BACK IS FRONT

——INVERSION OF ALEXANDRIA

N

0 500 2000 5000m
100 1000

◈ Infrastructure
◈ High-rank Residence
◈ Docklands
◈ History District
◈ Brownfield
◈ Centra City

◈ Desert
◈ Slums
◈ Industral Estate
◈ Ocean
◈ Lake
◈ Canal
◈ Roads

Country / City	China, Beijing
University / School	Beijing Forestry University
Academic year	2017-2018
Title of the project	Back is Front- Inversion of Alexandria
Authors	Xiaosong Ma, Ruokun Zhang, Dongchen Li, Ying Zhang, Xu Chao

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X International Landscape Architecture Biennial

Máster d'Arquitectura del Paisatge -DUOT - UPC
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TECHNICAL DOSSIER

Title of the project	Back is Front- Inversion of Alexandria
Authors	Xiaosong Ma, Ruokun Zhang, Dongchen Li, Ying Zhang, Chao Xu
Title of the course	Seminars of Landscape Architecture Design
Academic year	2017-2018
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	Landscape Architecture Program
University/School	Beijing Forestry University

Written statement, short description of the project in English, no more than 250 words

Alexandria, the second biggest city in Egypt, has thrived by harbor. Built on the T-shaped Nile delta, the edge of the Sahara, Alexandria situates on a land strip caught between the sea and lagoons. 1 Nowadays, she is an industrialized tourist city threatened by both natural and social problems including marine submersion, sandstorms, industrial pollutions, population expansion, deterioration of slums, and historical context breaks. All of these crises have increased social imbalance, which hampers sustainable development of Alexandria. Imbalance is reflected in all kinds of scales. Most tourist and social resources are distributed along the coastline, while heavy industries, brownfields, informal accommodation, and desertification farmland occupy the side of hinterland.

Although the innate gaps caused by history and geography are neither just nor unjust, we can still create away that enables institutions to deal with the natural facts to pursue justice. The green system plays the role of communication, fusion and guidance contributing to the inversion of city development trend lead to a more justice society.

The Green system integrates natural facts that we can use. It constructs strategies for different types of urban areas respectively, while they are all designed for the inversion of hinterland. As for regional scale, the desert buffer belt combined with local precision agriculture defends against the sandstorm and stabilizes the edge of the delta to guarantee field production. As for urban border areas, the phytoremediation models around informal accommodation provide safe environment and social opportunities. As for the historical block, the strategy extracts spatial pattern of the traditional Egypt Garden, which encloses space by trees at the same time creating height variations to make blend spaces reconciling the requirement of residents and tourists.

COMPARISION DATA

FRONT

BACK

11%
58%
31%

27%
6%
67%

SPACE DISTRIBUTION

TOTAL LAND

dwelling
polluted &waste land
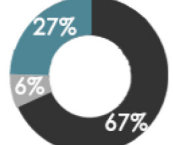green open space

