

# PAESAGGI IPERNATURALI

introduzione al laboratorio di sintesi finale | e

Architettura del Paesaggio

# materiali

i materiali a disposizione nel progetto di architettura del paesaggio

la componente vegetale



*Hay Fever*

l'acqua



*Oasi Naturalistica Ca di Mezzo*

la terra, il suolo



<https://www.theguardian.com> - Dubai

# temi

## di cosa ci occupiamo e con quali obiettivi

- di **architettura del paesaggio**,
- della relazione tra **paesaggio e infrastrutture**,
- di sistemi per la **difesa** del territorio,
- della **protezione** e della conservazione del paesaggio, della biodiversità,
- di valorizzazione **turistica**,
- di qualità dell'**ambiente**,
- di **adattamento al cambiamento climatico**,
- ecc.



Parc de Buttes Chaumont



Xuhui Runway Park



MANHATTAN  
THE FIRM KODAKA  
before a flood, how should we plan?



Singlufjörður Avalanche Protection



Zandmotor



North Sea Wind Farm

# multiscalare

## utilizziamo una metodologia multiscalare ...

nel laboratorio:

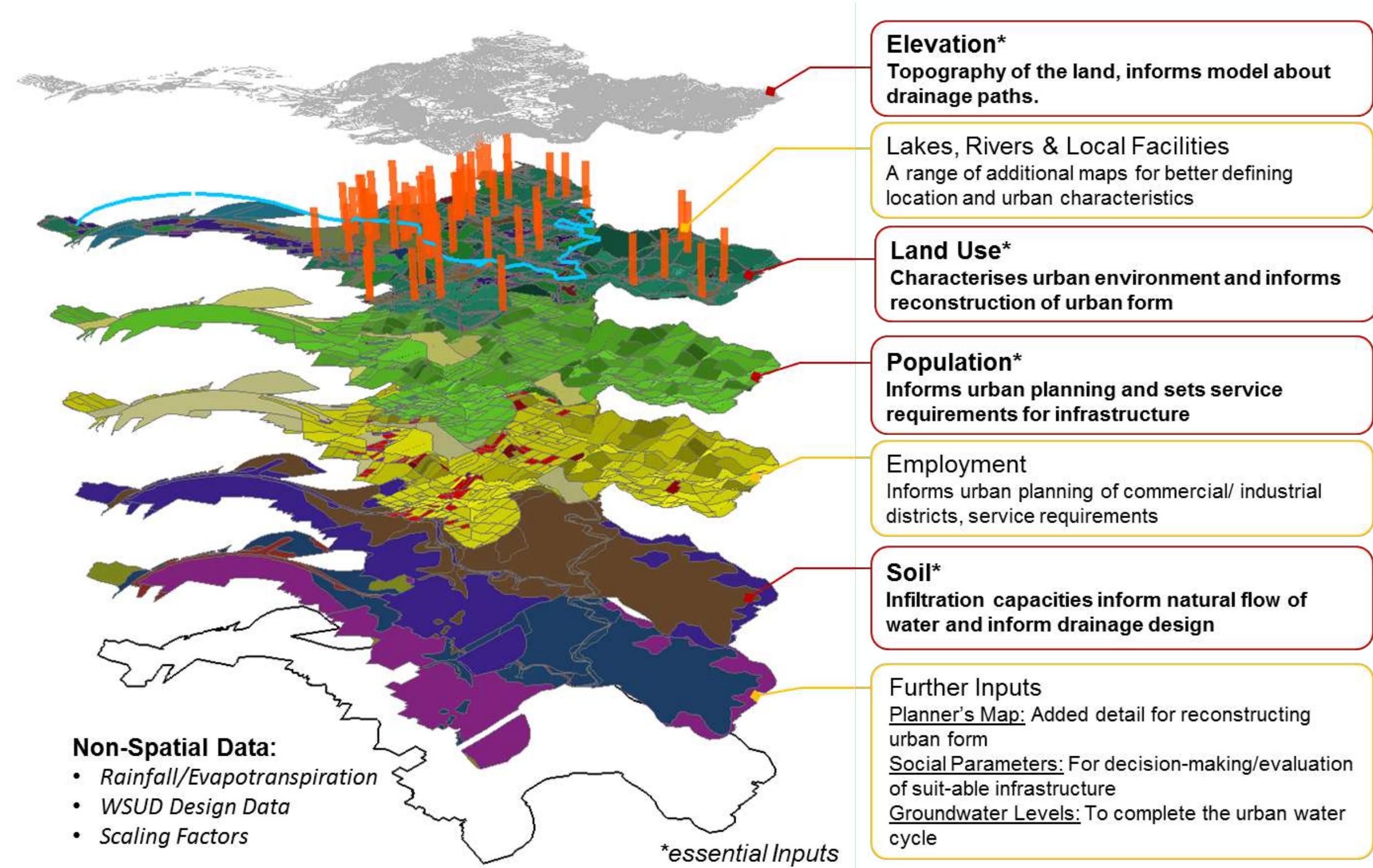
- progettiamo architetture
- elaboriamo strategie alla dimensione territoriale
- applichiamo metodologie alternativamente **top down / bottom up**



# multidisciplinare, multilivello

## i gruppi di lavoro sono multidisciplinari

- l'architettura del paesaggio
- la geologia
- l'ecologia
- la botanica
- l'agronomia
- la climatologia
- l'ingegneria ambientale, idraulica, naturalistica
- ecc.



# laboratorio

## la struttura e l'organizzazione del laboratorio, le collaborazioni

**Architettura del paesaggio**

*Luca Emanueli*

**Progettazione di opere idrauliche e marittime**

*Massimo Tondello*

**Progettazione parametrica del paesaggio e sistemi infrastrutturali**

*Gianni Lobosco*

**Fisica tecnica ambientale**

*Michele Bottarelli*

**Georisorse, infrastrutture e paesaggio**

*Carmela Vaccaro*

**SEALINE**

Centro Dipartimentale di Ricerca  
per lo Sviluppo dei Sistemi Costieri e del Turismo

**DIAPReM**

Centro Dipartimentale di Ricerca  
per lo Sviluppo di Procedure Automatiche Integrate  
per il Restauro dei Monumenti



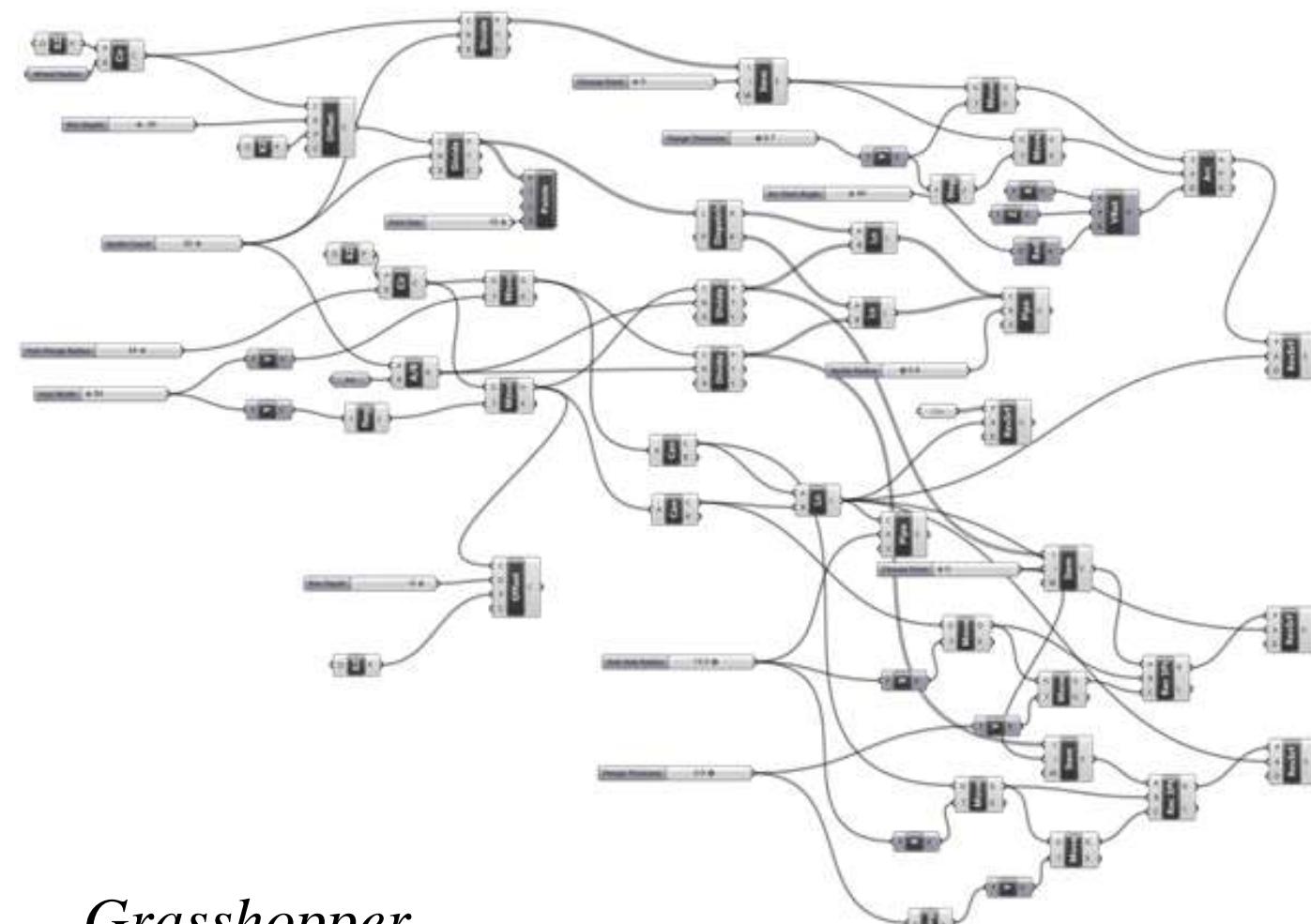
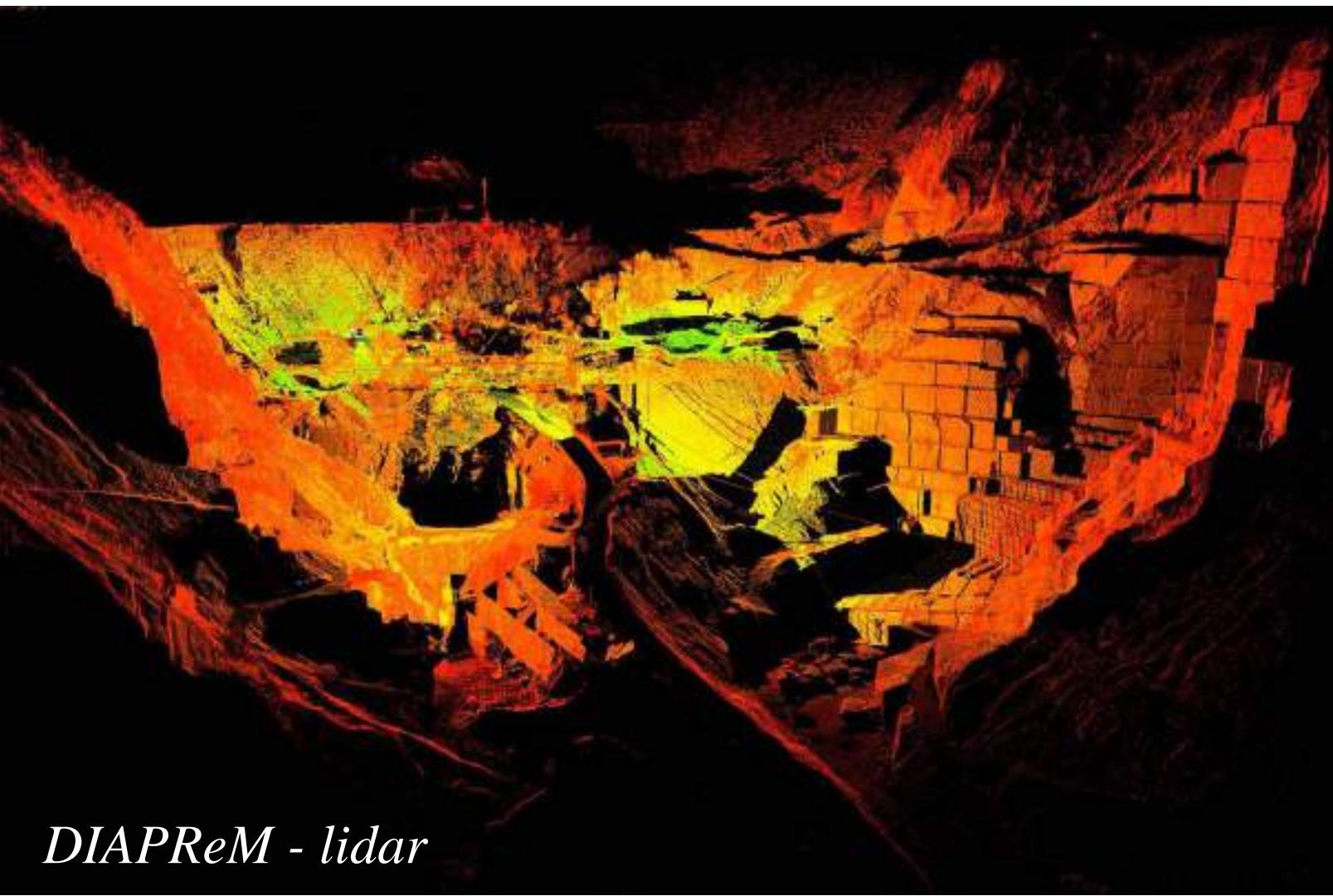
**workshop**

paesaggi IPERNATURALI - Isfe 2022/23

# strumenti

## le conoscenze e l'acquisizione di capacità

- l'analisi spaziale georeferenziata con il **GIS**
- il rilievo con il **lidar**
- l'elaborazione del progetto con gli algoritmi di **Grasshopper**



The background image shows a vast, brown, undulating landscape of an open-pit coal mine. A single dump truck is visible on the left, and several wind turbines stand in the distance under a hazy sky.

attualità

*lo scenario dentro il quale operiamo*

**ANTHROPOCENE**

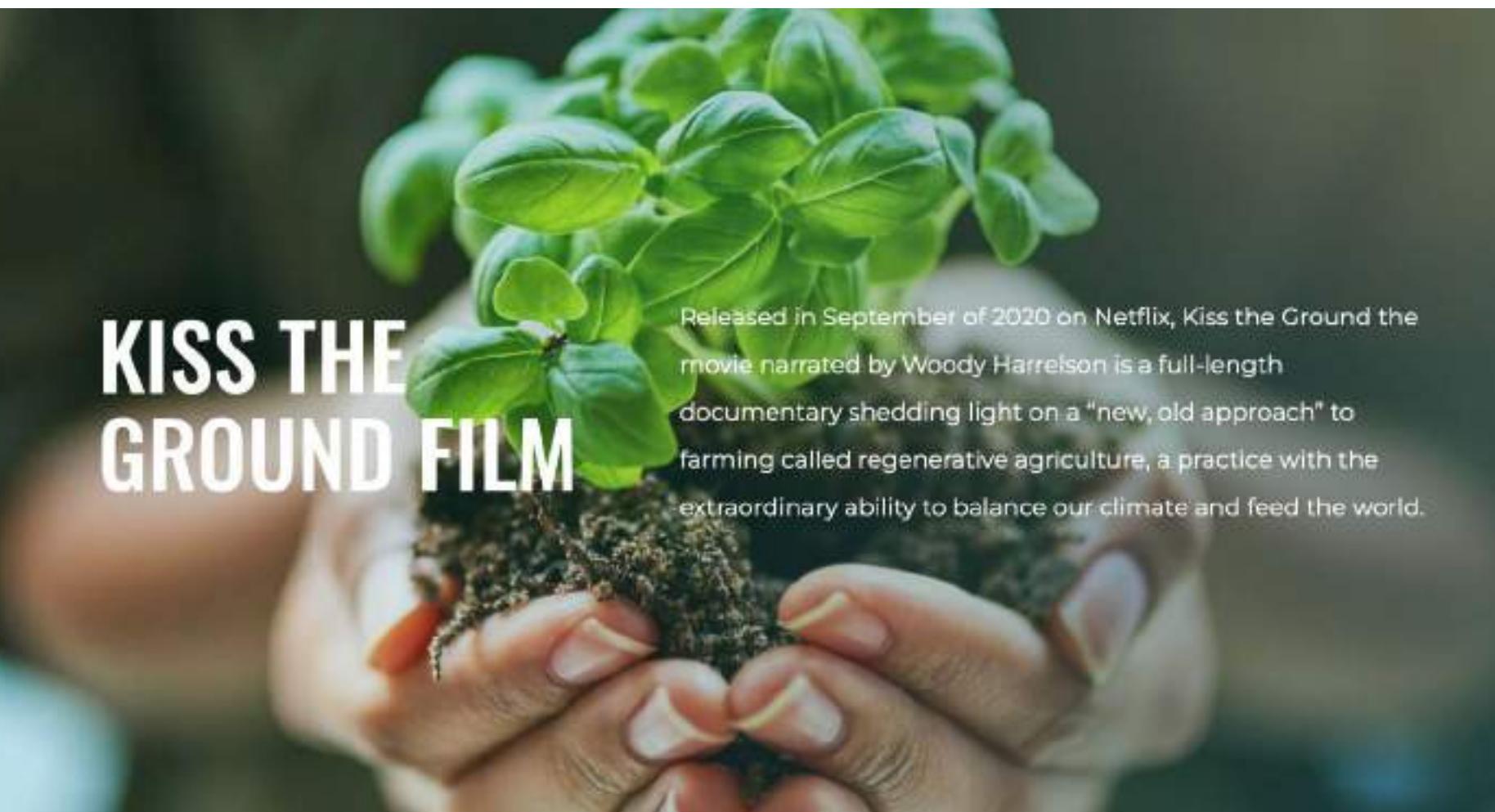
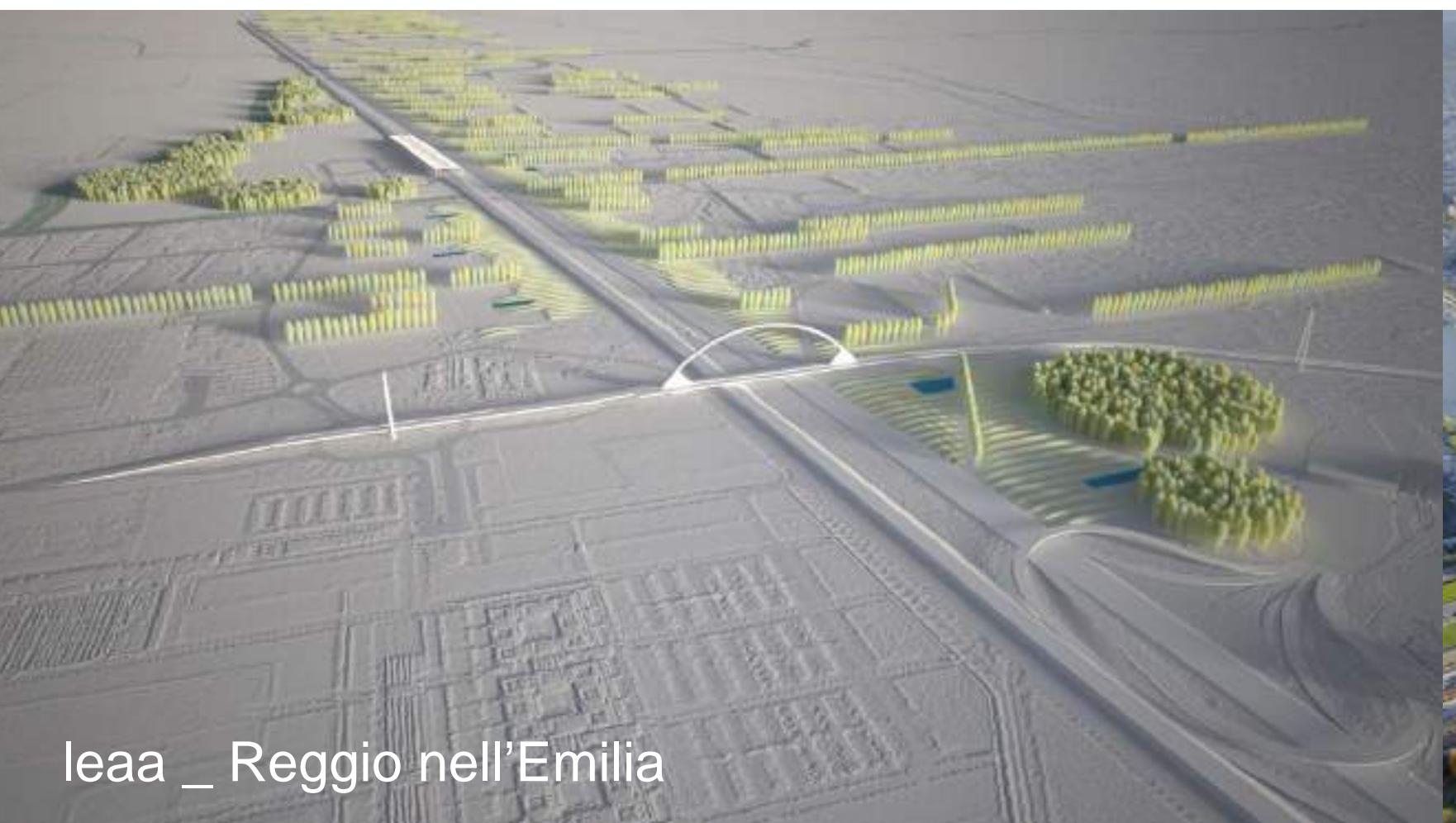
# attualità

