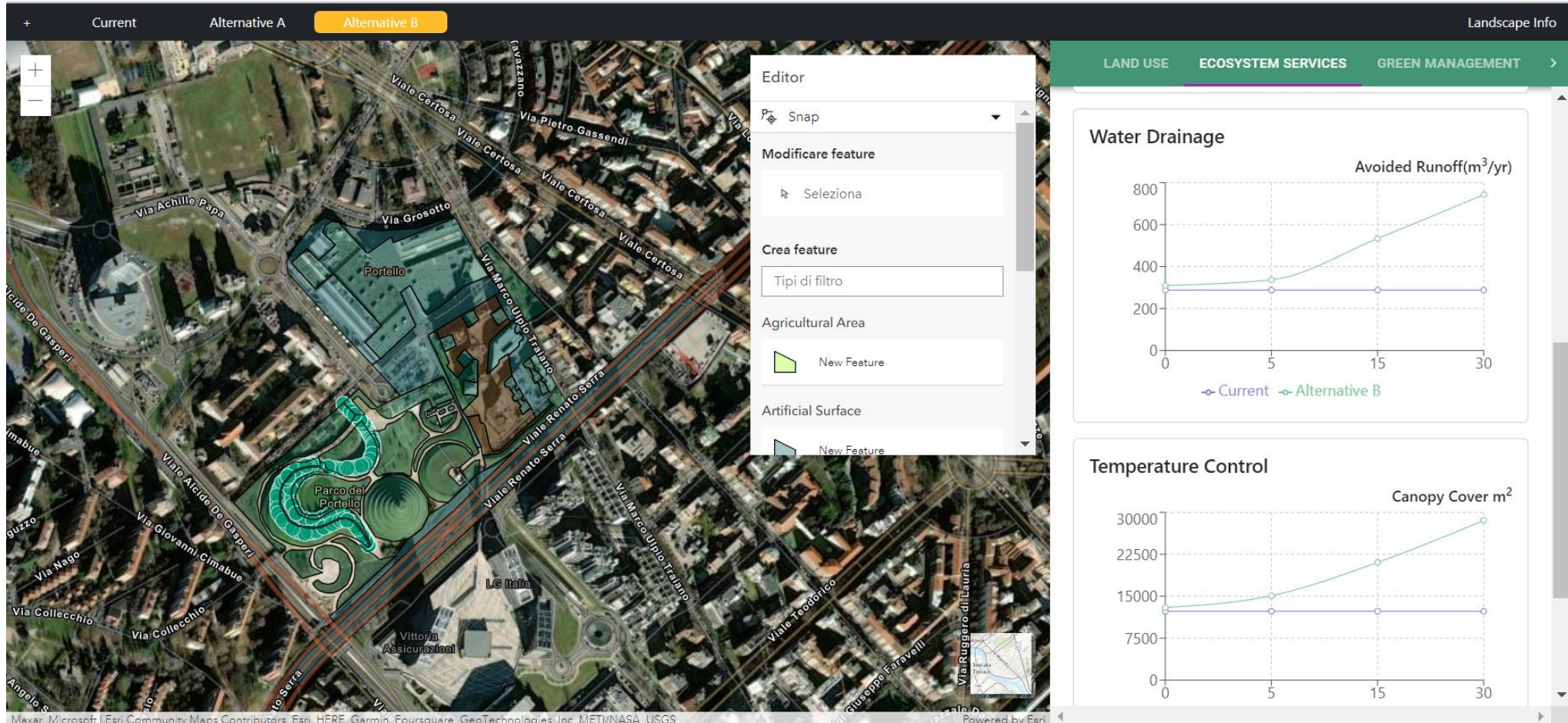
30 Year Preview – Air Quality

Portello Milano



Adding Trees – Water Drainage + Temperature Control

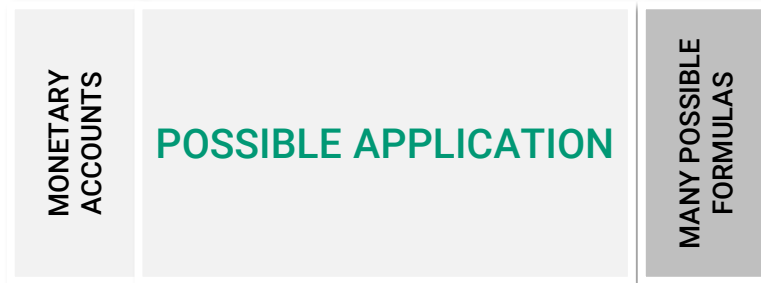
Portello Milano



Possible application of our NCA output

Monetary asset

System of Environmental Economic Accounting

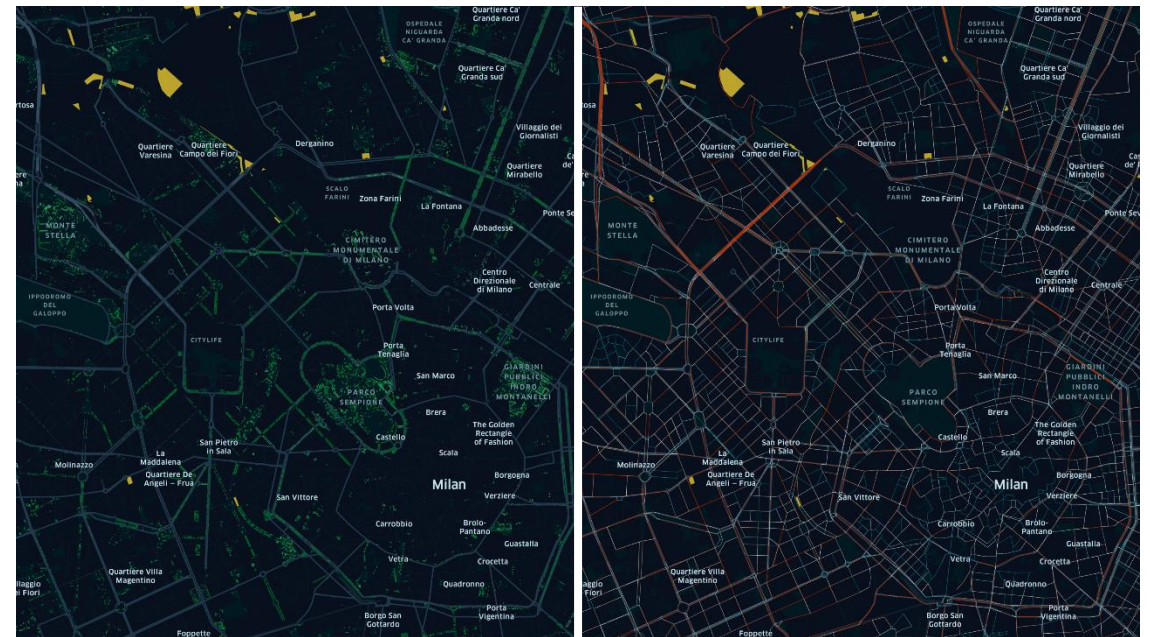


Assessing nature and its performance

Nature-based Solutions to Mitigate Vehicular Traffic Pollution Beyond SUMP's



In line with the UN's SDG 11 and 13, such integrated data-driven research developed with **Transform Transport** could support decision makers in the **integrated planning of SUMP's and green infrastructures** to leverage on their co-benefits for climate change adaptation.



Policy Guidelines