dwelling
polluted &waste land
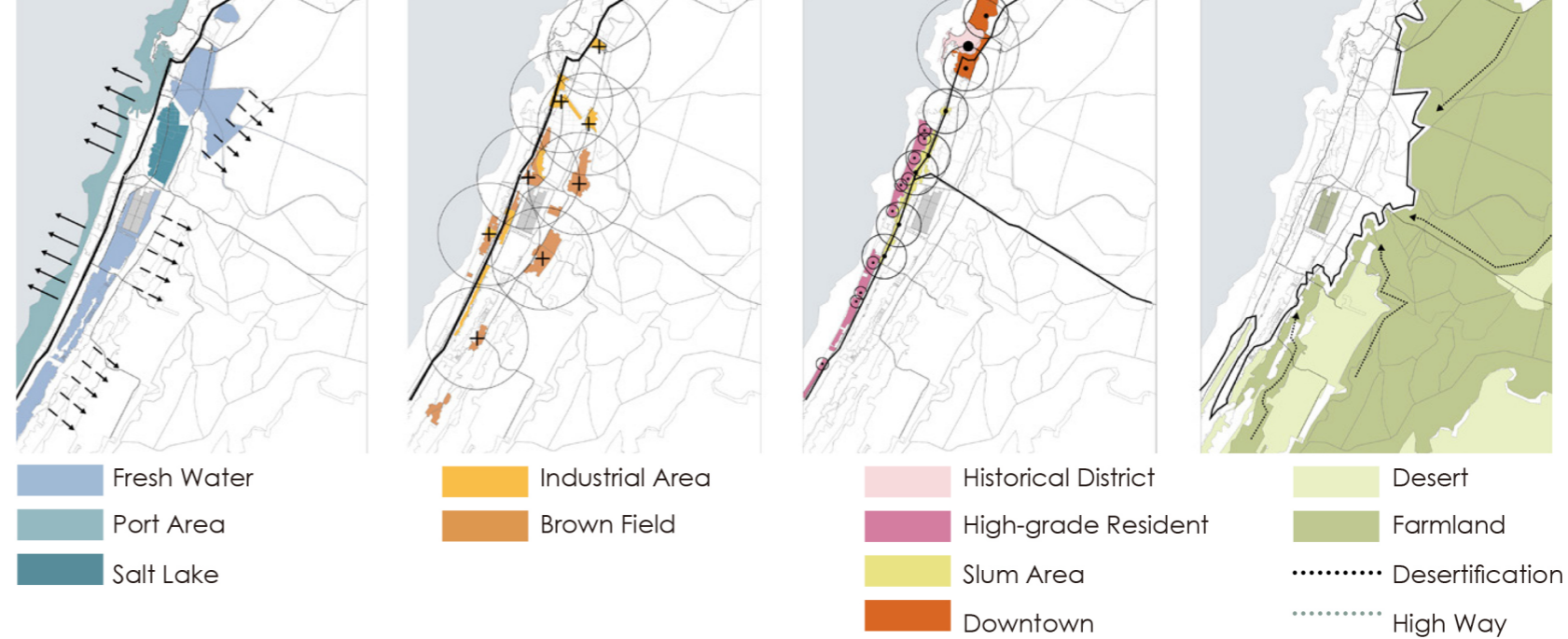green open space
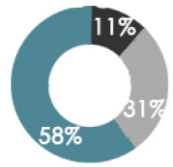
POPULATION

1254480 people

2158220 people

Alexandria is an industrialized tourist city threatened by a increased gap between coastline and hinterland, which is a result of unbalanced resources distribution. Most social resources are distributed along the coastline, while heavy industries, brownfields, informal accommodation, and desertification farmland occupy the side of hinterland. Thus, we manage to fill up the gap by landscape power— windbreak and phytoremediation.