*le politiche*

***“la rivoluzione verde  
e la transizione ecologica”***

*la priorità*

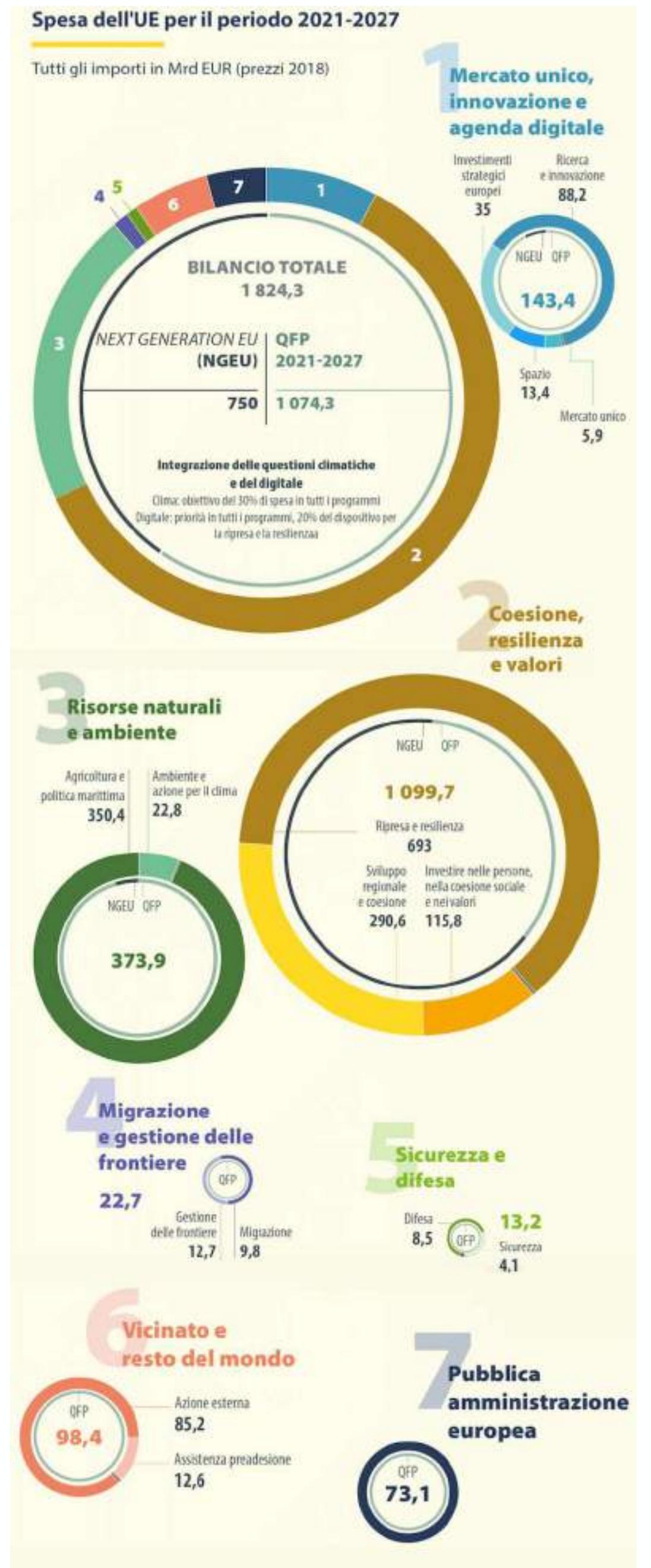
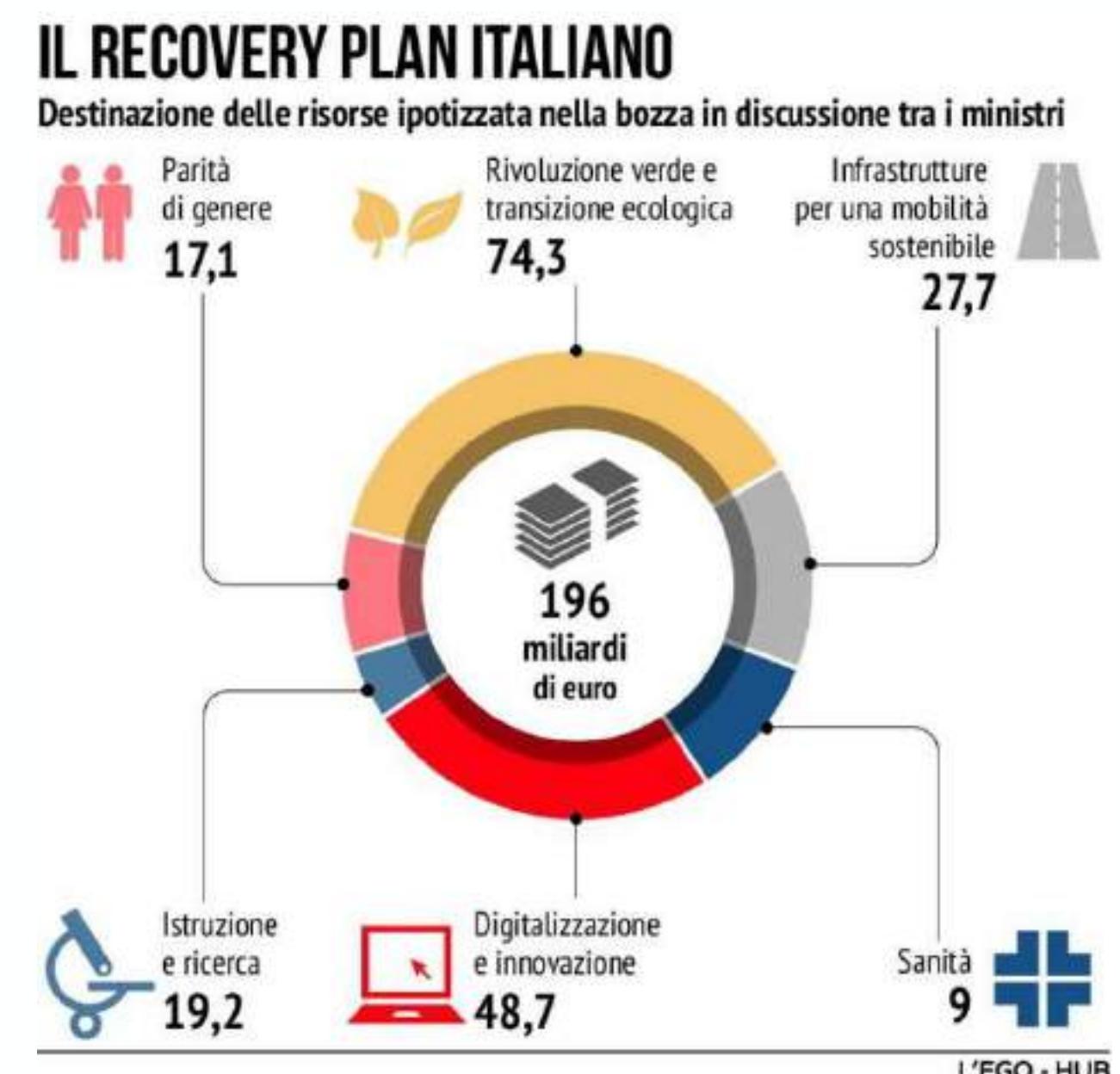
***la costruzione di  
nuovi ecosistemi***



# attualità

*le risorse:*

*il Ministero della Transizione Ecologica  
le Regioni, l'Europa  
i Programmi Europei 2021-2027  
il Recovery Plan 2021-2026 (PNRR)*



# **panoramica**

## **alcuni riferimenti per avere un'idea riguardo l'architettura del paesaggio**

- <https://landscape.coac.net/en>



- <http://landezine.com>



- <https://www.iflaworld.com>



# **PAESAGGI IPERNATURALI**

**3 parole chiave**

# **ipernaturale**

- un neologismo per dare un nome al nuovo paesaggio che nascerà dai vostri progetti

# **disincanto**

- con disincanto guarderemo al paesaggio e alla natura

# **futuro**

- lavoreremo costruendo scenari, progettando oggi il paesaggio del futuro

# **PAESAGGI IPERNATURALI**

**7 progetti di architettura del paesaggio  
4 tesi di laurea**





# DIACHRONIC LANDSCAPES

A MULTIDISCIPLINARY WORKSHOP ON THE ARCHAEOLOGICAL SITE OF APTERA, CRETE

Design International Workshop

CHANIA, CRETE  
2-9 MAY 2020

Diachronic Landscapes is a multi-disciplinary workshop, bringing together students and scholars in landscape architecture, urban and territorial planning, and archaeology around the issues of landscape heritage understanding, preservation and promotion. This joint work will ground on the collection, interpretation and design processing of already available data on the archaeological site of Aptera, Crete, implemented with new surveys and analyses that will inform a strategic landscape plan for the area and its surrounding context.

The ancient city of Aptera is located in the municipality of Akrotiri, Crete, close to the southern shore of Souda Bay. The archaeological site has a long occupation, starting in the Minoan era to modern times, and is managed by the Greek Ministry of Culture, Ephorate of Antiquities. Thanks to many excavations carried out by the Archaeological Service of Crete, there are today many information about the archaic and classical period of this city. During the Roman occupation, according to the monumentality of its public buildings like the theater, the baths, the three-vaulted roman cistern, Aptera was one of the most important settlements in western Crete. Less is known about the Byzantine and medieval periods. Local traditions explain the disappearance of ancient Aptera with the effects of an earthquake in the VII century. However, many architectures, like the monastery of Agios Ioannis Theologos (XII century), or the Ottoman castle of Izzedin, show the long continuity of its history and occupation.

The main objective of the workshop is to produce meta-projects and an integrated management plan capable of coordinating and combining together the scheduling and prioritization of archaeological excavations with landscape/territorial design interventions aimed at improving the touristic, didactic, and overall cultural experience of the site, with the support of the Ephorate of Antiquities.

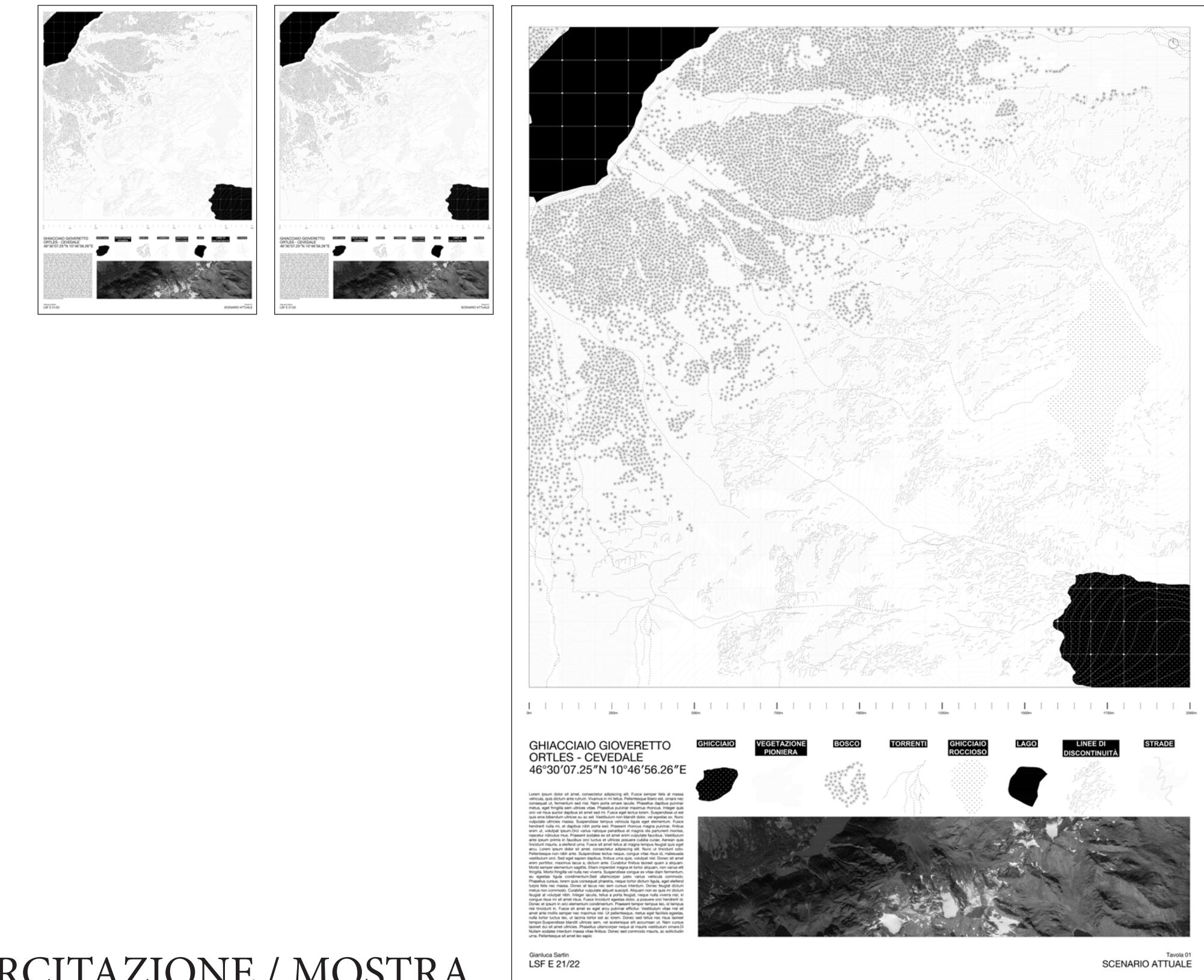
Supported by



Promoted by



# WORKSHOP CRETA



## ESERCITAZIONE / MOSTRA

**Adriatico:**  
architettura, città e  
storia di uno spazio  
esistenziale di frontiera

MANUEL DRAD  
Workshop Architettura - Università degli Studi di Ferrara  
BEATRICE MAGASHOLI  
MARSHALITA PASCUALI  
FABIO PREDOSO

martedì 11 maggio 2022  
ore 18:00  
Dipartimento di Architettura  
TicQuattro, 3° piano  
Bule CH

**Il progetto**  
di paesaggio per la  
rigenerazione urbana  
e territoriale

BEATRICE MAGASHOLI  
MARSHALITA PASCUALI  
FABIO PREDOSO

martedì 11 maggio 2022  
ore 18:00  
Dipartimento di Architettura  
TicQuattro, 3° piano  
Bule CH

**Paesaggio:**  
rappresentazione  
e progetto

FILIPPO LARUER  
FABIO PREDOSO

martedì 11 maggio 2022  
ore 18:00  
Dipartimento di Architettura  
TicQuattro, 3° piano  
Bule CH

**Il ruolo delle**  
**componenti**  
**ecologiche nel**  
**progetto di paesaggio**

AURELIO GANDOLINI  
FABIO PREDOSO

martedì 11 maggio 2022  
ore 18:00  
Dipartimento di Architettura  
TicQuattro, 3° piano  
Bule CH

... 2023

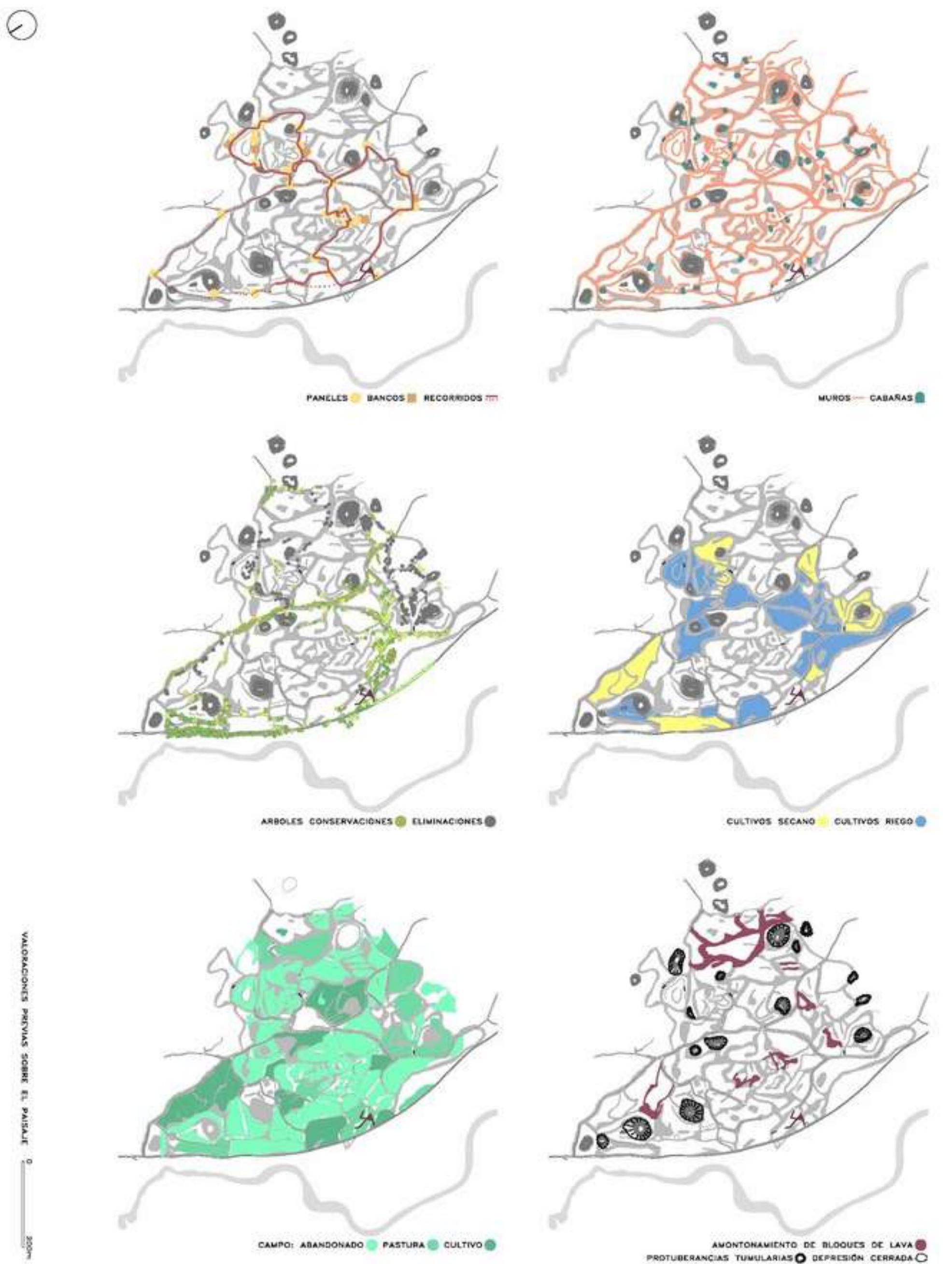
## SEMINARI E CRITICS

paesaggi IPERNATURALI - Isfe 2022/23

# FARE PAESAGGIO

**PARQUE DE PIEDRA TOSCA**  
1998-2004, Les Preses. Girona, Spain  
RCR Arquitectes







paesaggi IPERNATURALI - Isfe 2022/23





0 - 100% / 01/04/2022/07/26/2022





## Garraf Waste Landfill

2001, Begues, Barcelona, Spain

Battle i Roig



2004



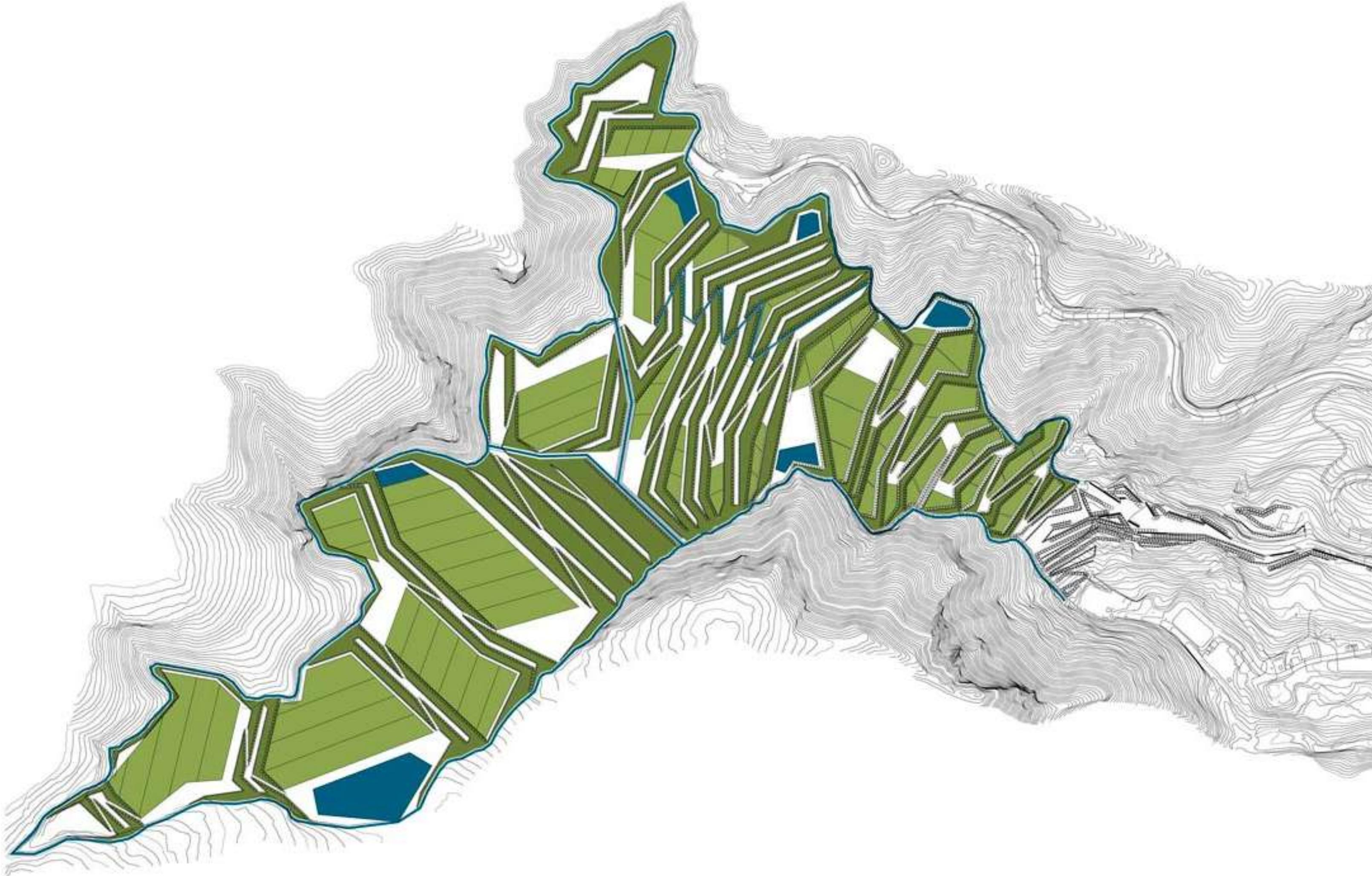
2005



2007



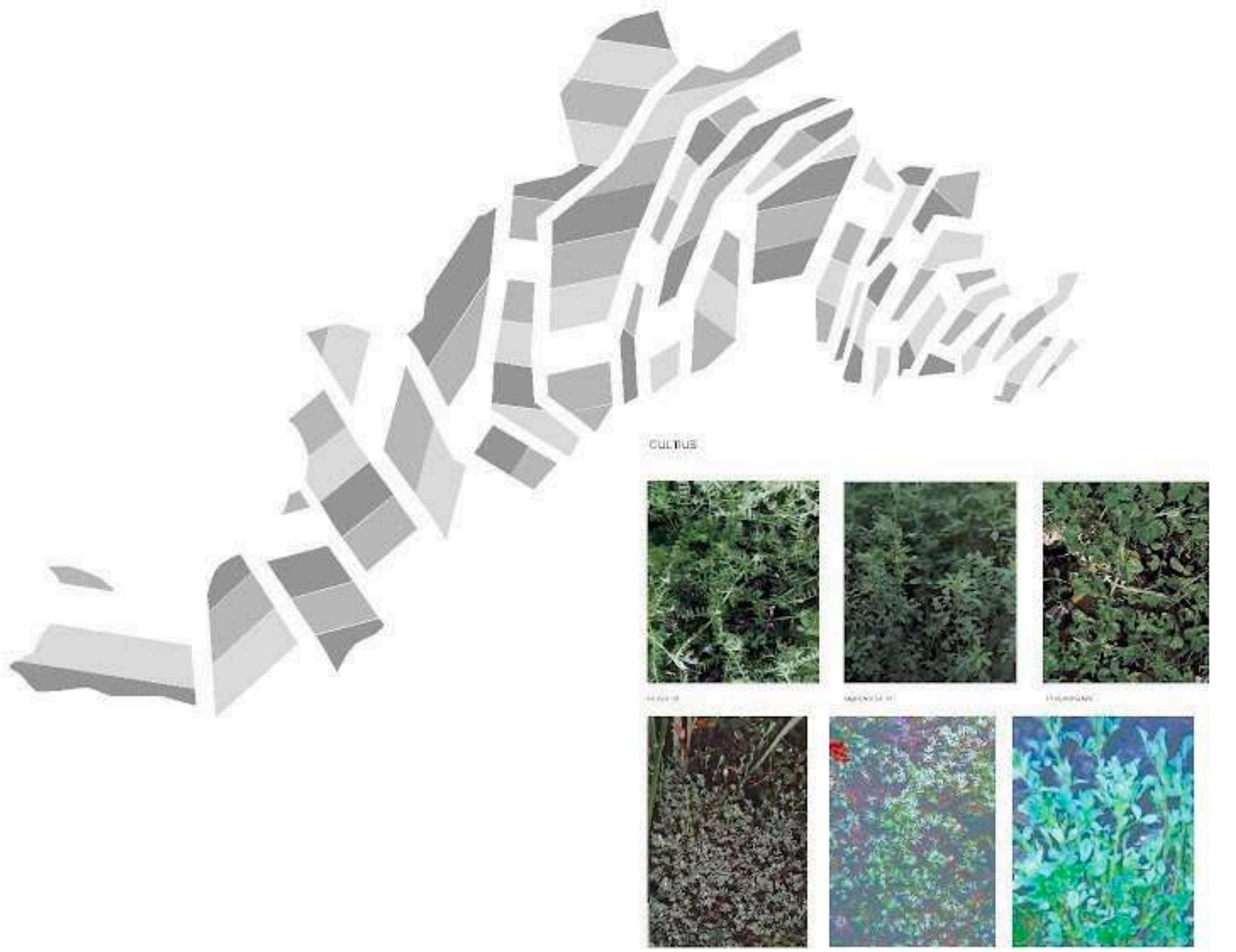
2009...