Data Portals



Research Projects



Assessing nature and its performance

Evaluation and mitigation of the Urban Heat Island (UHI) effect

- Estimate and combine **Land Surface Temperature** with **land cover maps** and meteorological data to provide a clear indication of the urban areas affected by the UHI effect
- Suggest a selection of **Nature-based Solutions** to mitigate the phenomenon.

Data Portals

CREODIAS
powered by Copernicus



ARPA



Research Projects

A14
copernicus

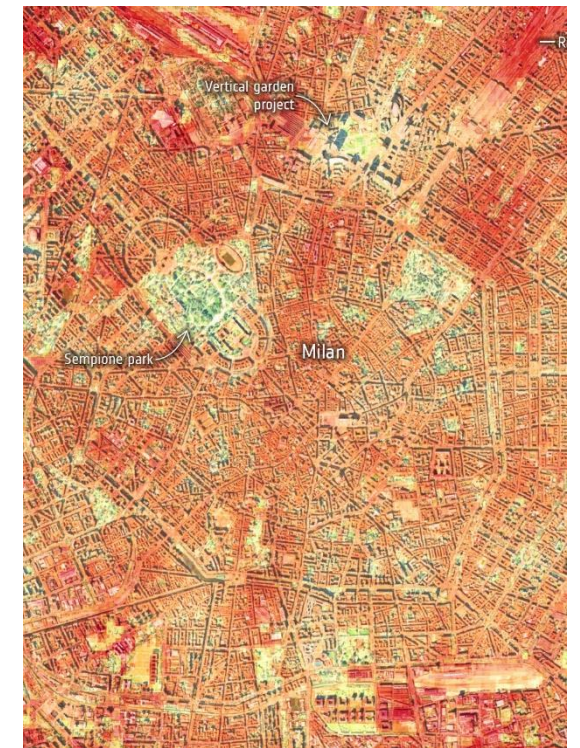
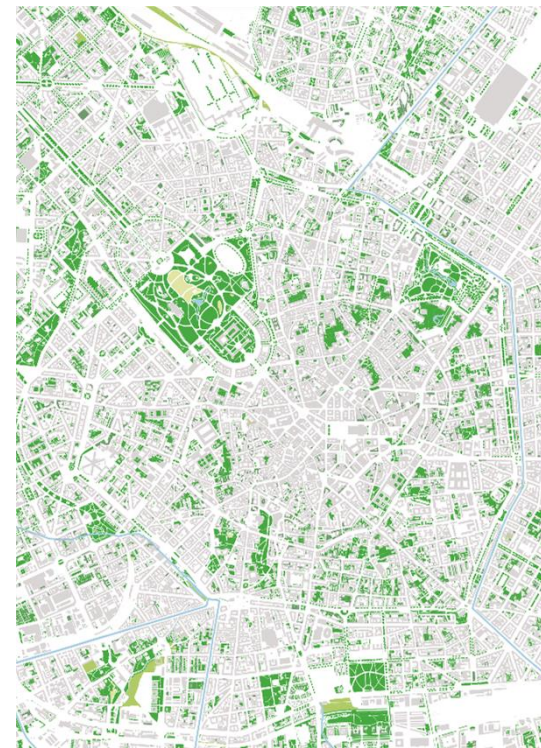


LIM
LANDSCAPE
INFORMATION
MODELLING



LATITUDO 40

LAND
LAND RESEARCH LAB®



Leading with LANDscape

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ITALIA

SUISSE

GERMANY