CRISIS CONCERN

1)SUMERSION: Alexandria faces a marine submersion problem, eating the city spaces.
2)DESERTIZATION: Back area of Alexandria is suffered from oasis marginal land desertization.
3)POLLUTION: Polluted and toxic brown fields encompass the slums in the back area, which makes poor people struggled with life.
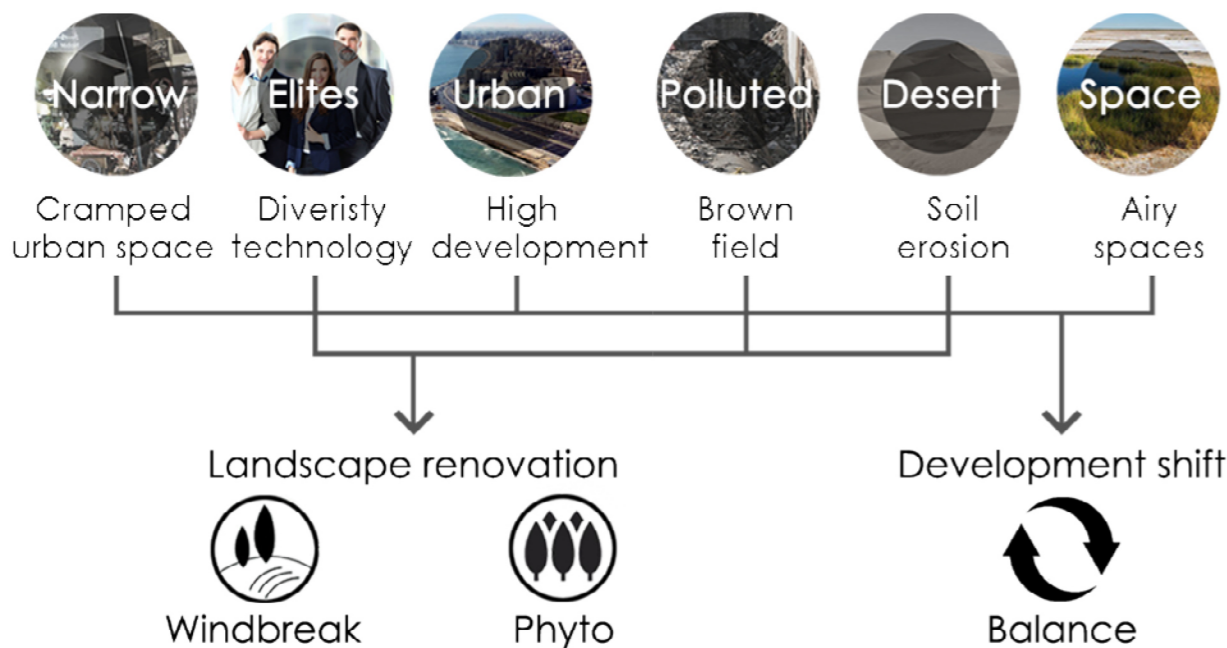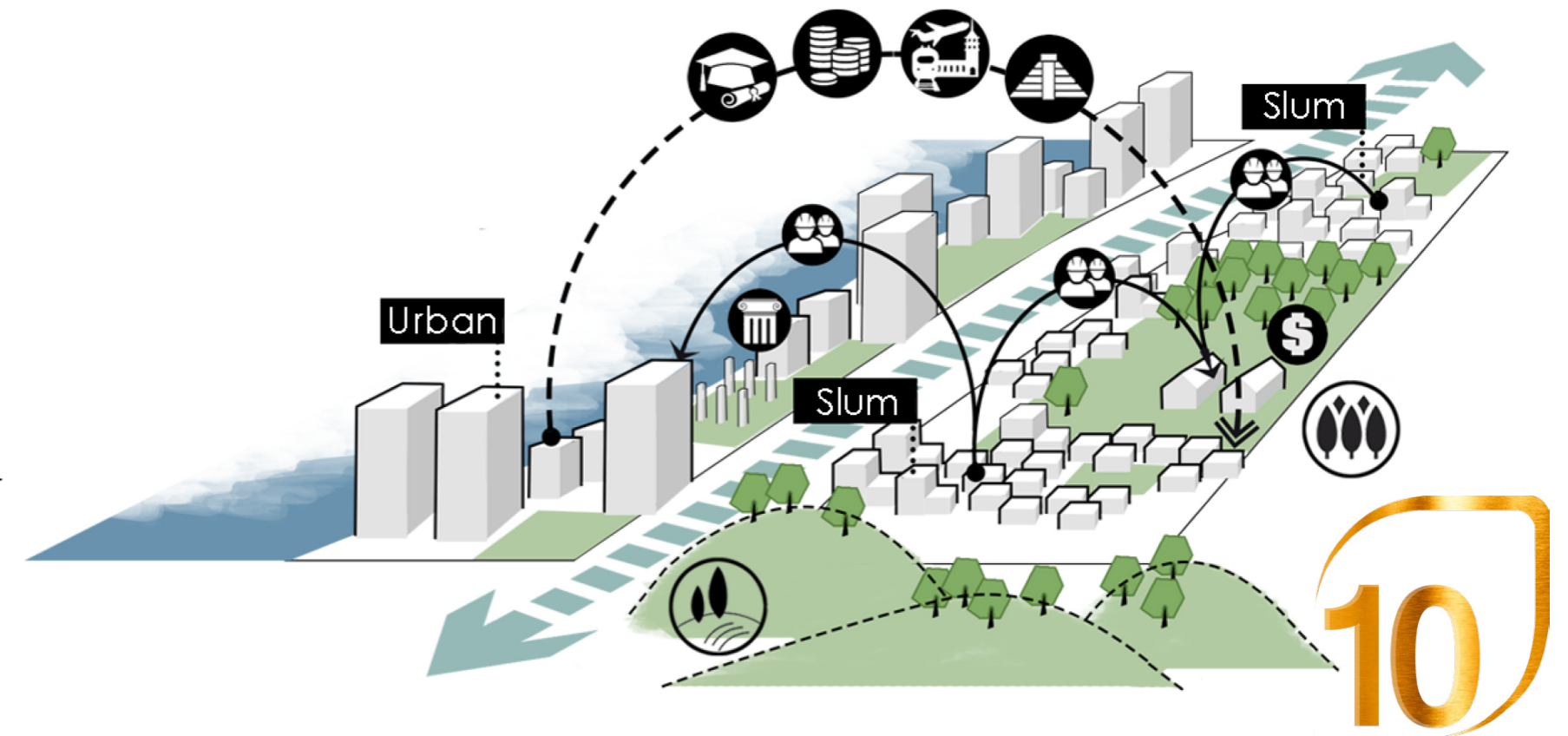
AREA ANLYSIS