paesaggi IPERNATURALI - Isfe 2022/23



CULTUS o PRATS DE LLEGUMINOSES (*alfals, trébol Jetus, vega, coronilla, ononio, Argyrolobium, dorycnium*)





paesaggi IPERNATURALI - Isfe 2022/23

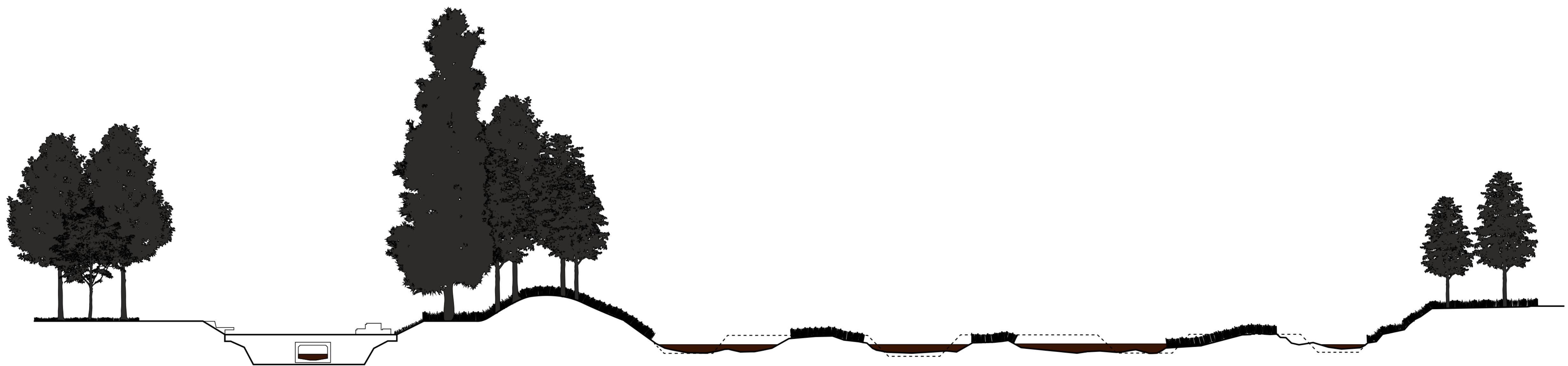
# Renaturation of the River Aire

2015, Ginevra, Svizzera  
Atelier Descombes Rampini, Superpositions





**section through canal**



**section through underground channel**





paesaggi IPERNATURALI - Isfe 2022/23

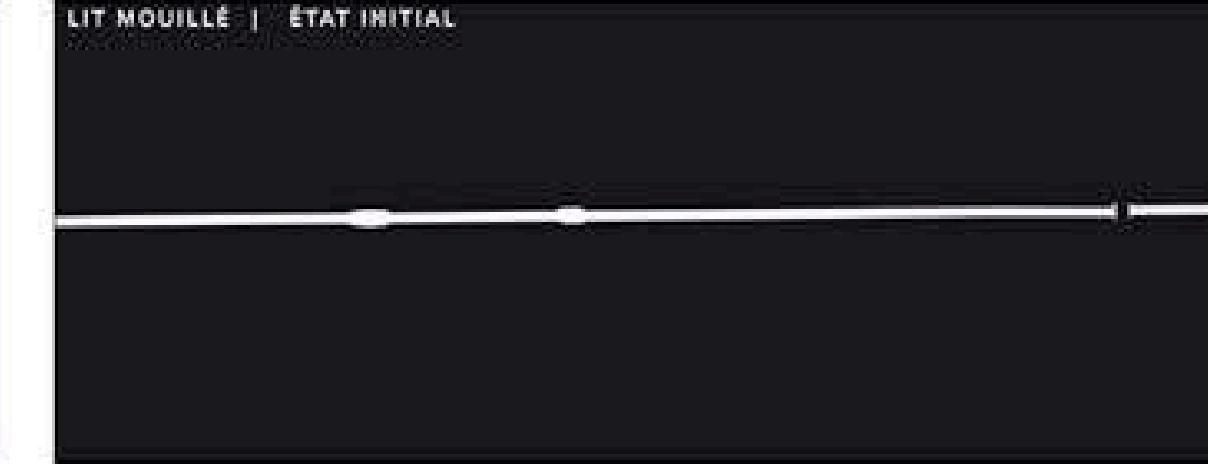




LOSANGES | ÉTAT INITIAL



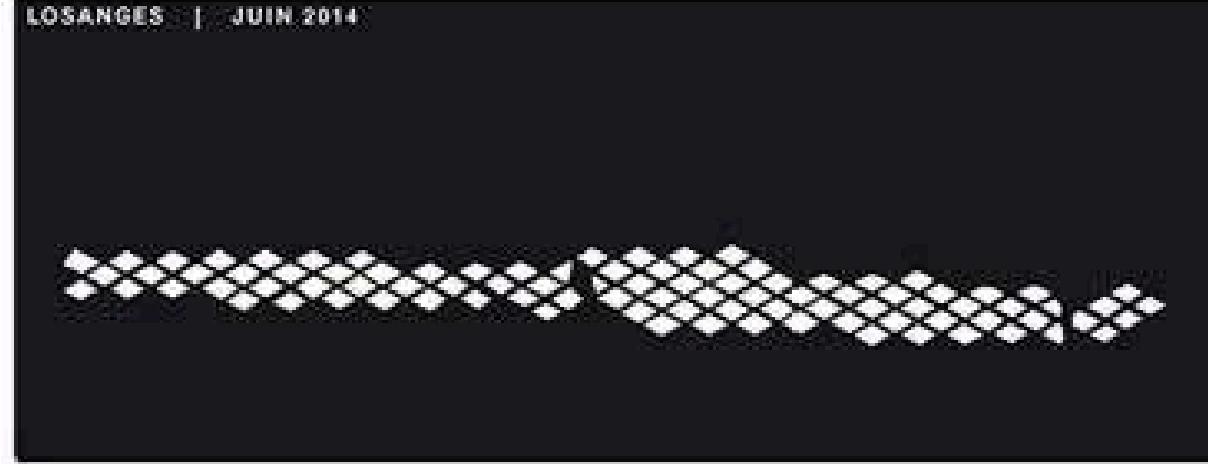
LIT MOUILLÉ | ÉTAT INITIAL



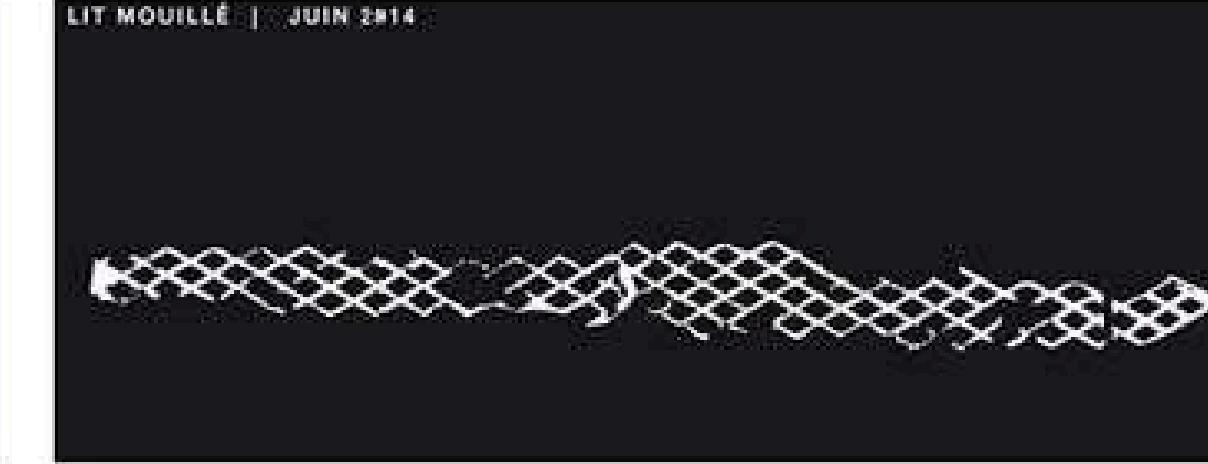
ZONES EXONDÉES | ÉTAT INITIAL



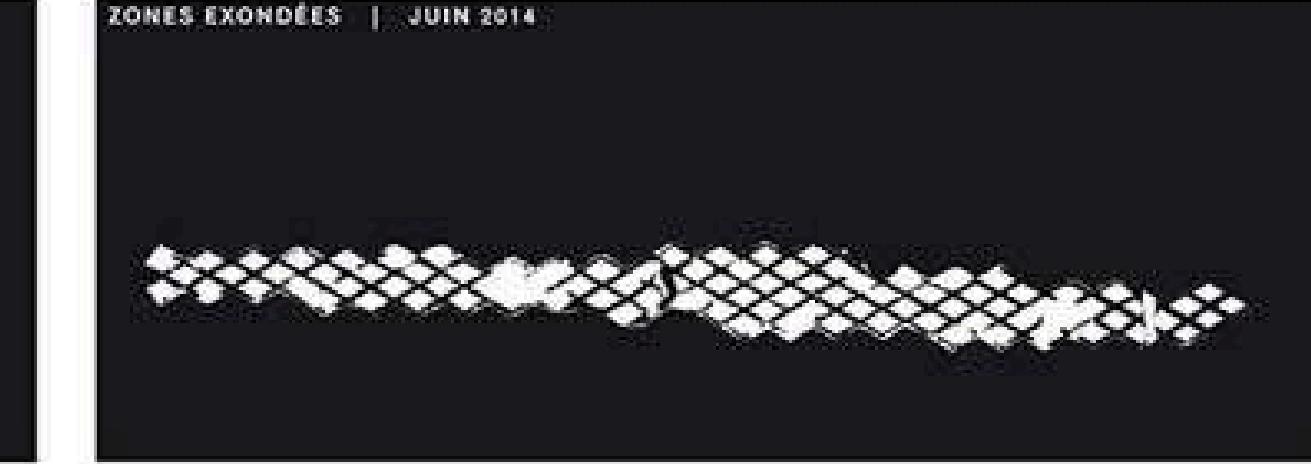
LOSANGES | JUIN 2014



LIT MOUILLÉ | JUIN 2014



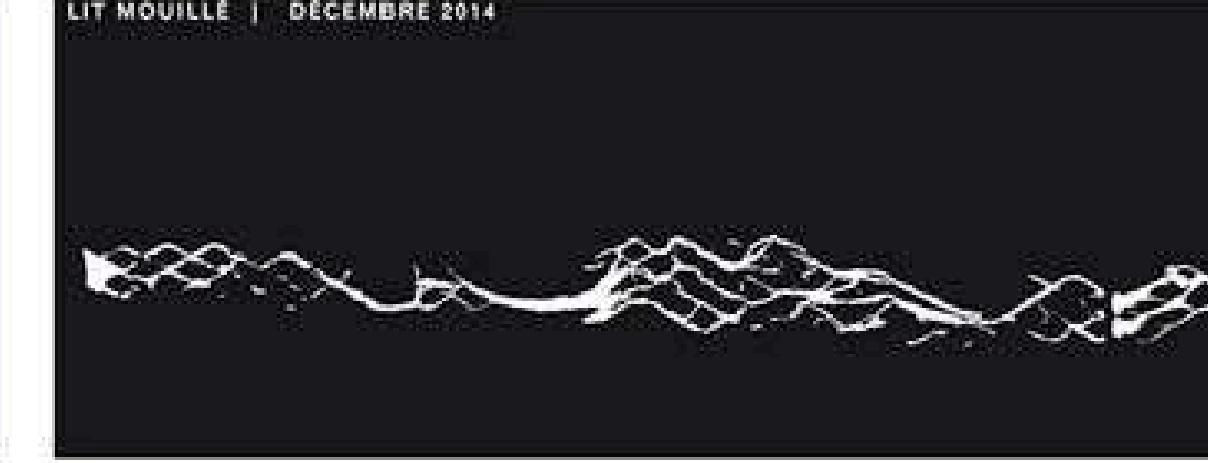
ZONES EXONDÉES | JUIN 2014



LOSANGES | DÉCEMBRE 2014



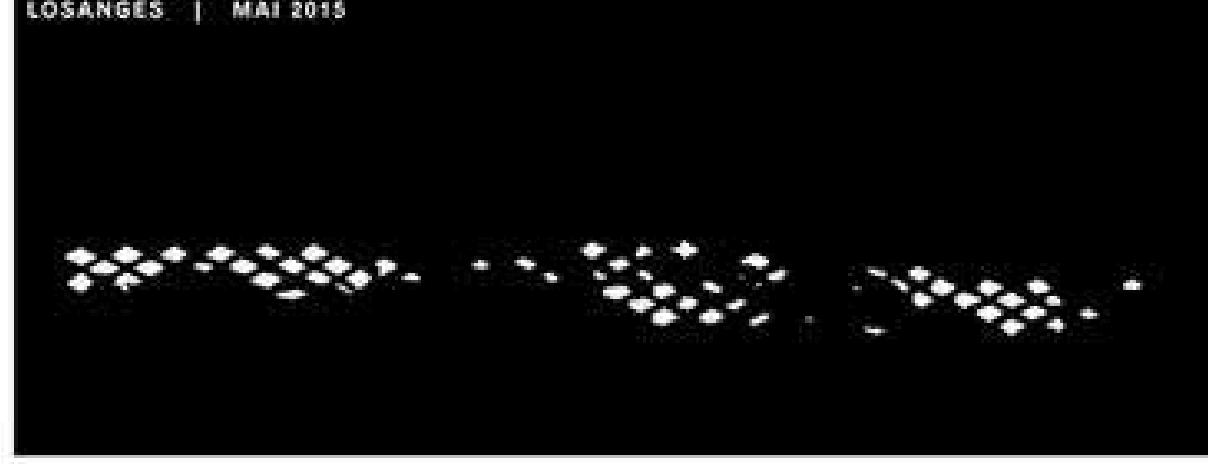
LIT MOUILLÉ | DÉCEMBRE 2014



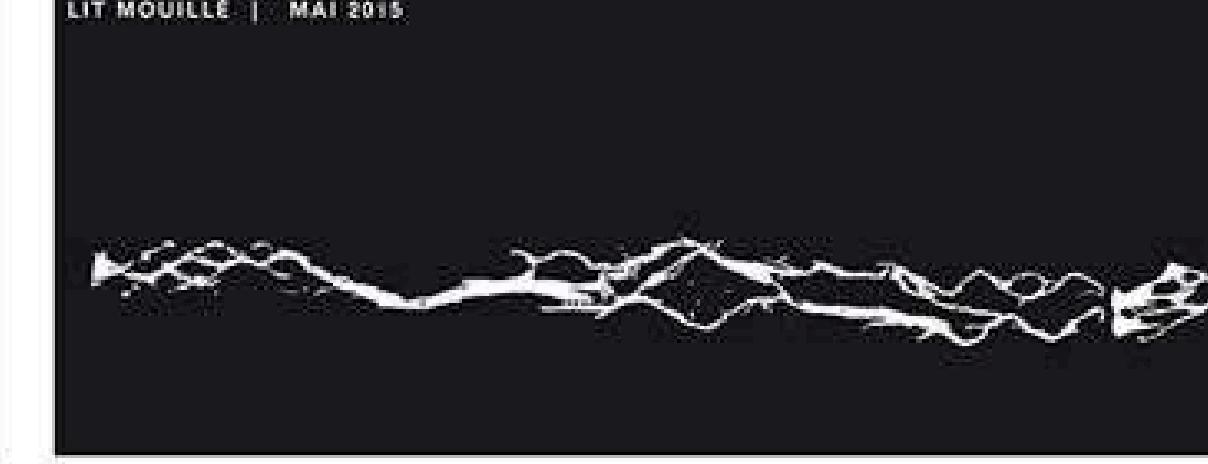
ZONES EXONDÉES | DÉCEMBRE 2014



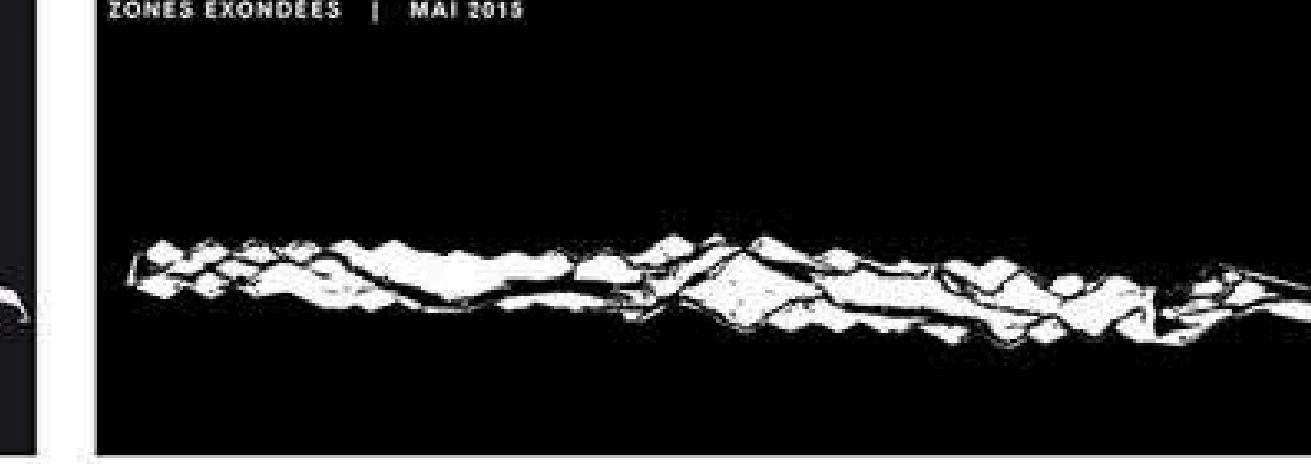
LOSANGES | MAI 2015



LIT MOUILLÉ | MAI 2015



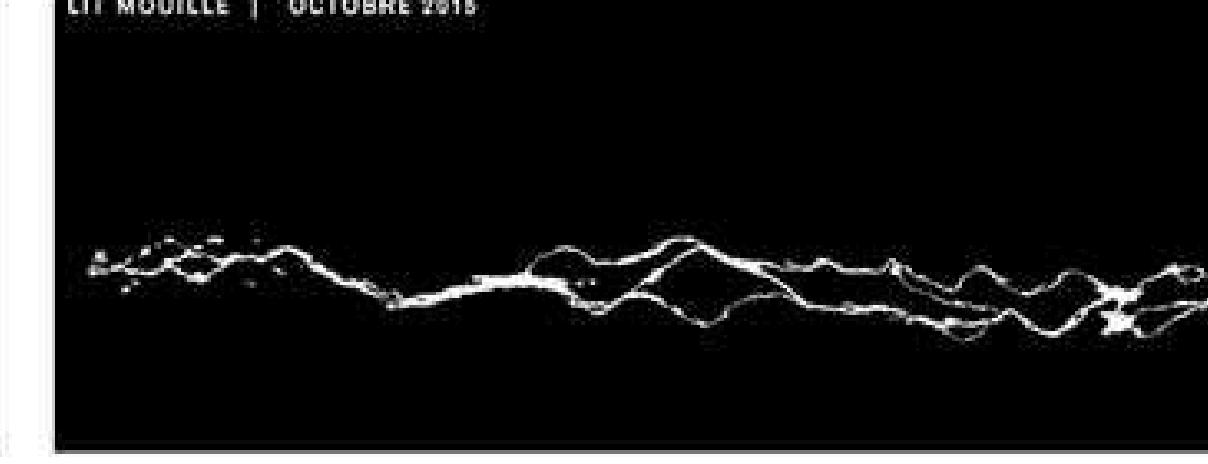
ZONES EXONDÉES | MAI 2015



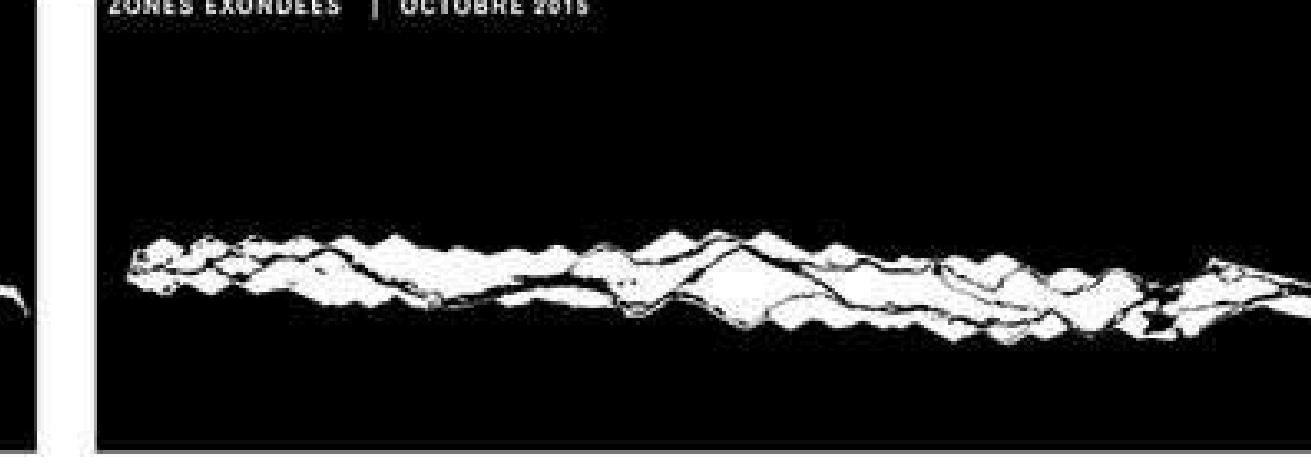
LOSANGES | OCTOBRE 2015



LIT MOUILLÉ | OCTOBRE 2015

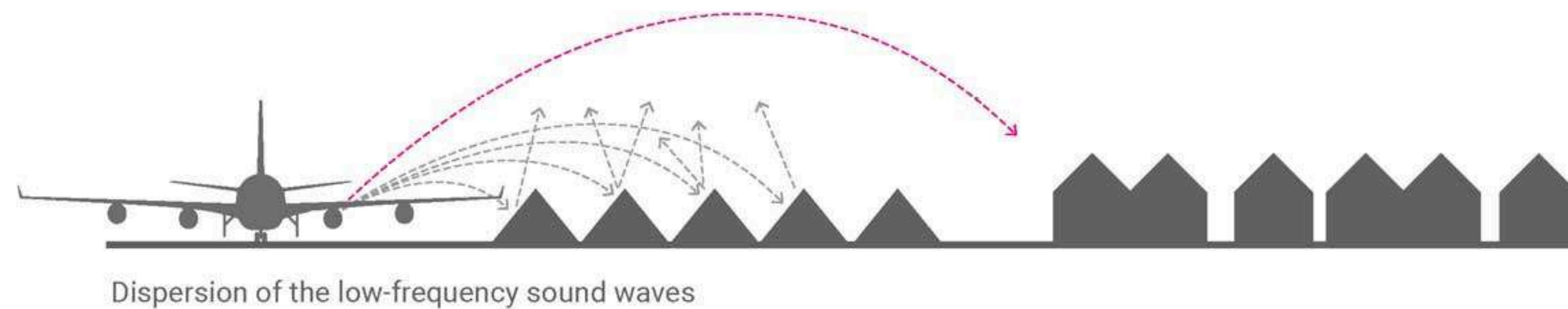
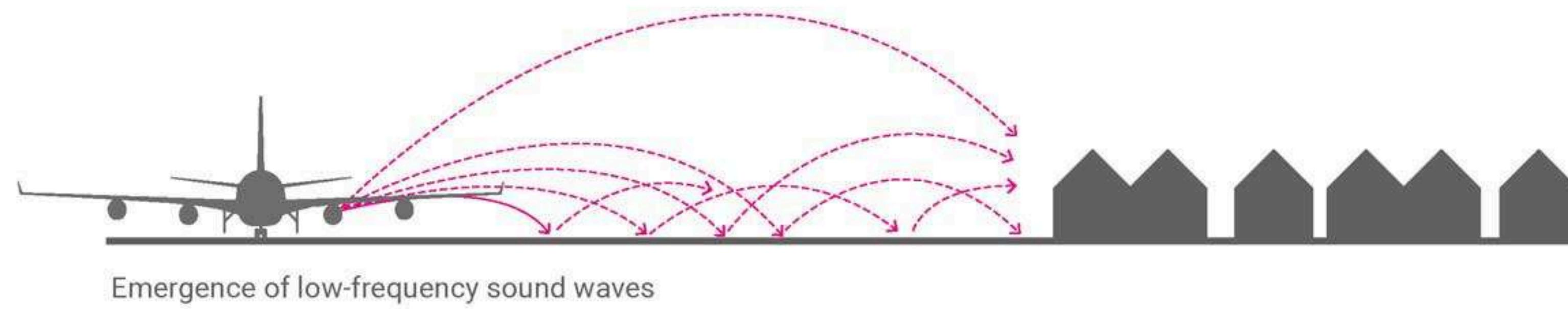