Fresh Water
Port Area
Salt Lake

Industrial Area
Brown Field

Historical District
High-grade Resident
Slum Area
Downtown

Desert
Farmland
.... Desertification
.... High Way

SUBMERSION

DESERTIZATION

POLUTION

THINKING PROCESS

FRONT AREA

Narrow — Cramped urban space
Elites — Diveristy technology
Urban — High development

BACK AREA

Polluted — Brown field
Desert — Soil erosion
Space — Airy spaces

Landscape renovation

Windbreak   Phyto

Development shift

Balance

STRATEGY

Slum

Urban

Slum

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RELATIONSHIP BETWEEN FRONT AND BACK AREA

Population
Housing
Space Distribution   Brown Field   Green Space

Slums around by extensive brown field are fillwithed by people. Meanwhile, farmlands face a serious desertification crisis.

2017

Population
Housing
Space Distribution   Brown Field   Green Space

Comfortable space for people to live is going to expend more. Windbreak will slow down the desertification, and Phyto skills will renovate brown fields.

2030

Population
Housing
Space Distribution   Brown Field   Green Space

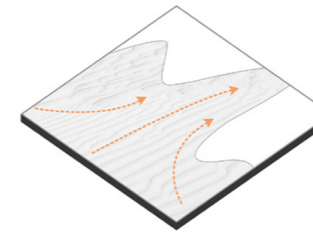Eventually, with more space to develop, Alexandria will shift her development from the front area to the back.
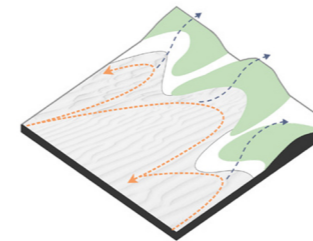
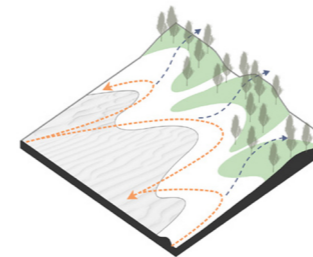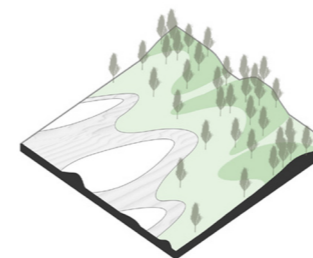2060

WINDBREAK DEVELOPMENT

TERRIANV

PRESENT
Desertification is increasingly destroying the oasis by strong wind.