ZONES EXONDÉES | OCTOBRE 2015

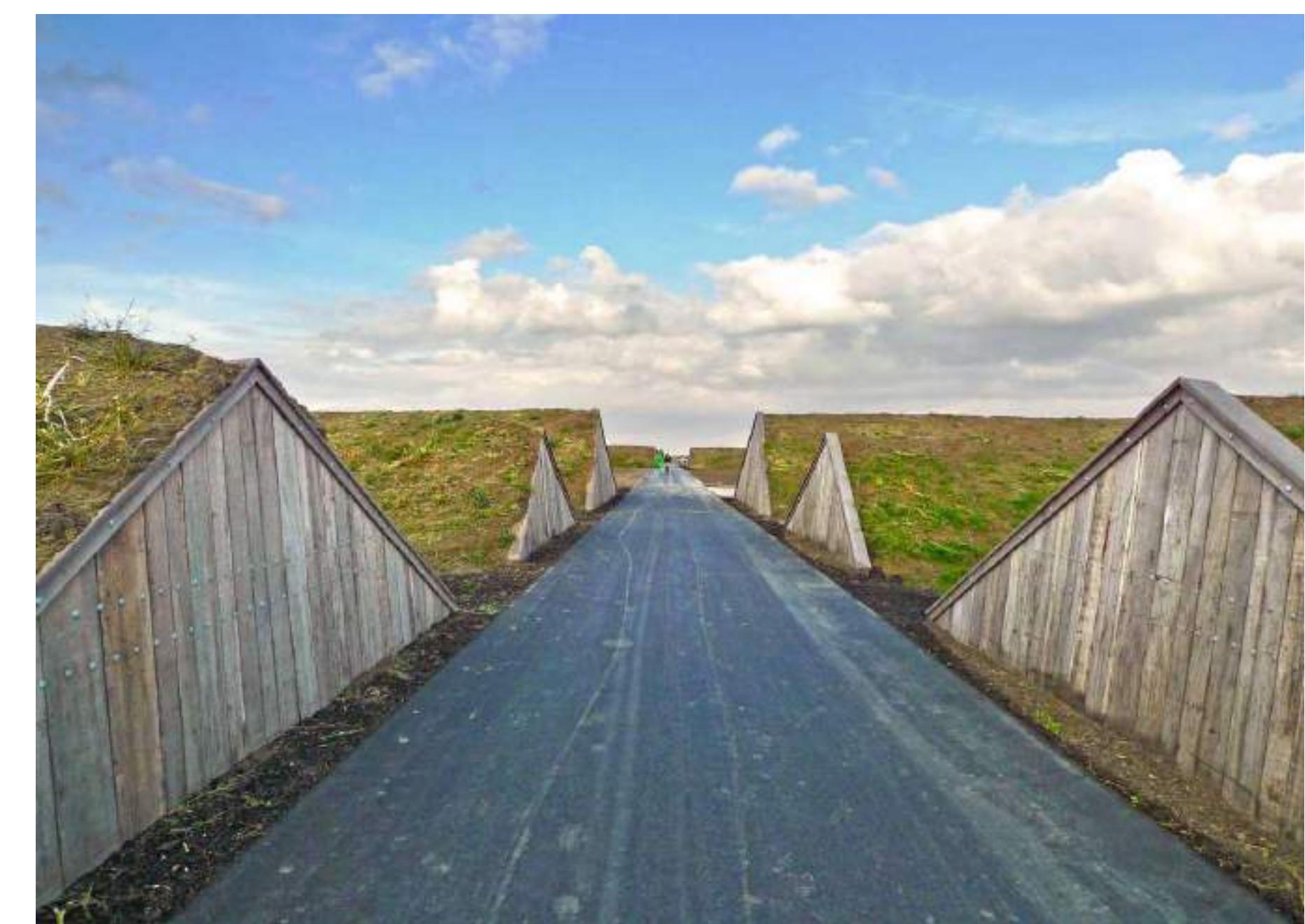


**Buitenschot Park**  
2013, Hoofddorp, Netherlands  
H+N+S Landscape Architects









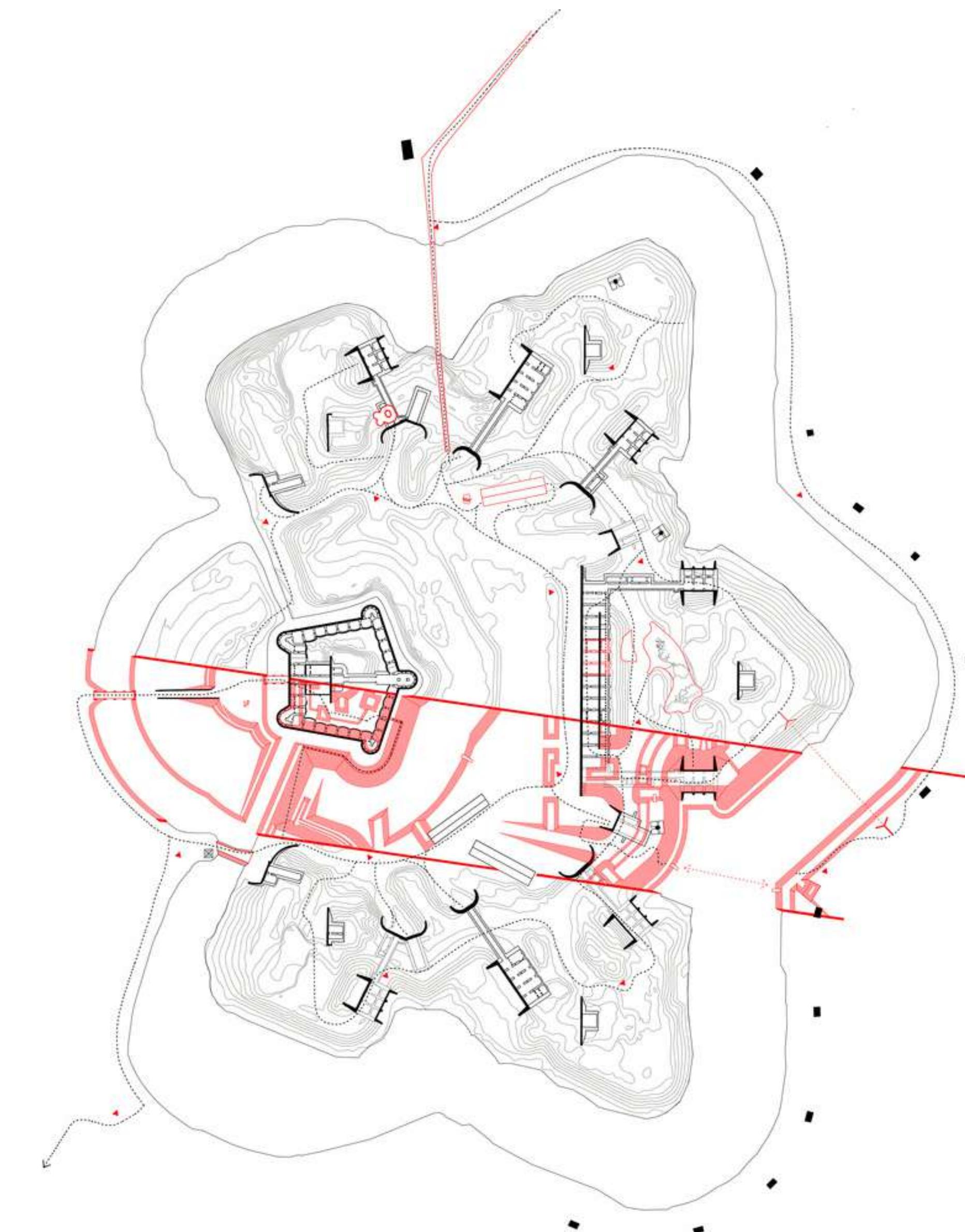
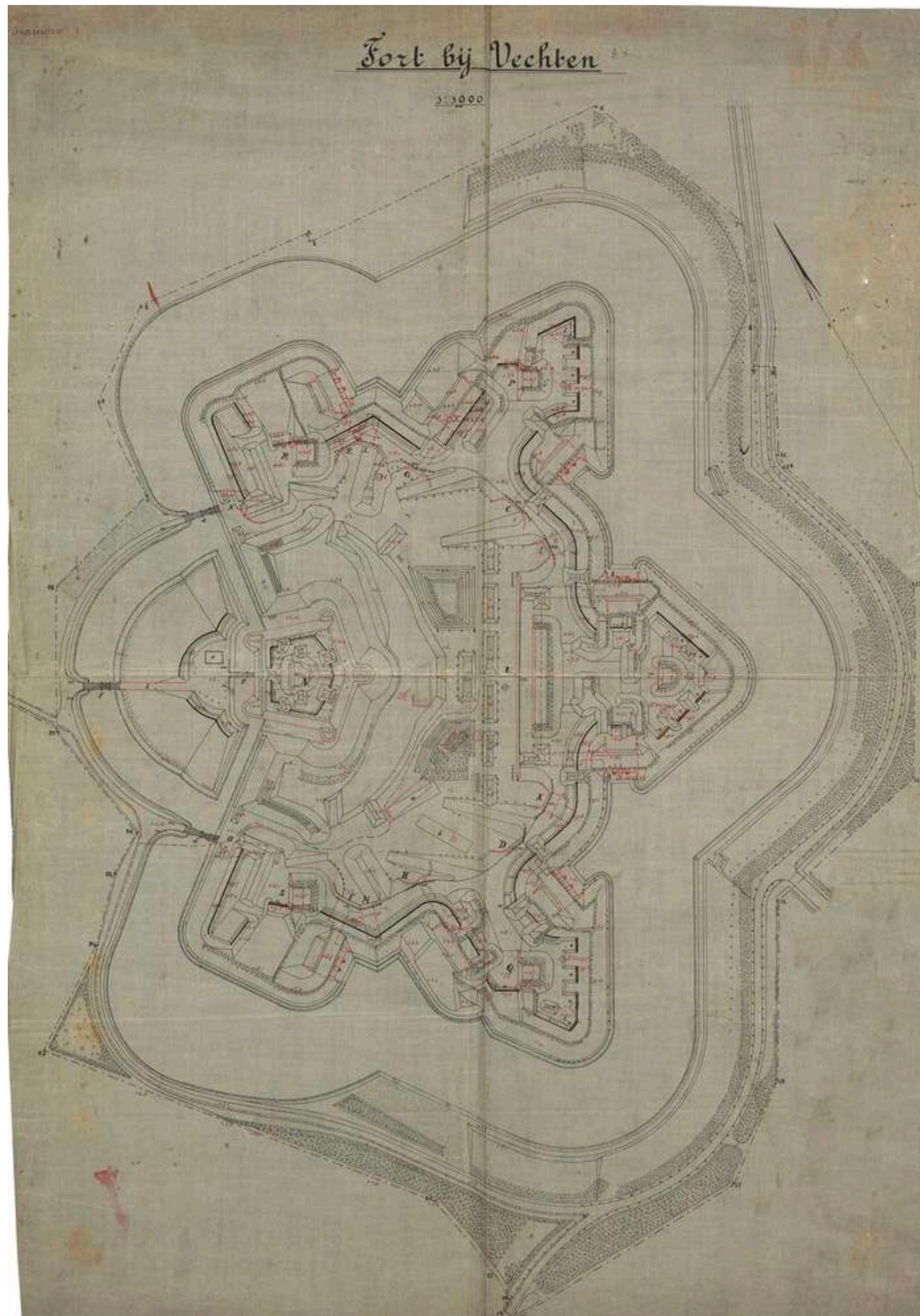
paesaggi IPERNATURALI - Isfe 2022/23



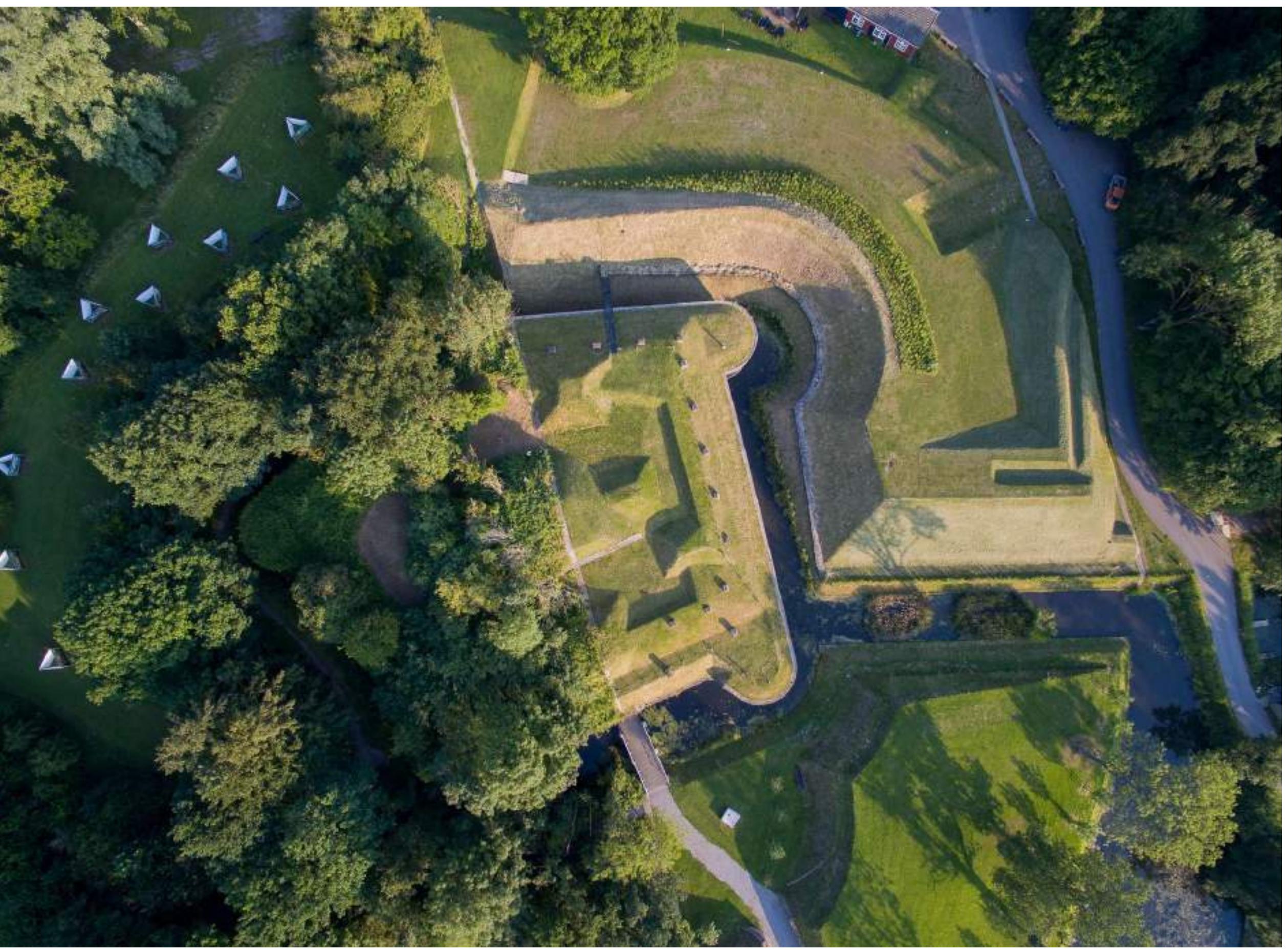
paesaggi IPERNATURALI - Isfe 2022/23



Fort Bi Vechten - National Waterline Museum  
2015, Houten, Netherlands  
West 8







paesaggi IPERNATURALI - Isfe 2022/23



paesaggi IPERNATURALI - Isfe 2022/23



paesaggi IPERNATURALI - Isfe 2022/23



# Room for the River

2019, Nijmegen, Netherlands

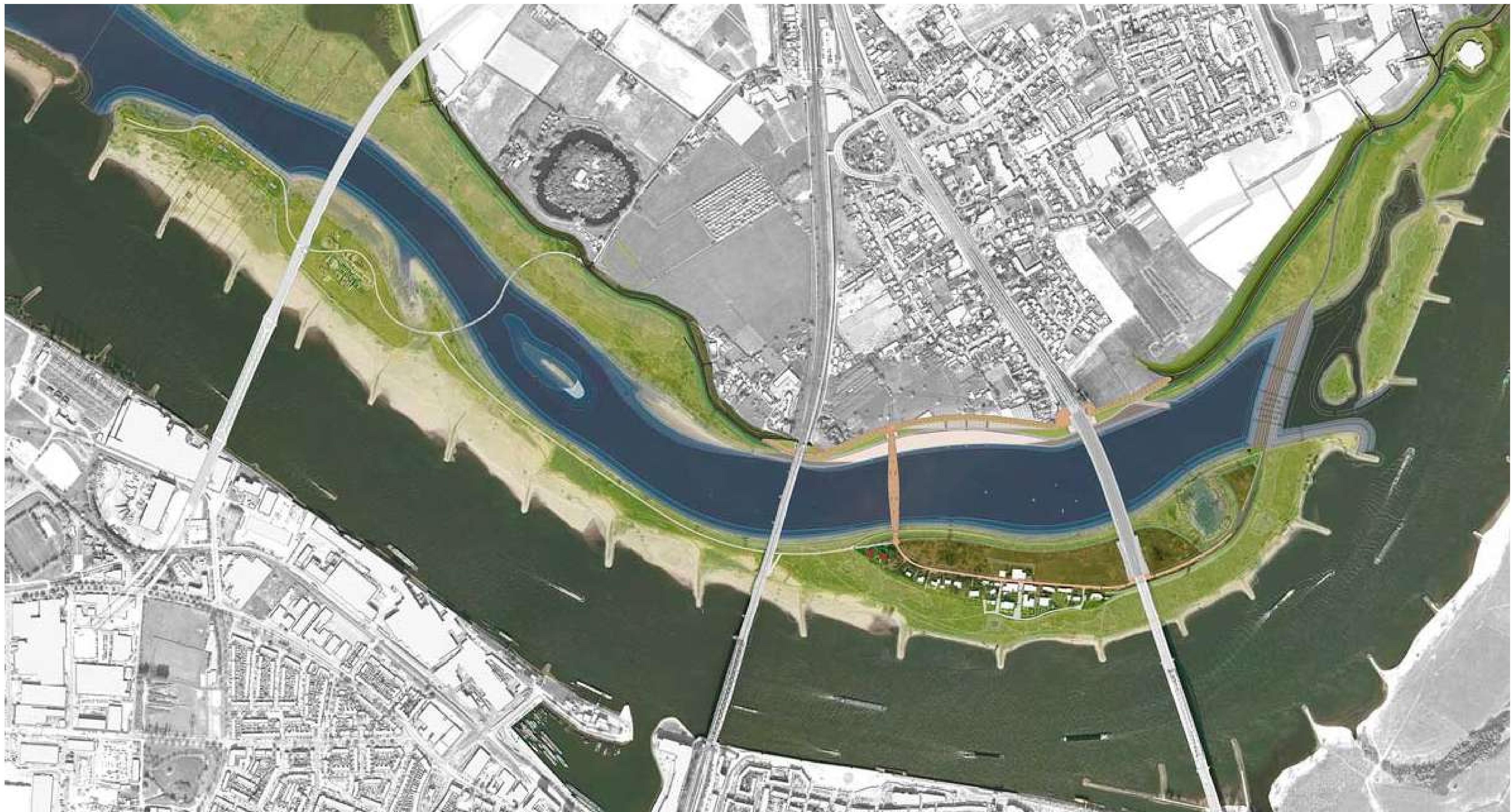
H+N+S Landscape Architects



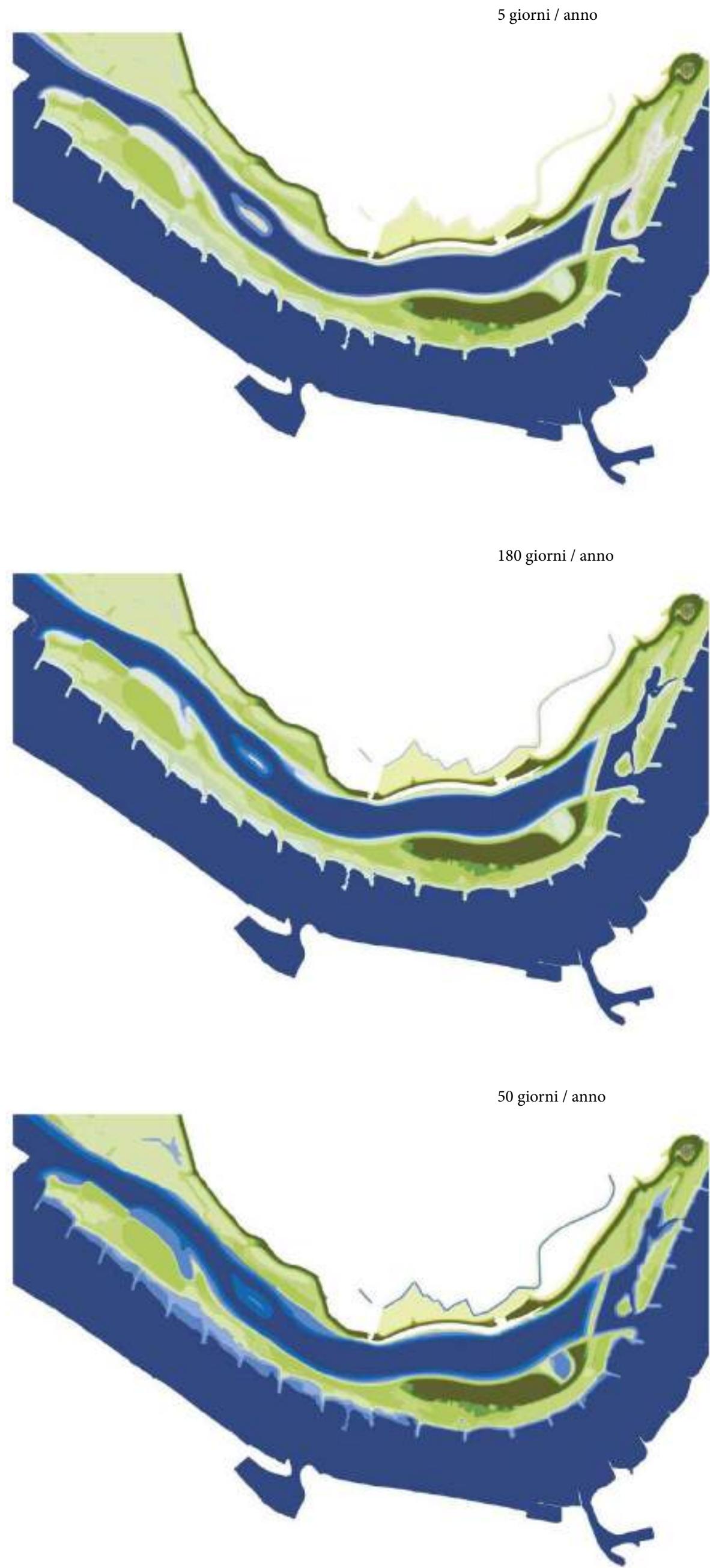
paesaggi IPERNATURALI - Isfe 2022/23



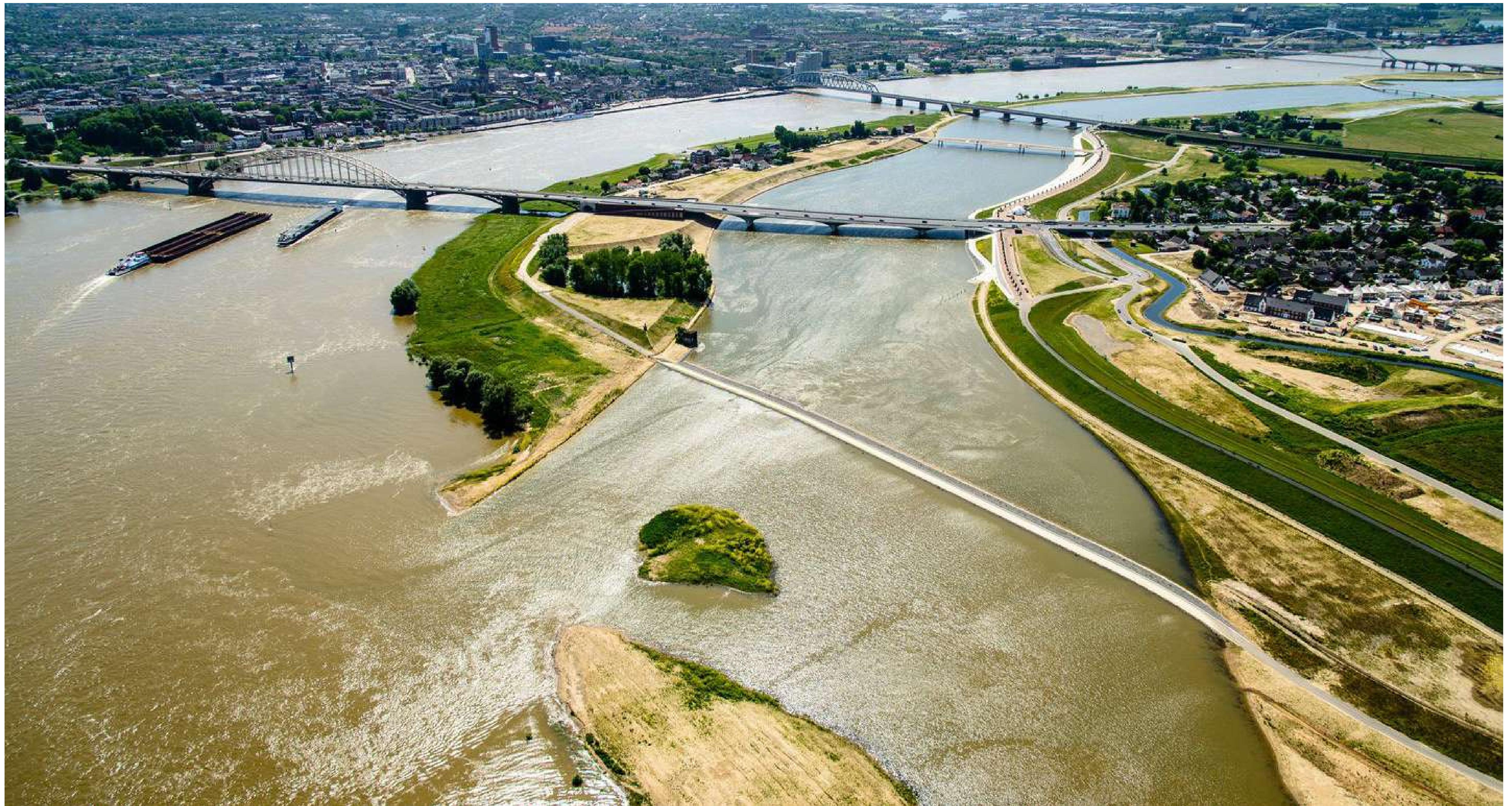
paesaggi IPERNATURALI - Isfe 2022/23



paesaggi IPERNATURALI - Isfe 2022/23



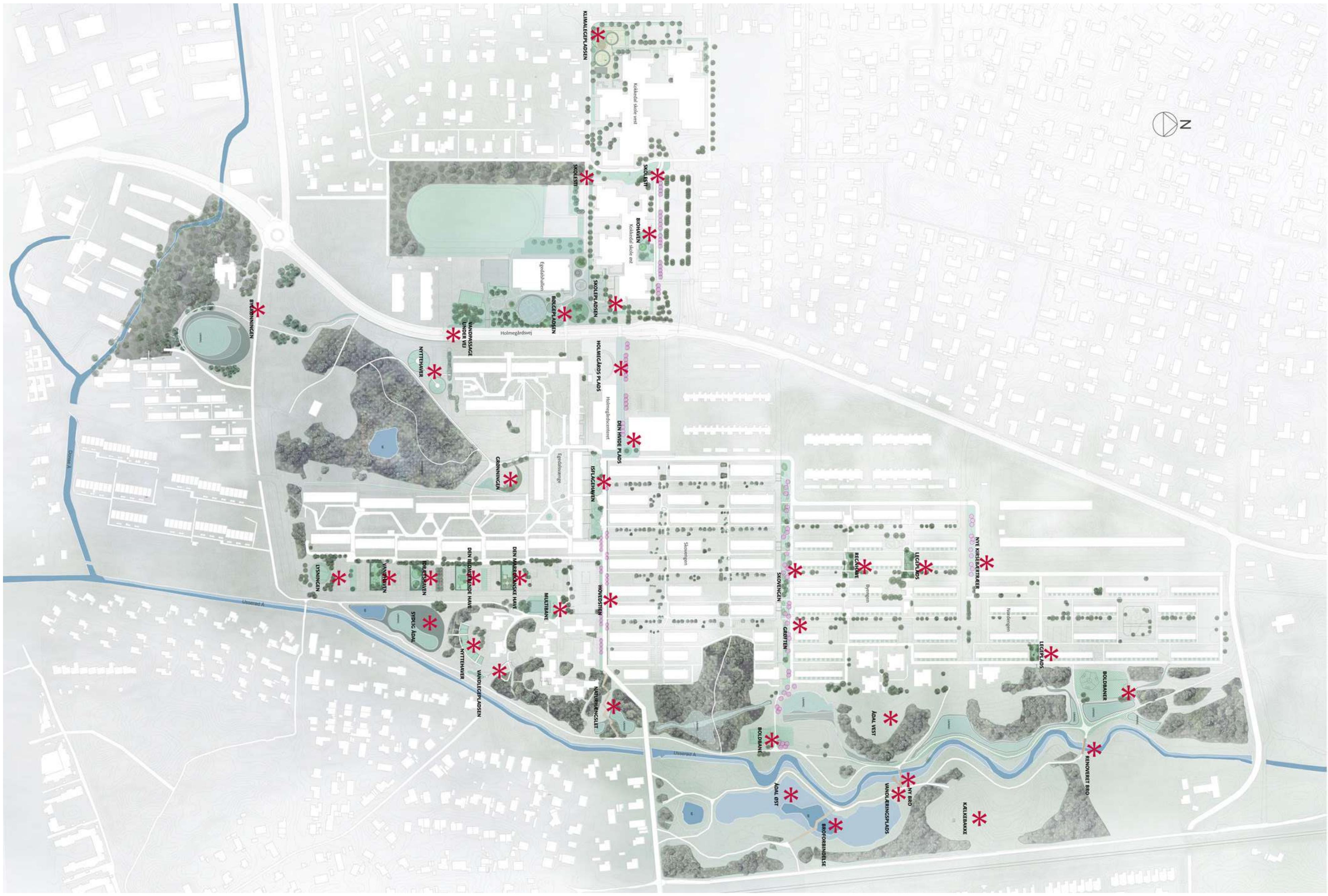




# Kokkedal Climate Adaption

2020, Kokkedal, Denmark  
Schonherr







paesaggi IPERNATURALI - Isfe 2022/23



paesaggi IPERNATURALI - Isfe 2022/23





**8. august kl. 09:00, 2019**



**8. august kl. 18:31, 2019**

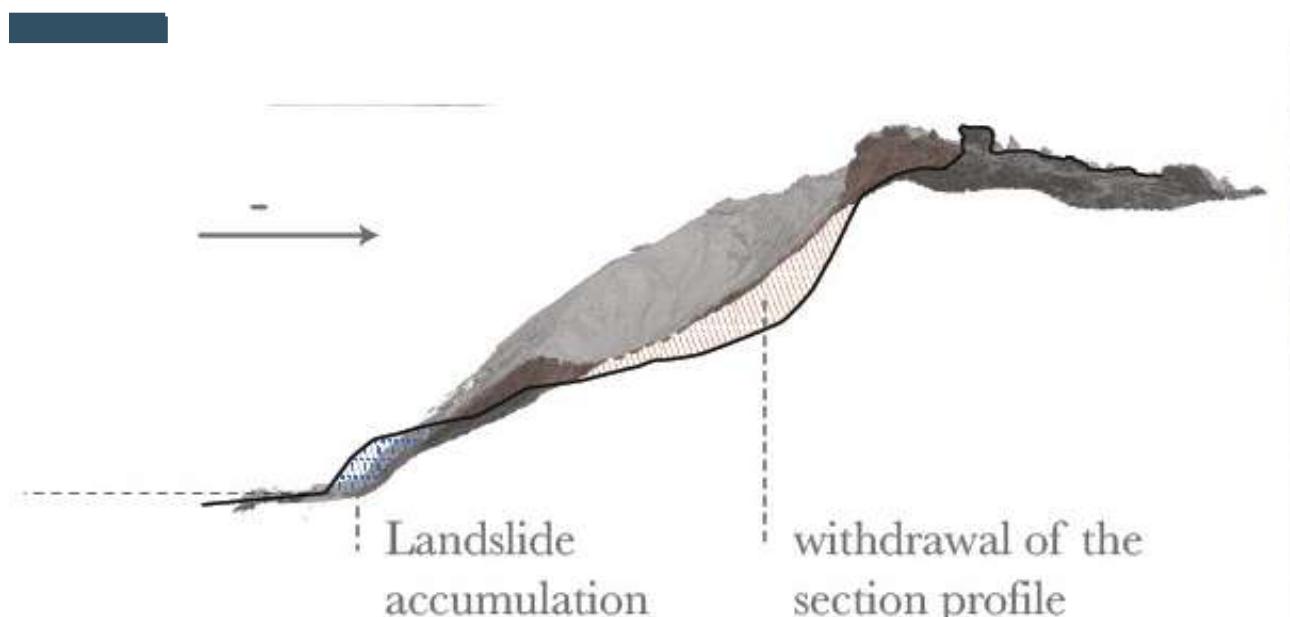


**9. august kl. 08:20, 2019**

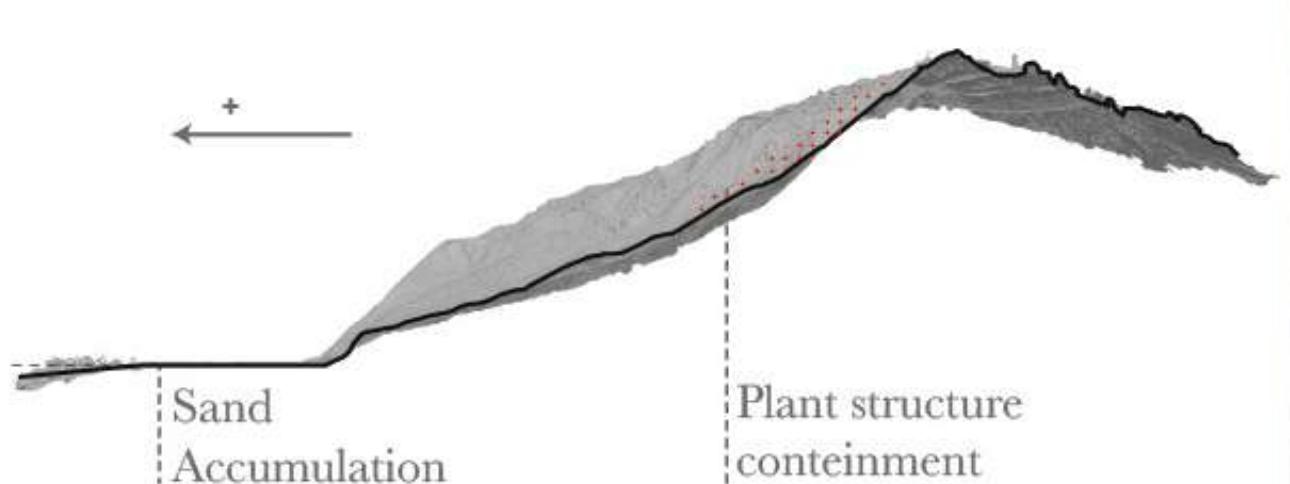
TEMI  
DI  
TESI

**TESI DI LAUREA**  
a.a. 2018-19, Active landscape  
Pietro Benedettini, Chiara Graziadei





Erosion *site*



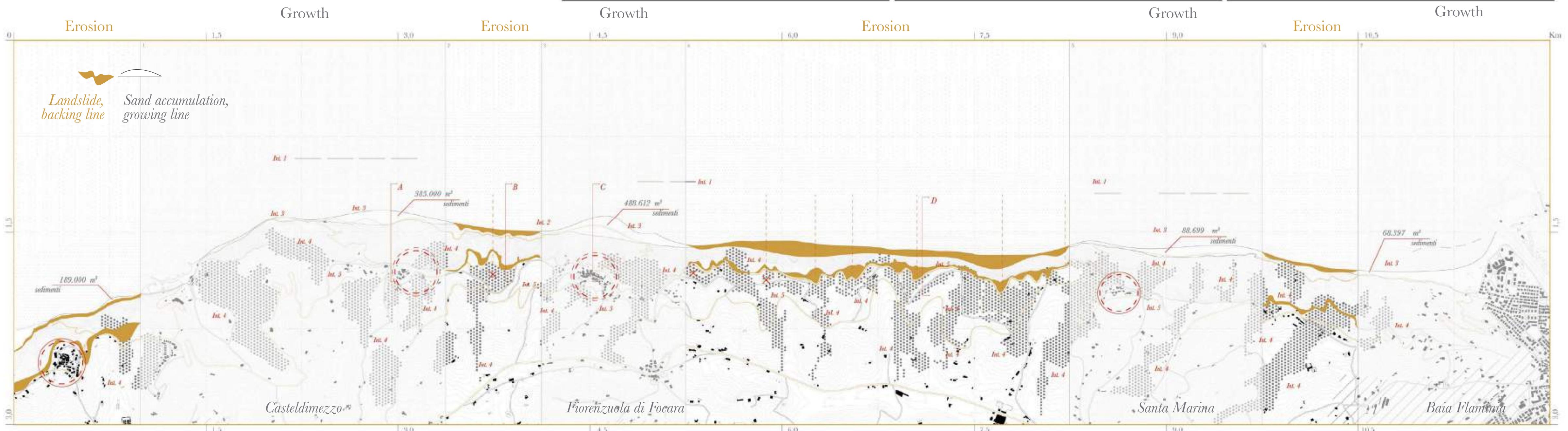
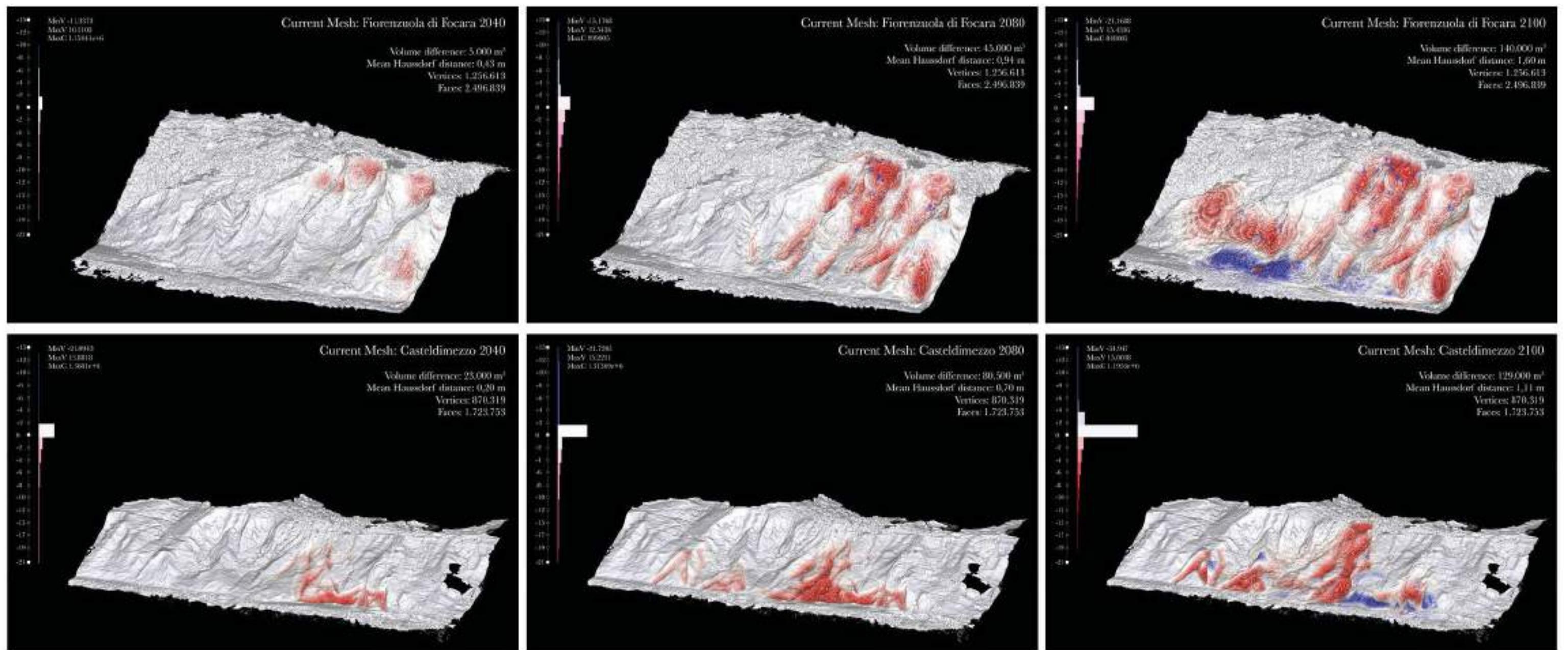
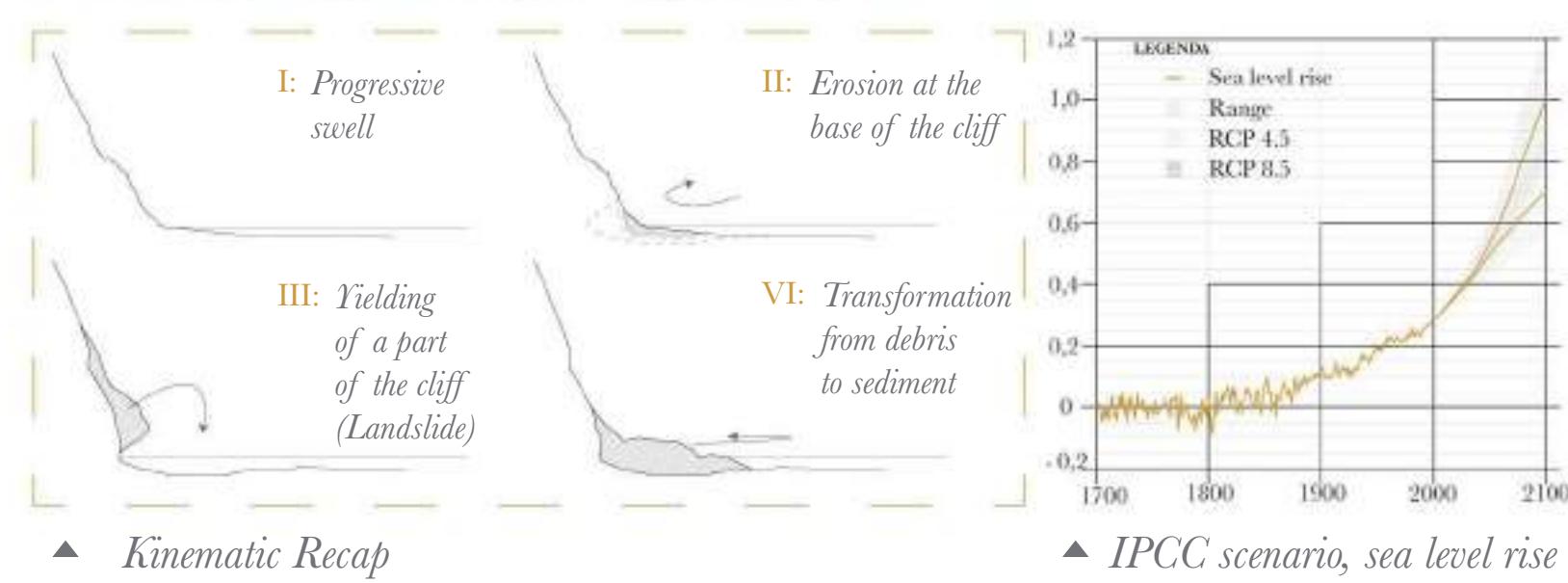
Growing *site*



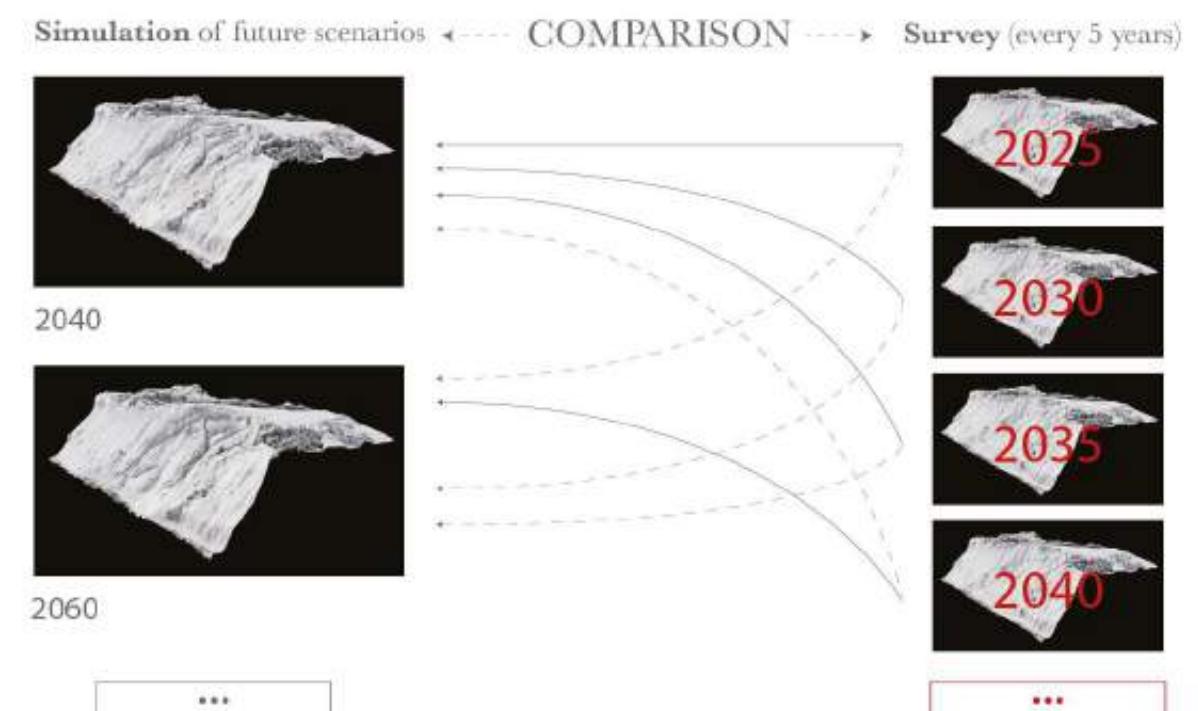


# CC Scenarios

In the next 80 years, the IPCC forecasts predict that the sea level rise will grow up to 1 meter. That means that the risk of **erosion** in the Monte San Bartolo area is quickly **increasing** and the villages built next to the cliff might **collapse** soon as well as the activities (like farming) assuring the landscape management.