PHASE 1
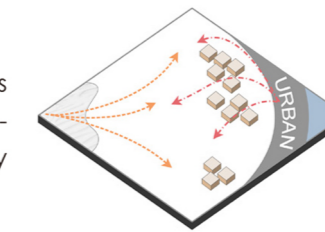By heaping up terrain and planting vegetation, wind will be breaked.

PHASE 2
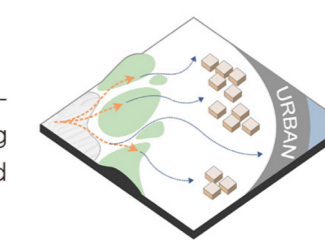Wind will bring sands and pile them up.

PHASE 3
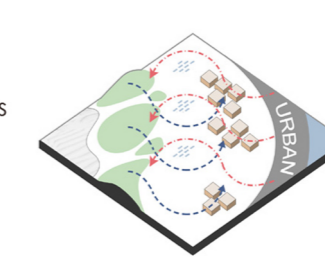the new terrain formation reduces the desertification.
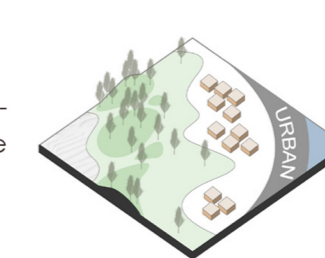
ENVIRONMENT

PRESENT
Hot air, from both desert and urban, causes a dry climate.

PHASE 1
Hot air from the desert will be cold after through the wind break terrian.

PHASE 2
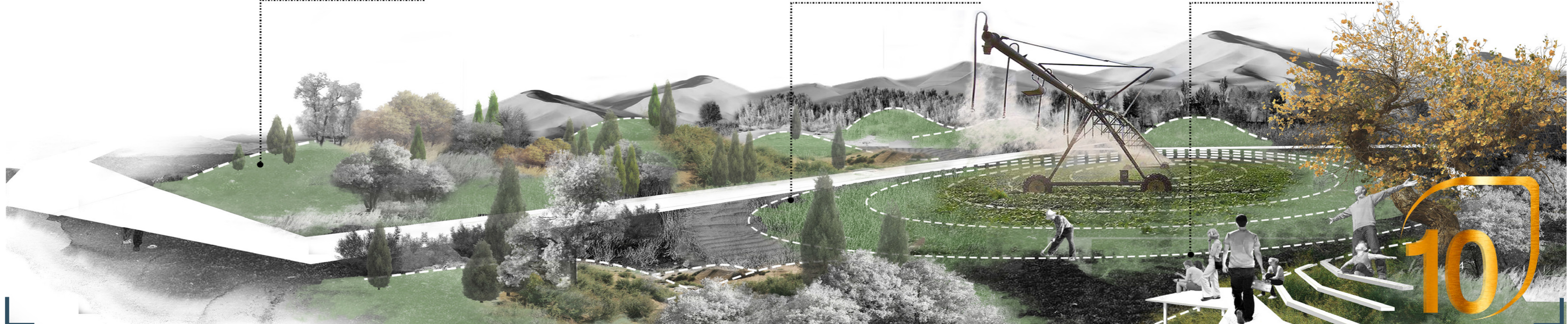Drought will be reduced after the collision of hot and cold air.