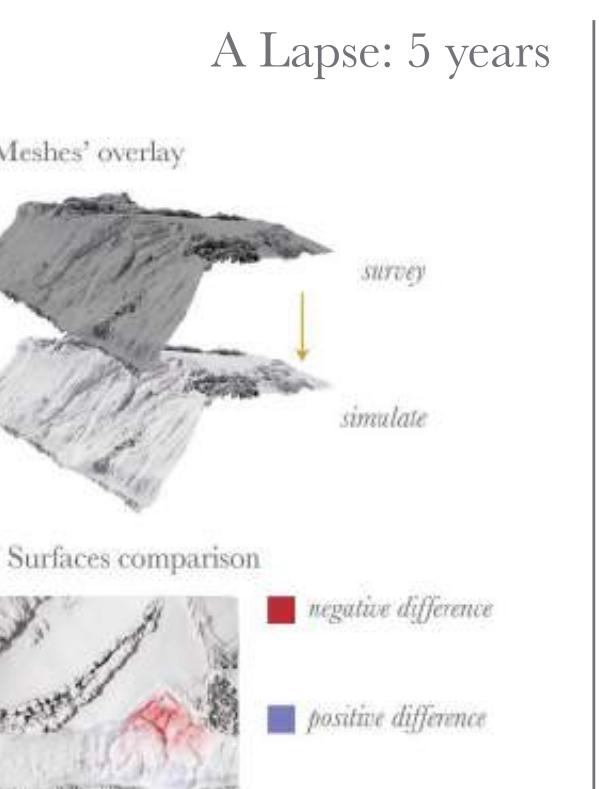


# The Monitoring as a design tool



The project's guidelines refer to a time frame of 80 years and since the landscape is in constant transformation, it is required to combine the project actions with constant monitoring.

Two tools are proposed to verify the forecasts made over time: the first (A) is based on the **comparison** between a simulated future model and a survey carried out at a time of 5 years;



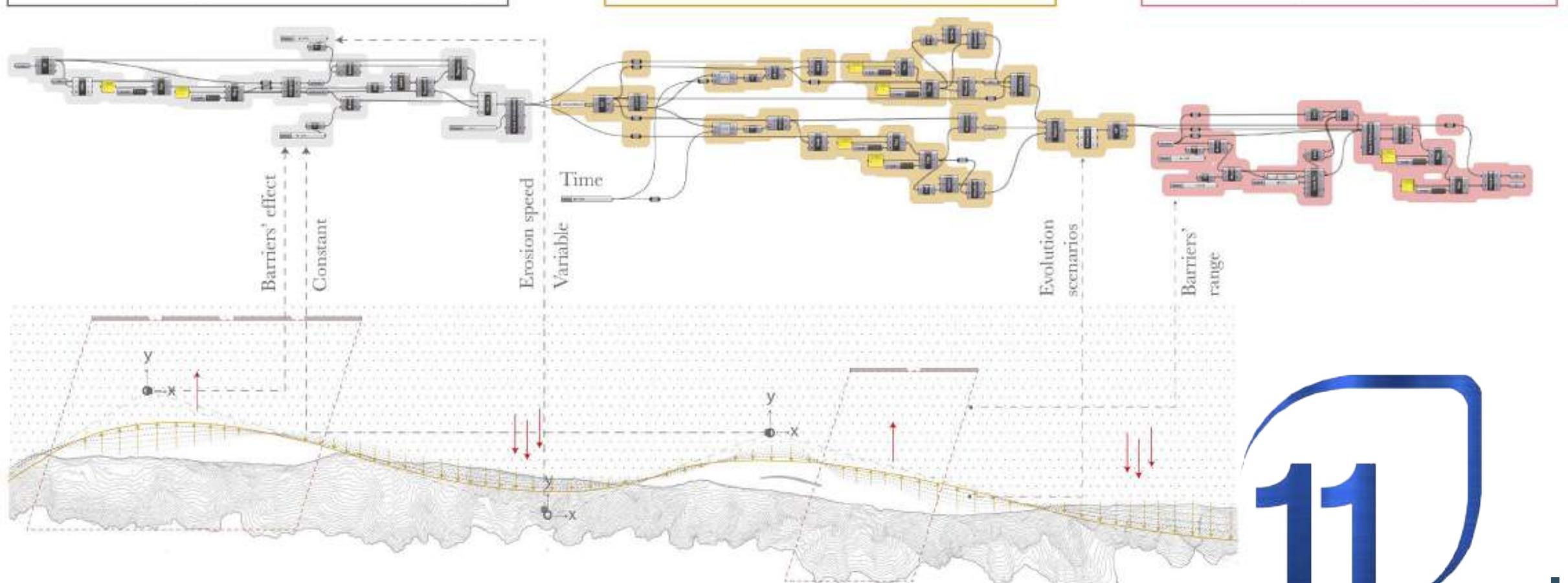
the other tool (B) supports the landscape design and, through a specific algorithm, it allows the generation of new **evolutionary scenarios** of the landscape by evaluating, over the months, the adequacy of the planned interventions.

A Lapse: 5 years

Methodological scheme

Through specific algorithms it is possible to generate a **coastal evolution** model as a simulation tool for the sediment transport process along the coast. This exemplary scheme (developed in Grasshopper) outlines a method of simulating natural processes and in particular it acts as a tool to support the design of underwater structures. An integrated system could be developed that combines the simulation with monitoring data in order to generate an efficient workflow for the site.

Definition of attractor points relates to transformation's speed

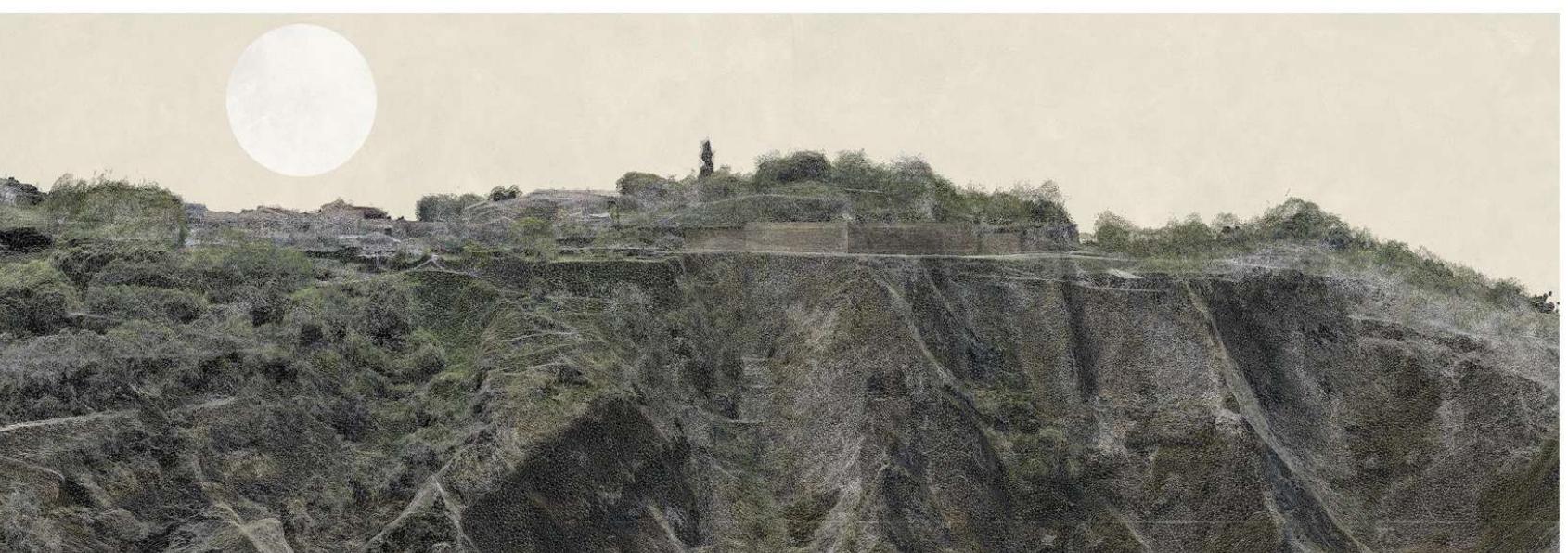


Generation of coastline's evaluation scenarios over time

Check of devices' operation through barriers' range

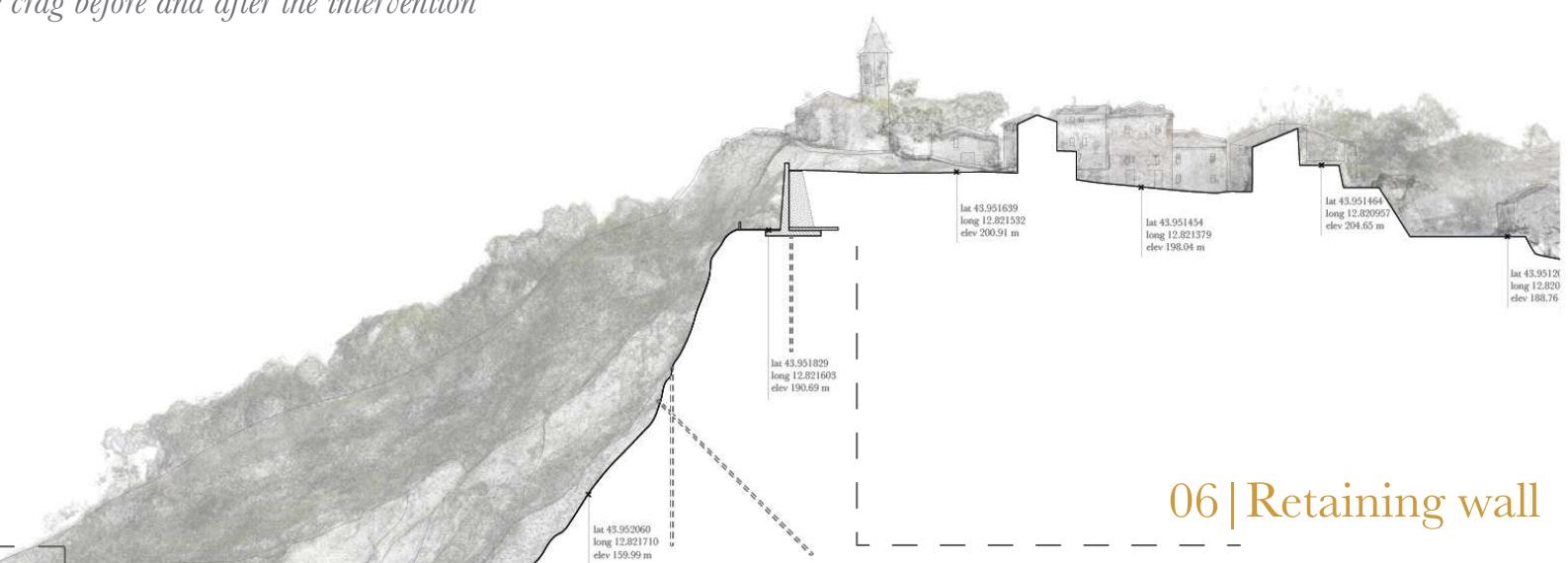


soil has been lost. In addition, a **stabilizing wall** is built at the base of the village.



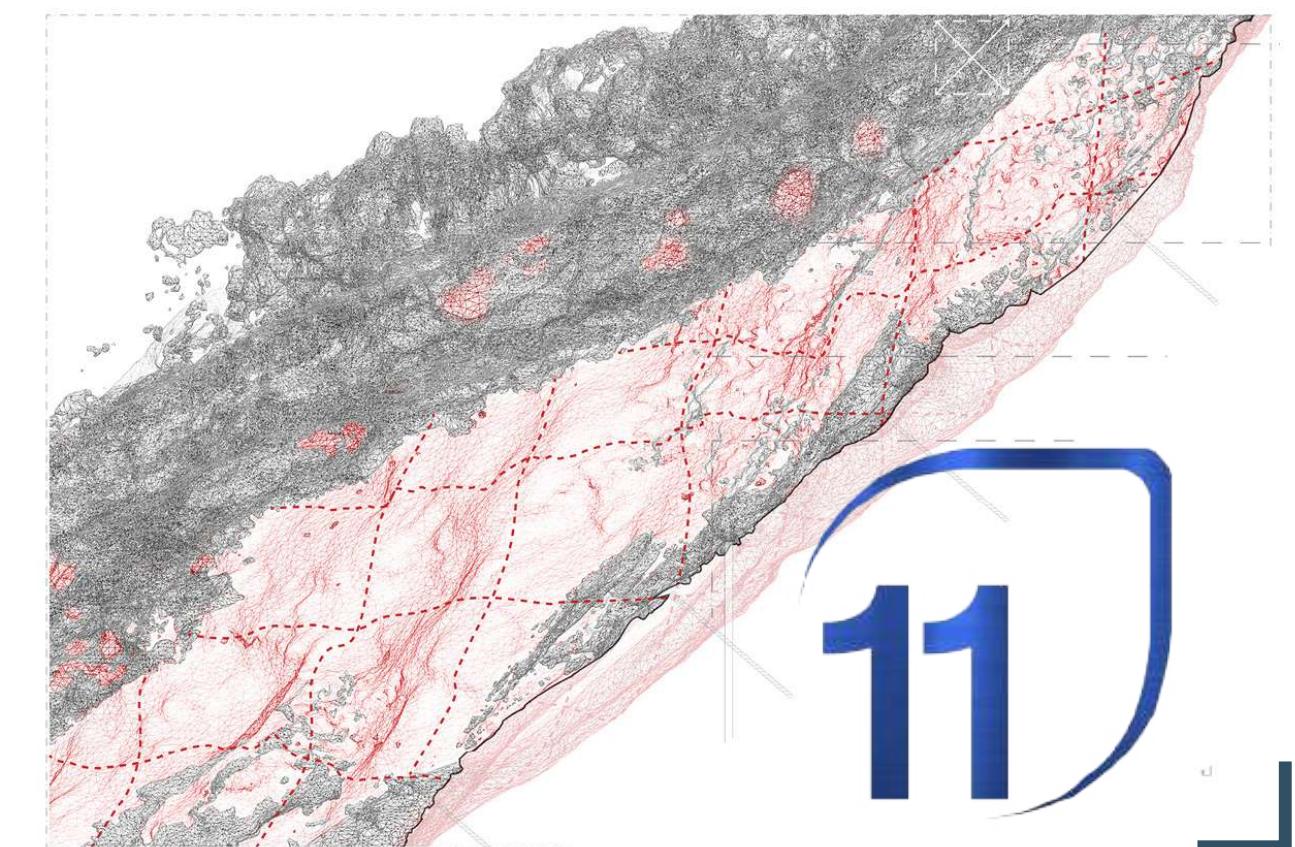
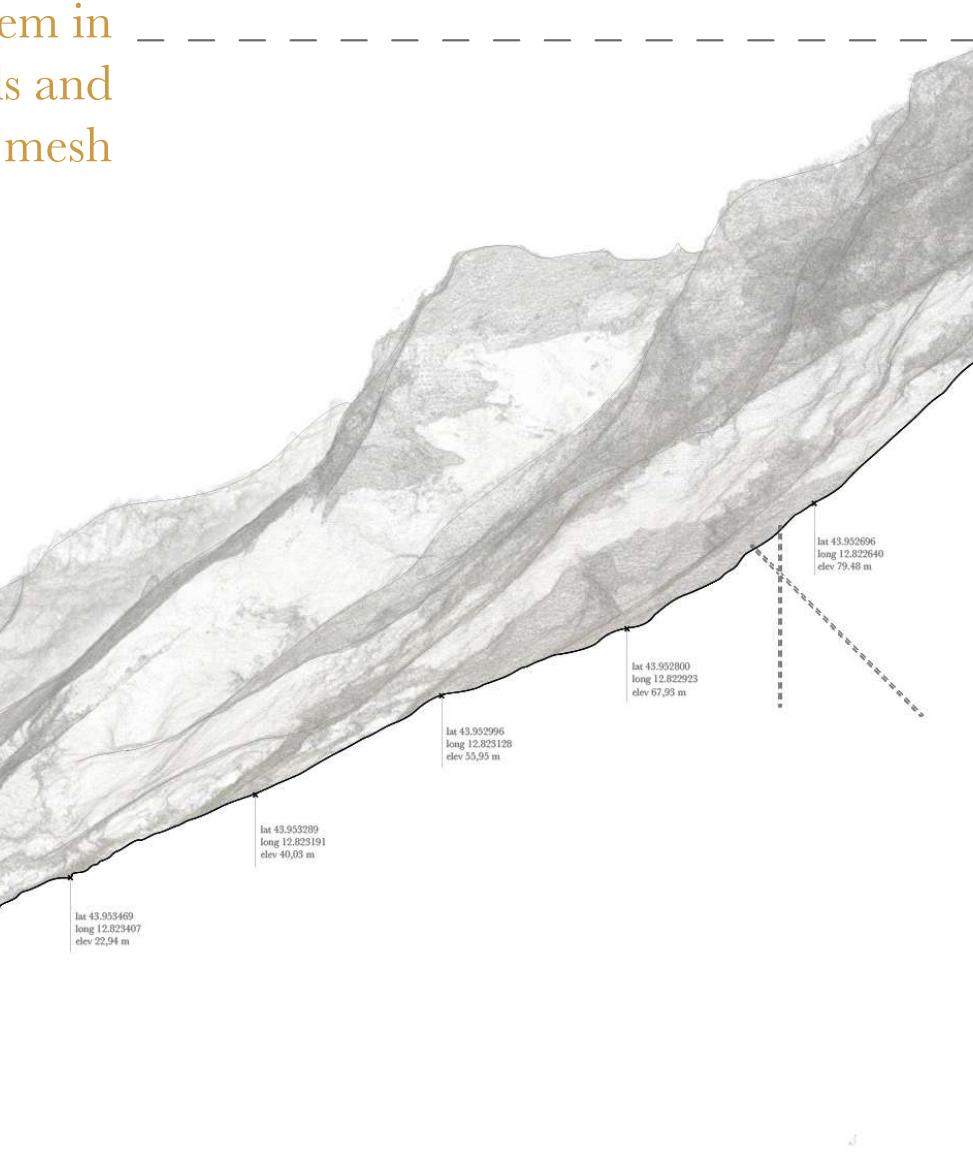
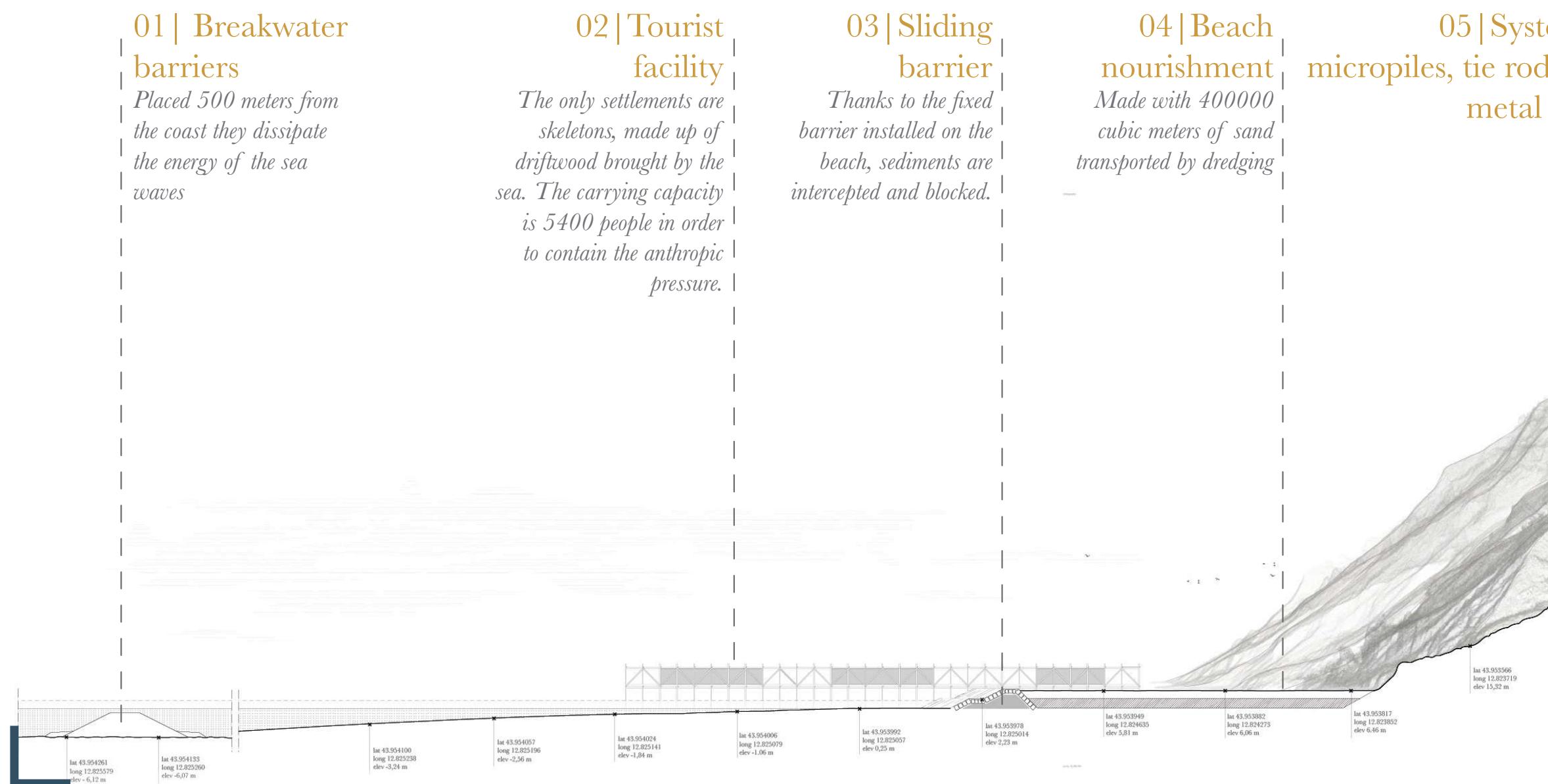
▲ General perspective view, of the project