PHASE 3
More moist climate will increase the vegetation.
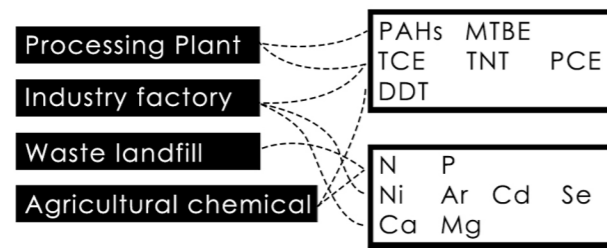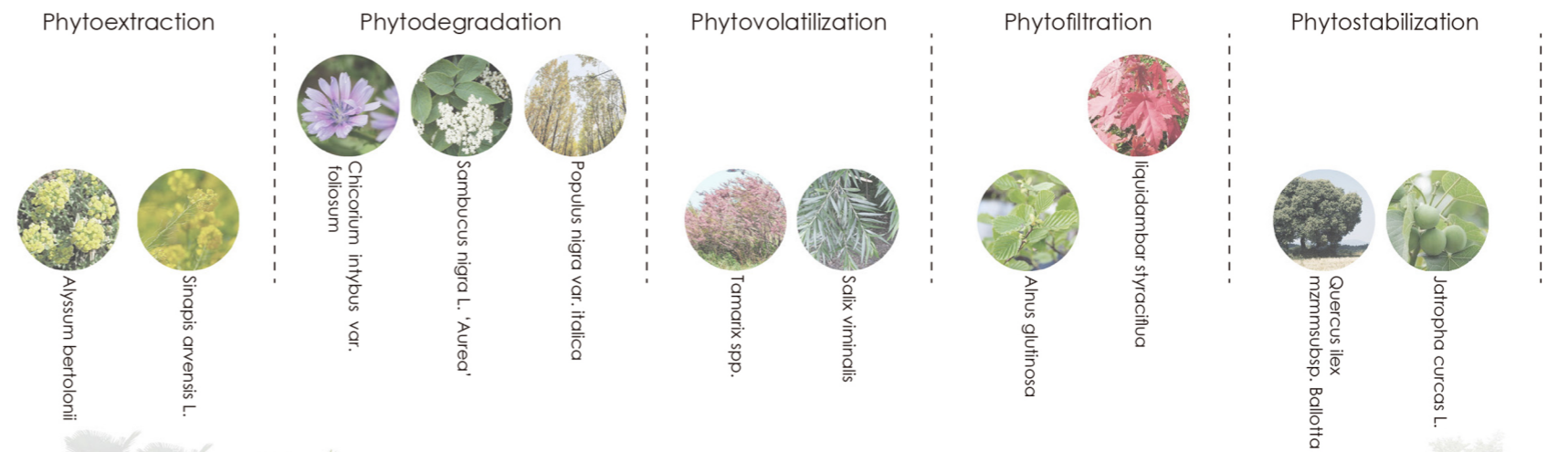
W Windbreak

A Agriculture

T Travel

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PHYTOREMEDIATION

THE SOURCE OF POLLUTION

- Processing Plant
- Industry factory
- Waste landfill
- Agricultural chemical

PAHs MTBE
TCE TNT PCE
DDT

N P
Ni Ar Cd Se
Ca Mg

PLANTING SELECTION

Phytoextraction

- Alyssum bertolonii
- Sinapis arvensis L.

Phytodegradation

- Chicorium intybus var. foliosum
- Sambucus nigra L. 'Aurea'
- Populus nigra var. italica

Phytovolatilization

- Tamarix spp.
- Salix viminalis

Phytofiltration

- Alnus glutinosa
- liquidambar styraciflua

Phytostabilization

- Quercus ilex mzrmmsubsp. Ballotta
- Jatropha curcas L.

PHYTO METHODS

Ni Se P → Ni Se P

Phytoextraction

Phytodegradation
MTBE PAHs PCE

Phytovolatilization
Cd Cu Ar

Phytofiltration
Ni TCE Mg

Phytostabilizc
DDT PCE N

Lower panel

- P Phytoremediation
- AG Agricultural Business
- O Open Space
- Educational support
- Cooperation
- H Historical Street

Ni Ni Ni Ni

Oii Oii Oii

SLUM

URBAN

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