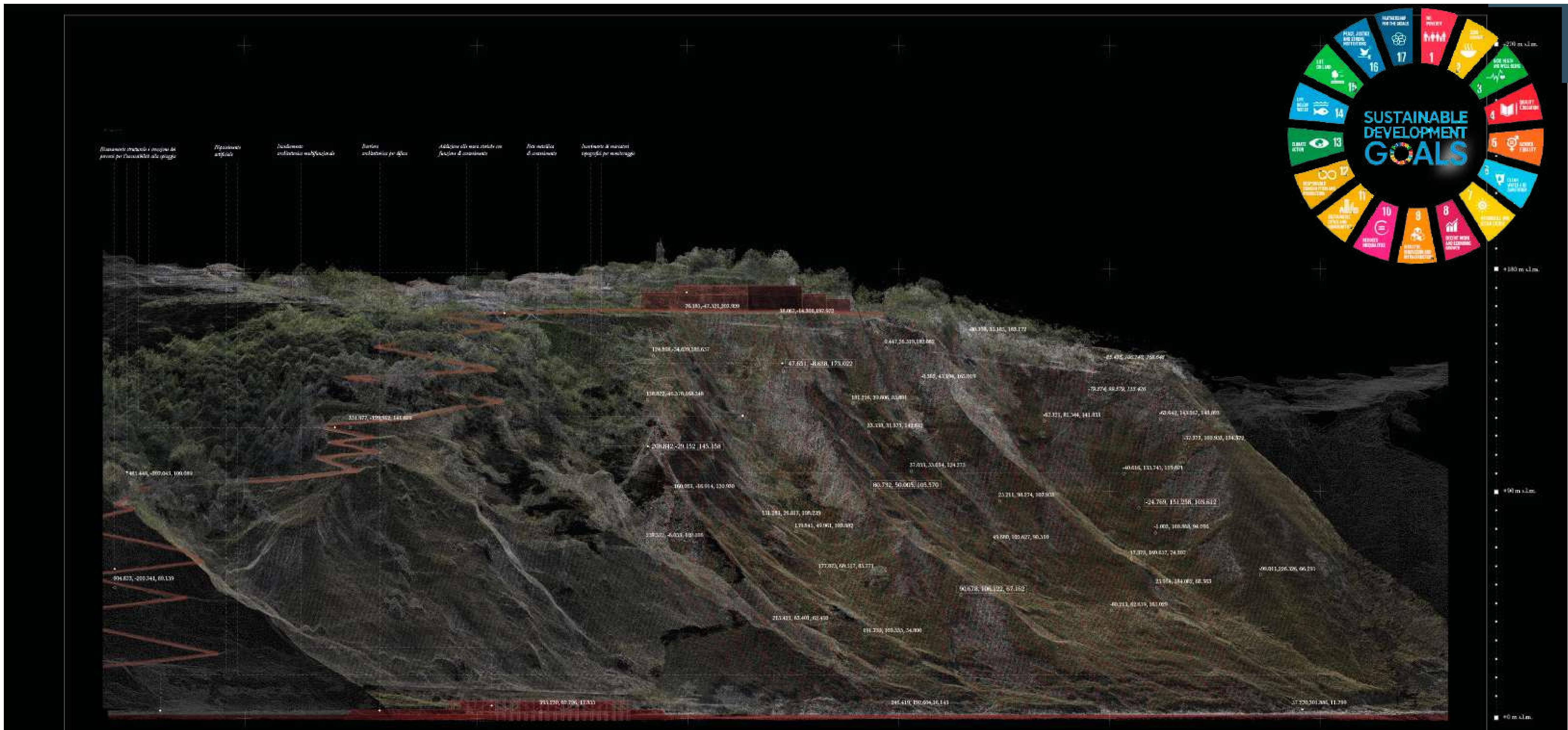
◀ The crag before and after the intervention



## 06 | Retaining wall

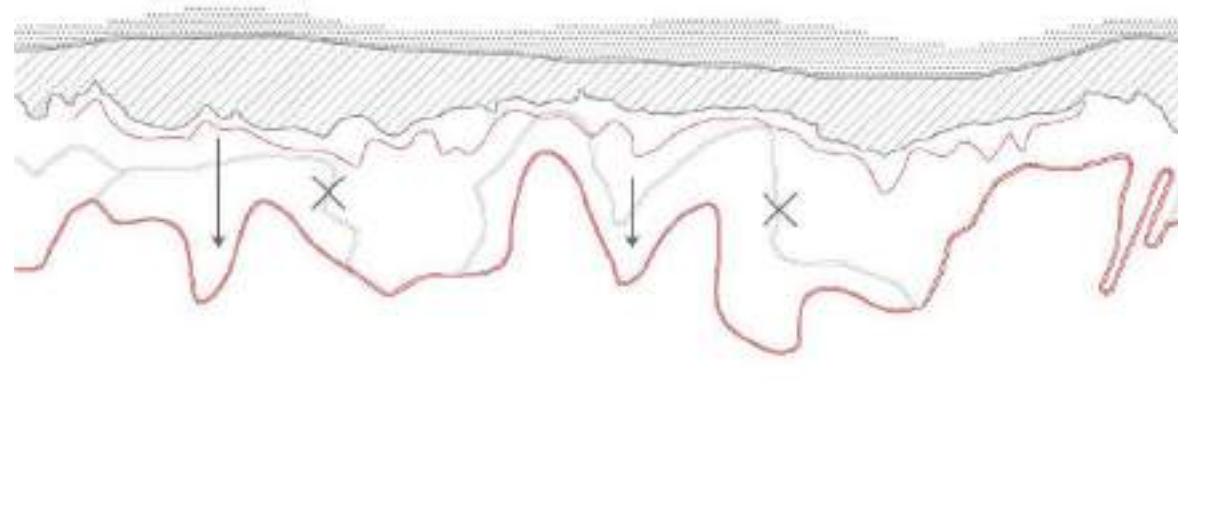
Detail of the crag reinforcement ▼



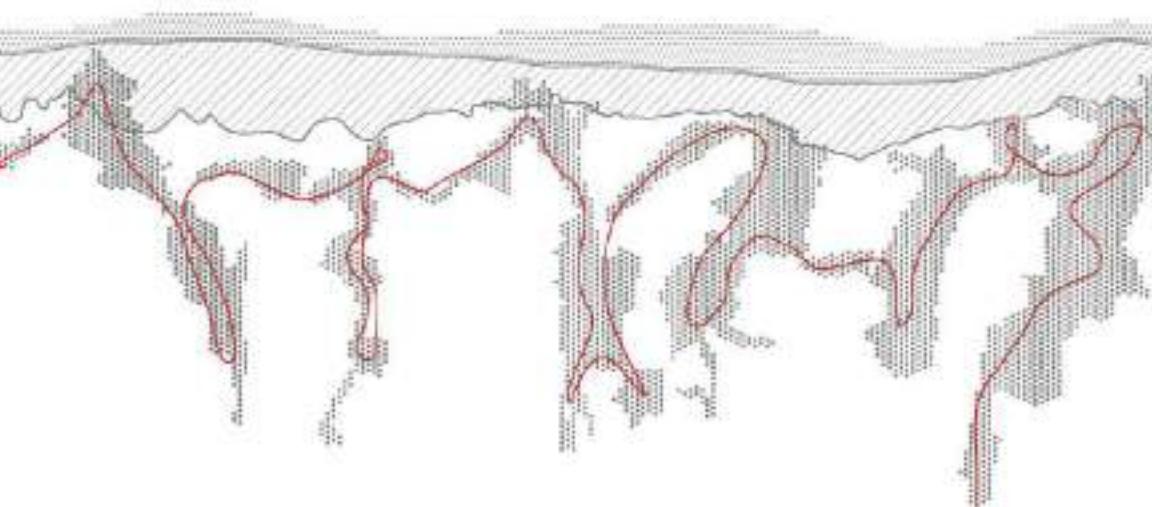


▼ Reforestation and strengthening of forestry sectors as defence infrastructure

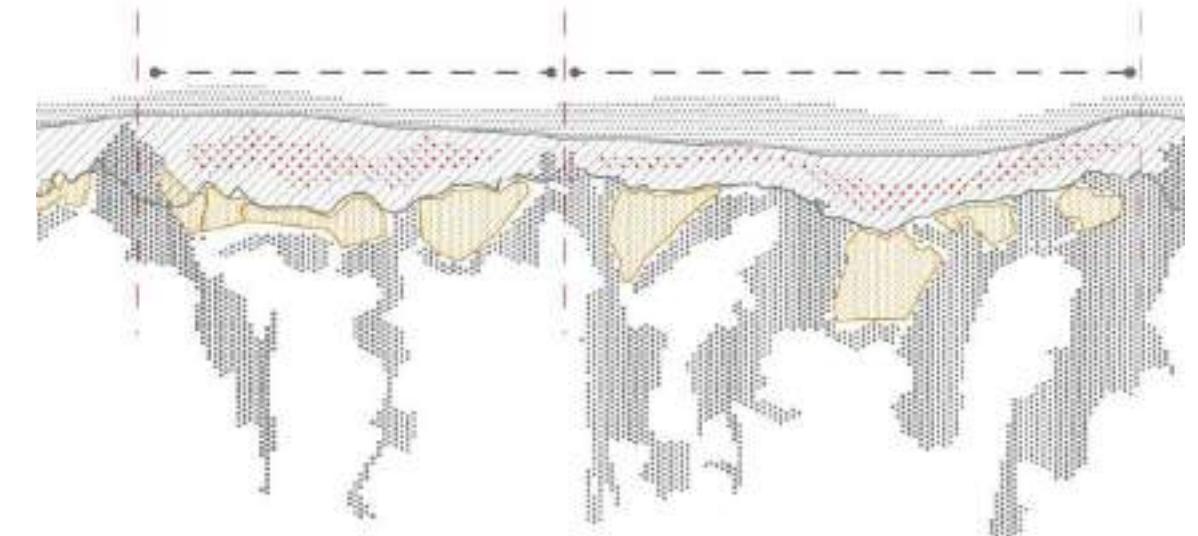
Revision of the mobility network and accessibility



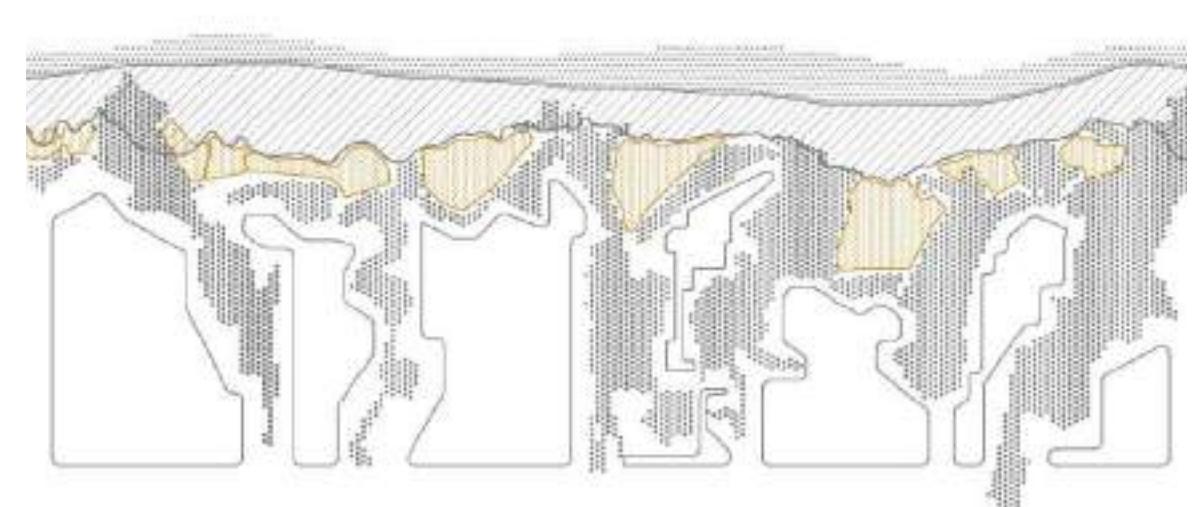
Restoration of ecological corridors



Definition of erosion boundaries



Retreat planning of farming areas



▼ 01 | Actual landscape, Monte Castellaro



▼ 02 | Transformations, Monte Castellaro



▼ 02 | Evolutionary scenario to 2060, Monte Castellaro



# TESI DI LAUREA

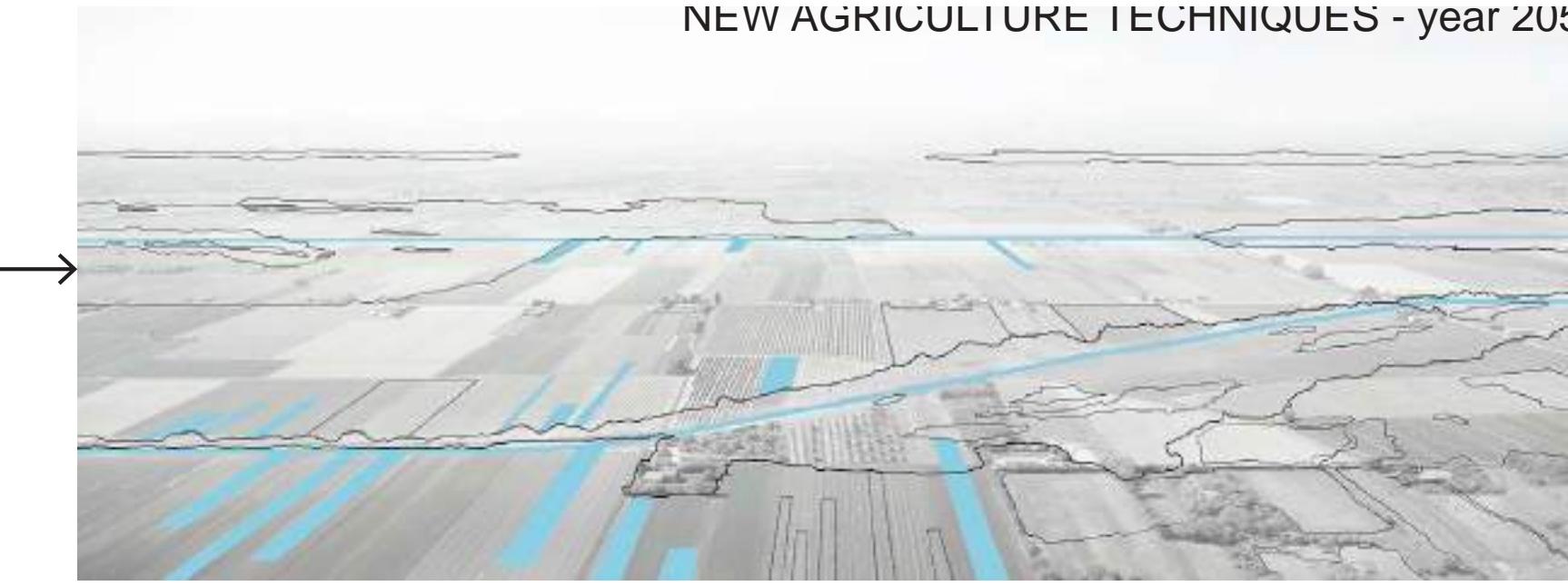
a.a. 2018-19, Symbiotic landscape

Davide Felloni, Beatrice Magagnoli, Lorenzo Tinti

ACTUAL CONDITION - year 2020



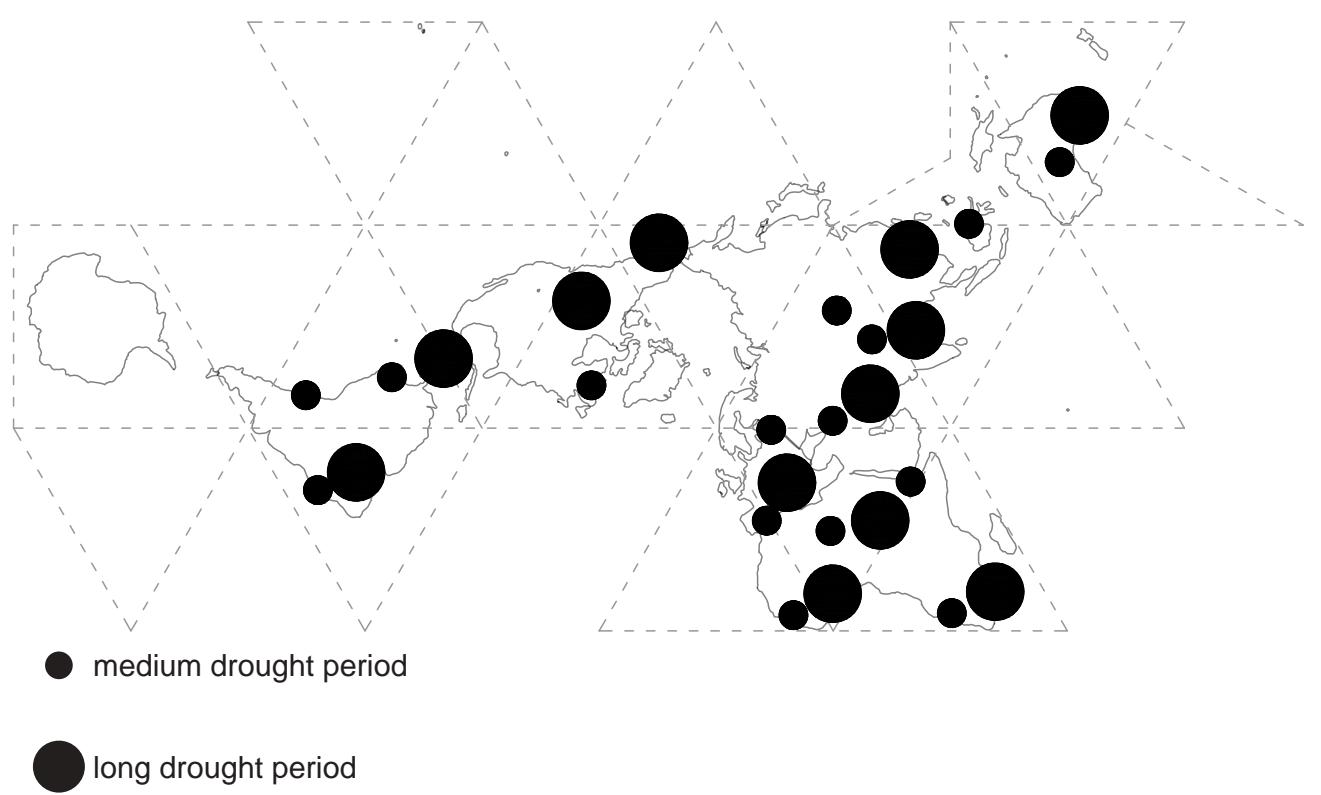
NEW AGRICULTURE TECHNIQUES - year 2050



SYMBIOTIC LANDSCAPE - year 2100



## CLIMATE CHANGE / DROUGHT



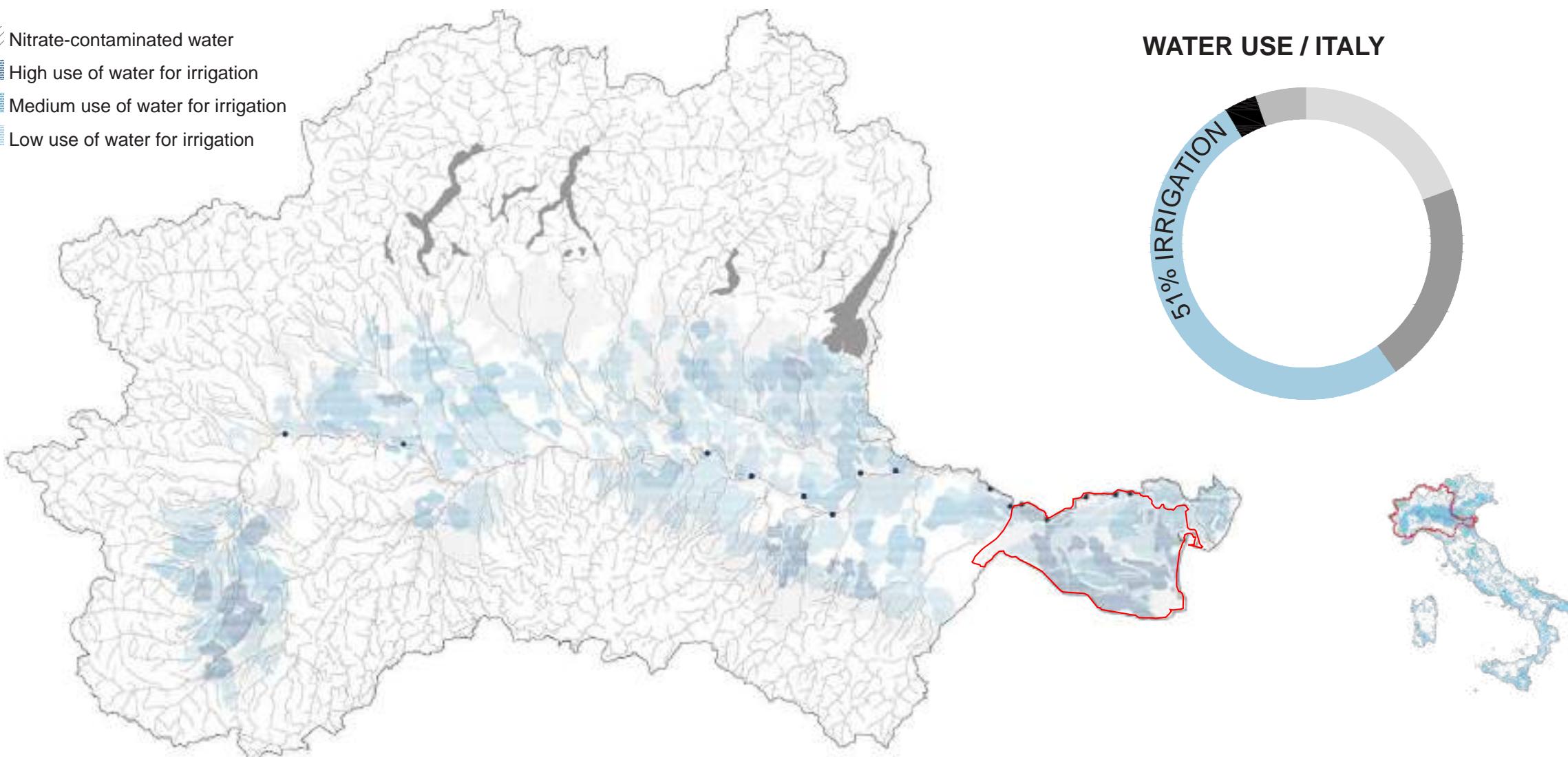
## CLIMATE CHANGE PROJECTIONS

IPCC SCENARIO: ■ TODAY at 2020, ■ IPCC RCP2.6 at 2100, ■ IPCC RCP8.5 at 2100



## PO BASIN / IRRIGATION MAP

- Nitrate-contaminated water
- High use of water for irrigation
- Medium use of water for irrigation
- Low use of water for irrigation

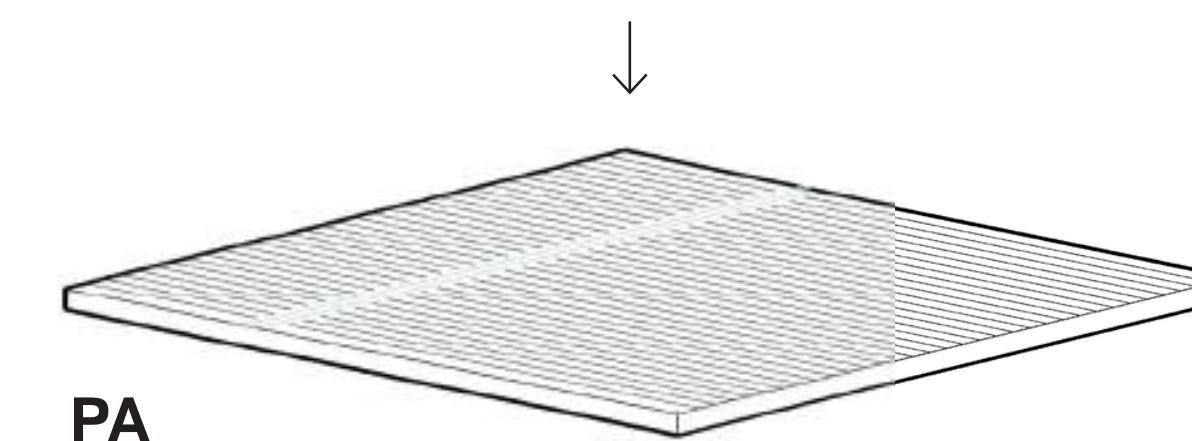
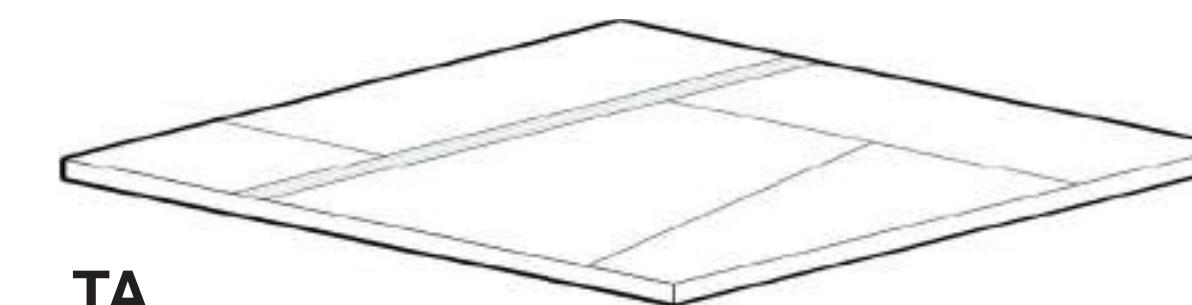


## SCENARIO'S APPROACH 2 VARIABLES MATRIX GENERATION

VARIABLE 02: AGRICULTURE TECHNIQUES	
VARIABLE 01: DRY DAYS SCENARIO	
TRADITIONAL AGRICULTURE (100% water consumption) + RCP 8.5 IPCC SCENARIO (60 consecutive dry days)	PRECISION AGRICULTURE (70% water consumption) + RCP 8.5 IPCC SCENARIO (60 consecutive dry days)
TRADITIONAL AGRICULTURE (100% water consumption) + RCP 2.6 IPCC SCENARIO (37 consecutive dry days)	PRECISION AGRICULTURE (70% water consumption) + RCP 2.6 IPCC SCENARIO (37 consecutive dry days)

## WATER CONSUMPTION - PRECISION AGRICULTURE

100% → 70%



FOOD PRODUCTION

AGRICULTURE

PRECISION AGRICULTURE

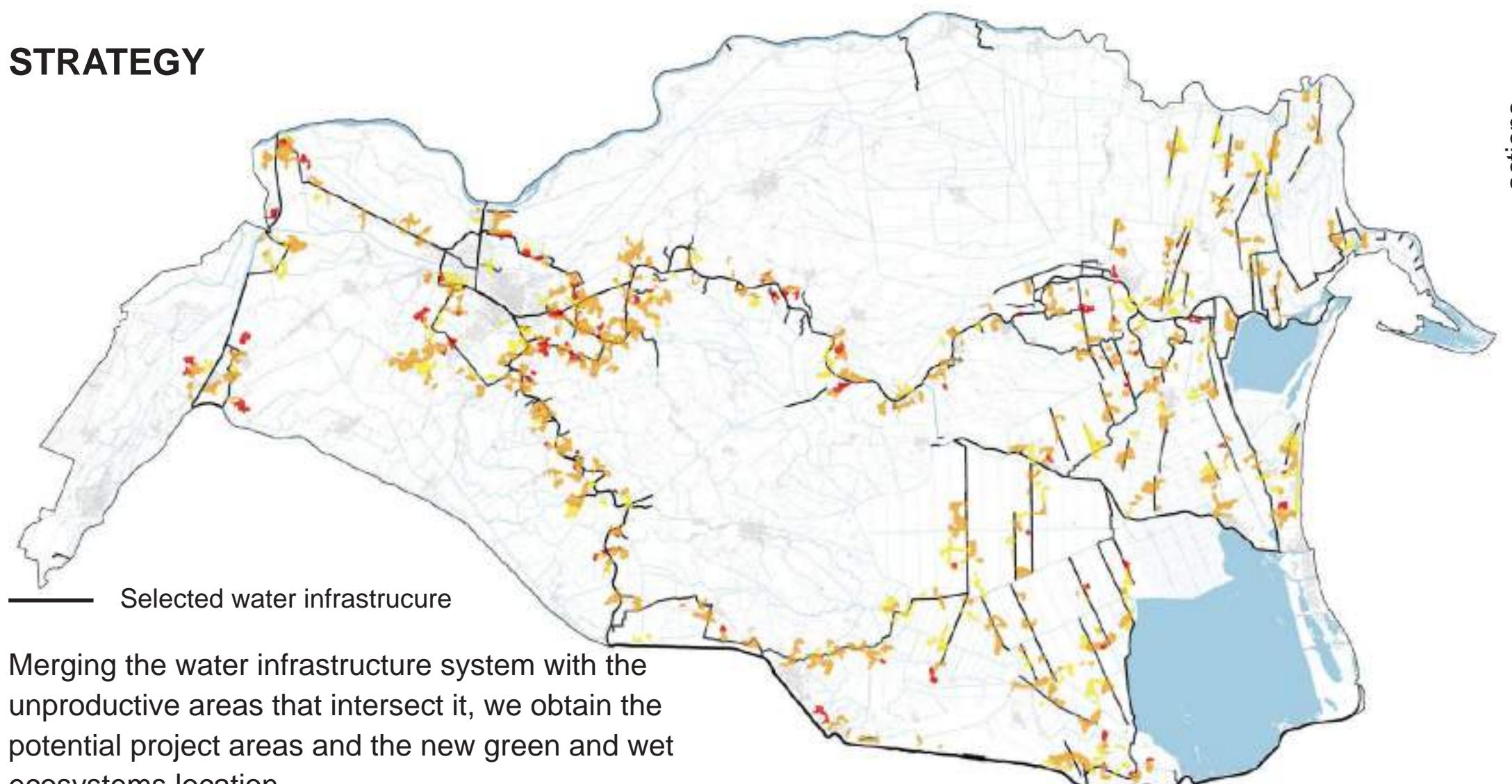
NEW AGRARIAN LANDSCAPE



## SOIL AGRICULTURE PRODUCTIVITY

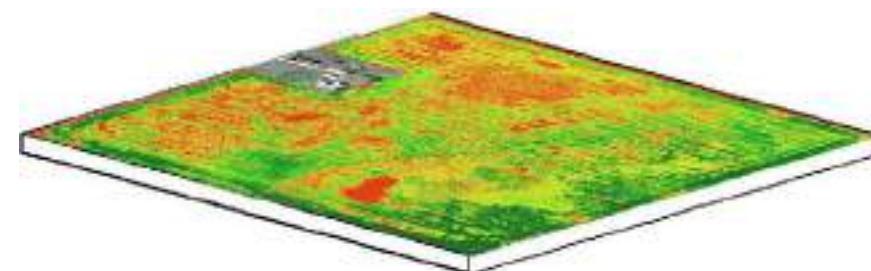


## STRATEGY

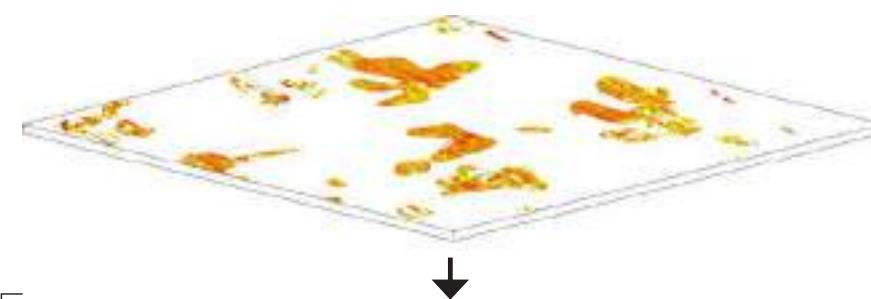


## METHODOLOGY

### SOIL PRODUCTIVITY ANALYSIS

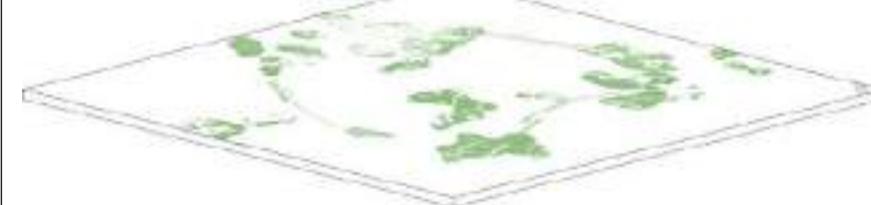


### UNPRODUCTIVE AREAS SELECTION

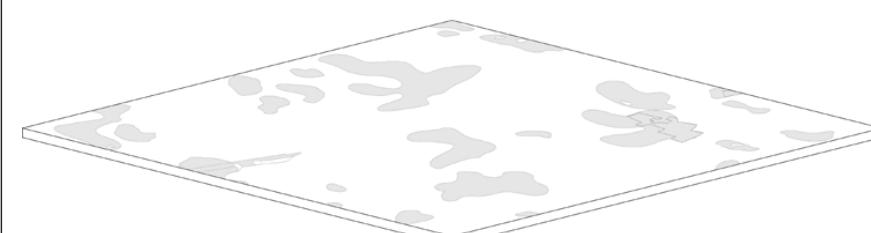


actions

### NEW FORESTS



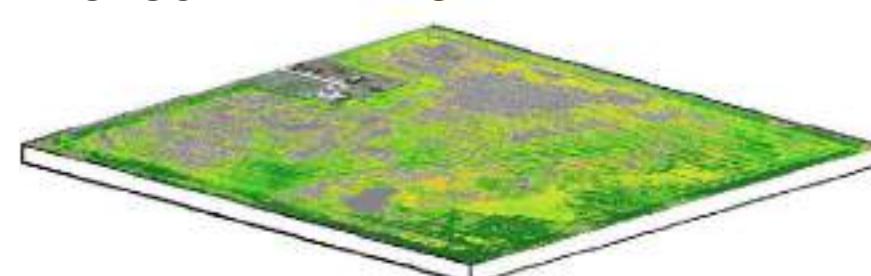
### AQUIFER RECHARGE CONNECTION



### HYDROGRAPHY IMPLEMENTATION

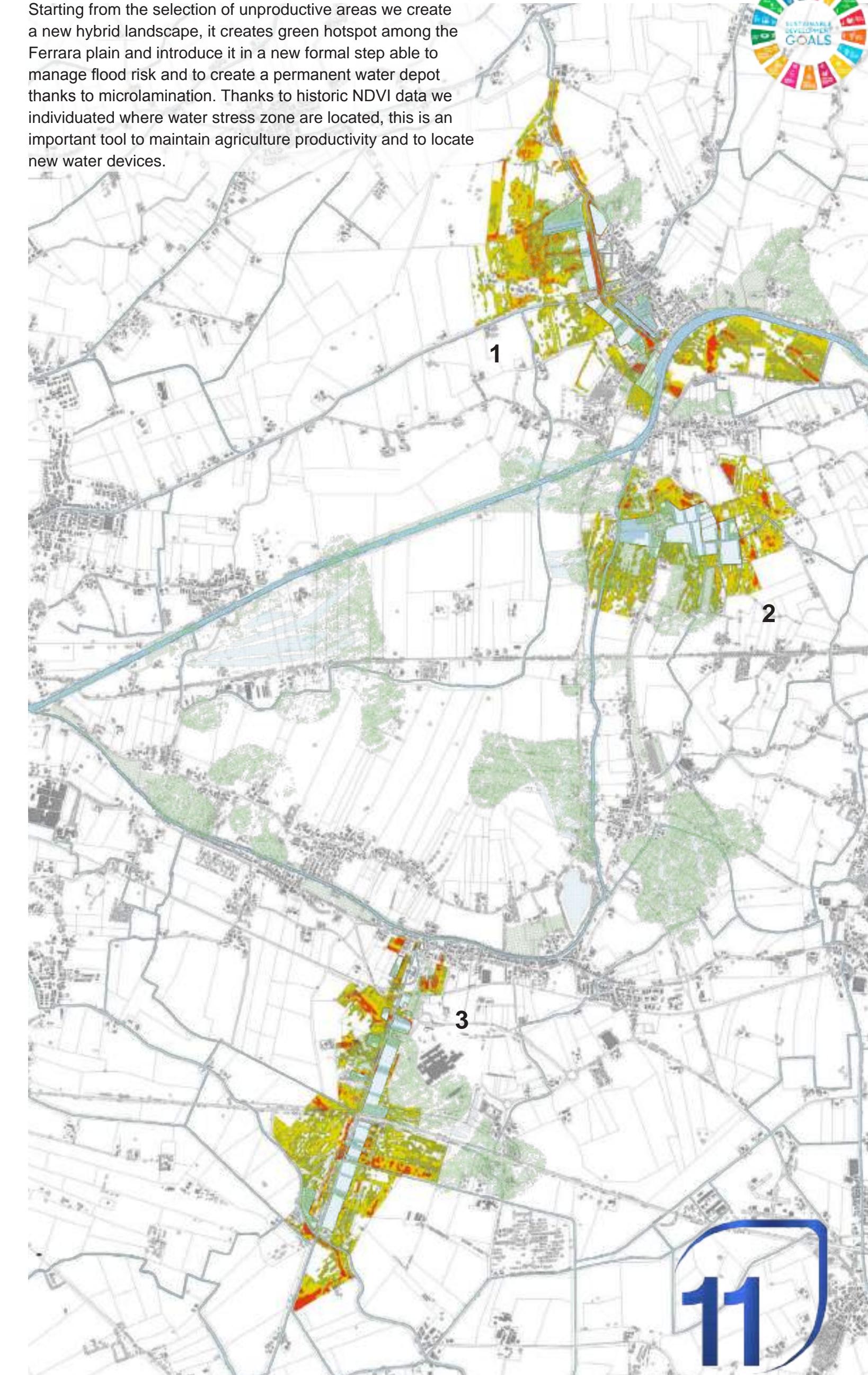


### PRODUCTIVE LAND SAVED



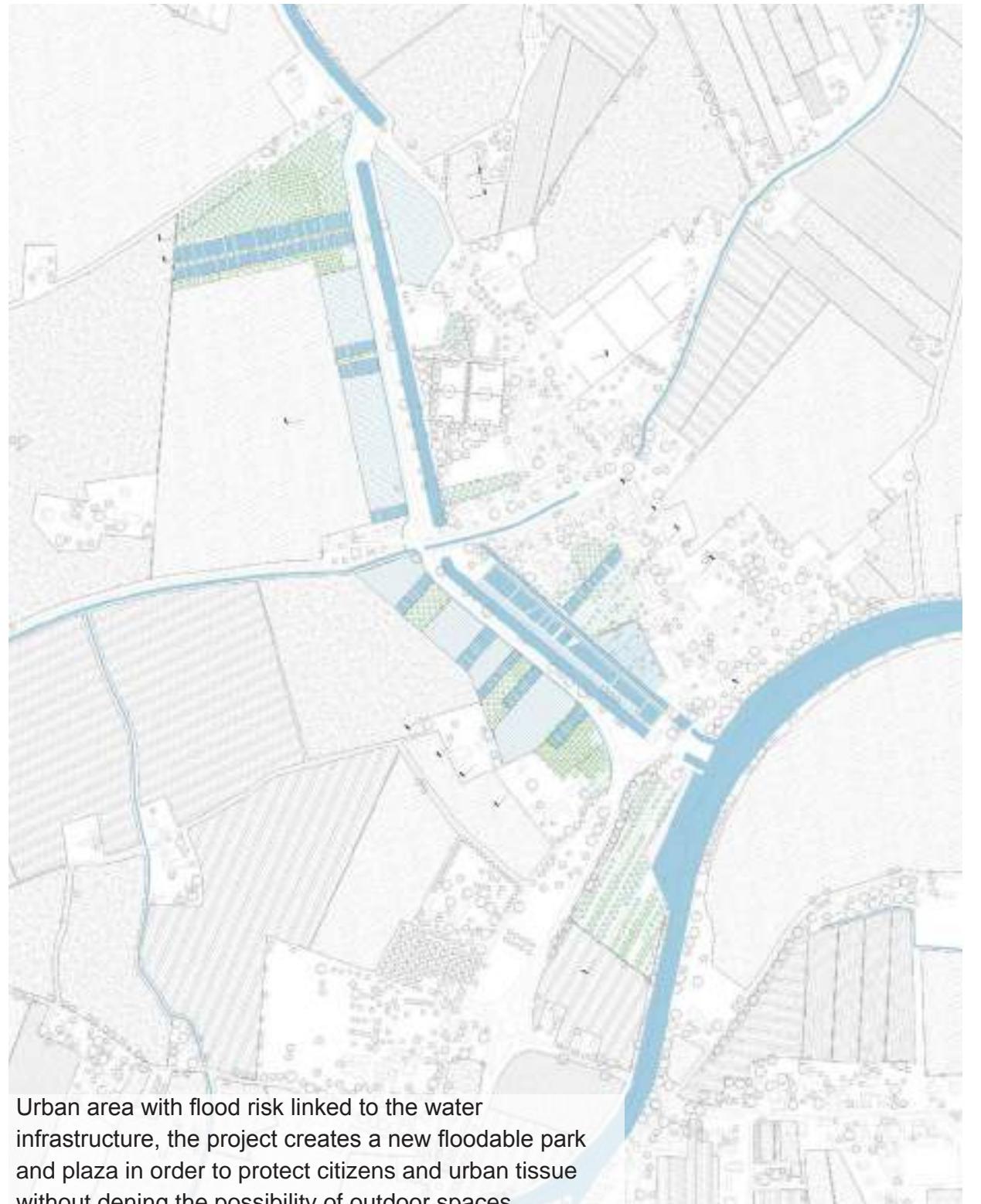
## NEW LANDSCAPE ECOSYSTEMS

Starting from the selection of unproductive areas we create a new hybrid landscape, it creates green hotspot among the Ferrara plain and introduce it in a new formal step able to manage flood risk and to create a permanent water depot thanks to microlamination. Thanks to historic NDVI data we individuated where water stress zone are located, this is an important tool to maintain agriculture productivity and to locate new water devices.



## 1 / URBAN CASE STUDY

OBJECTIVES: FLOOD RISK MANAGEMENT | GREEN URBAN AREAS | MICROLAMINATION AGRICULTURE



Urban area with flood risk linked to the water infrastructure, the project creates a new floodable park and plaza in order to protect citizens and urban tissue without denying the possibility of outdoor spaces.

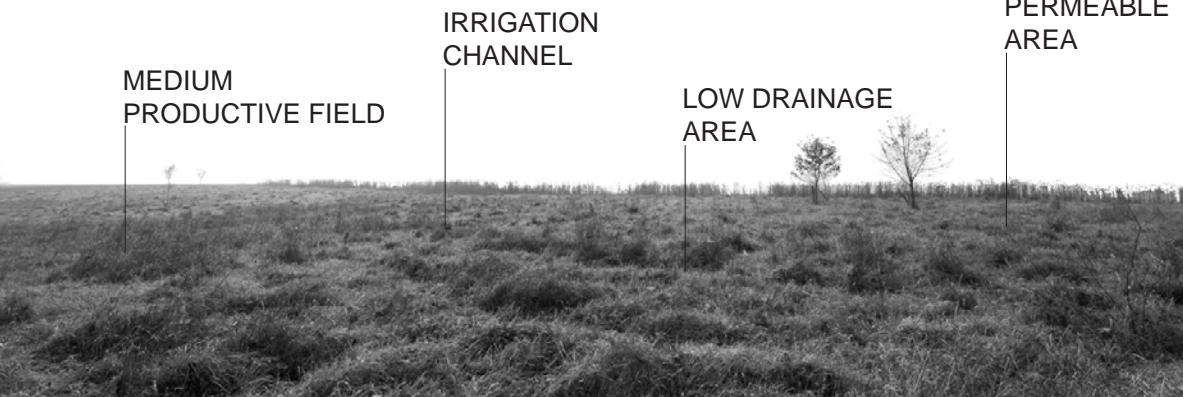


## 2 / RURAL CASE STUDY

OBJECTIVES: WATER DEPOT | HUMID ECOSYSTEM



Rural area where agriculture needs water depot, the project creates a floodable zone that could be used as a basin in order to collect water to face prolonged drought periods serving the surrounding fields.



## 3 / PERIURBAN CASE STUDY

OBJECTIVES: FLOOD RISK MANAGEMENT | PHYTOREMEDIATION



Peri urban area characterized by the presence of Ferrara's hospital. The project proposes a floodable linear park able to phytoremediate water and to create an open air space to serve patients.

