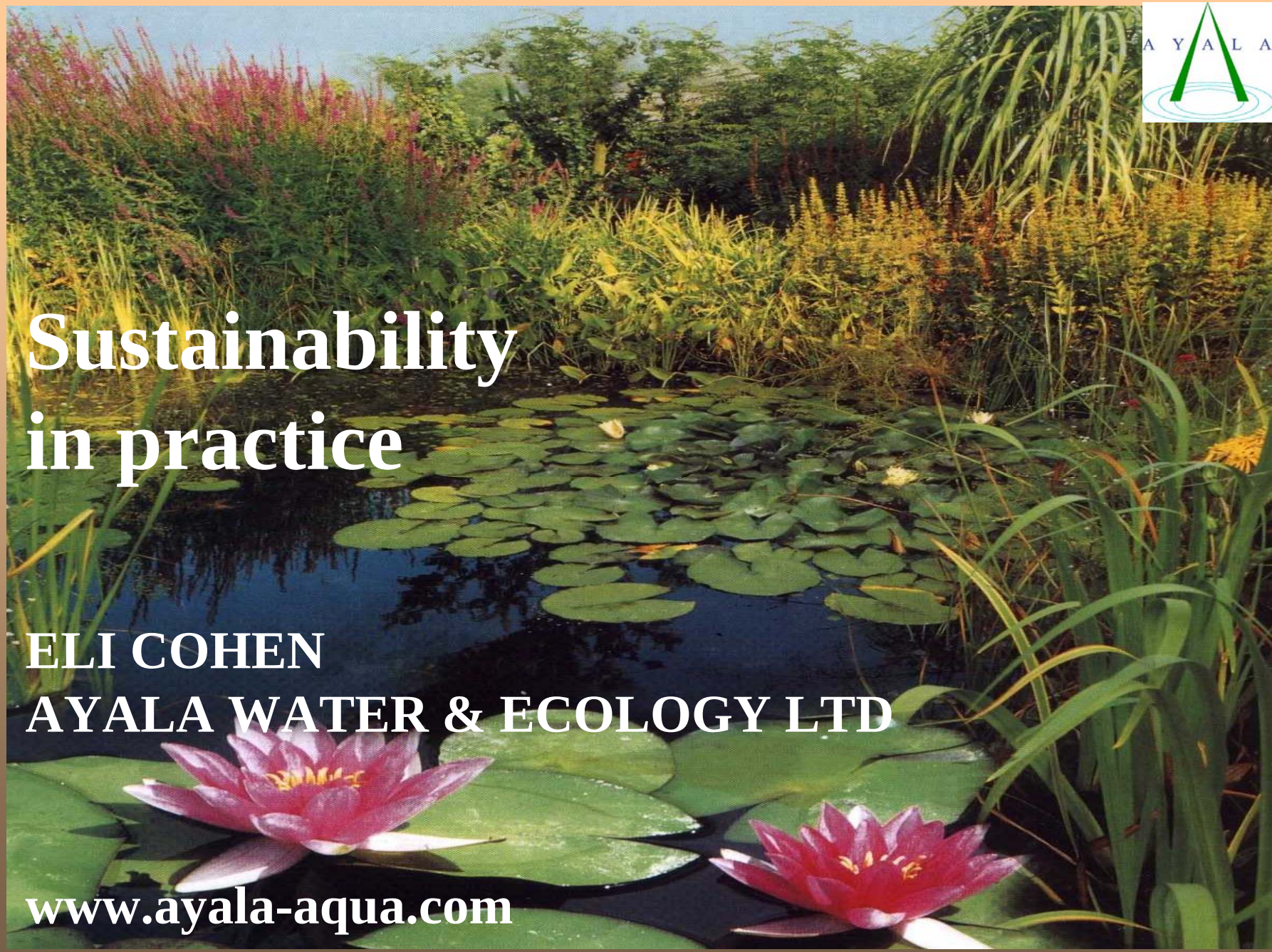


Sustainability in practice

ELI COHEN
AYALA WATER & ECOLOGY LTD

www.ayala-aqua.com

Sustainability =

minimal human and technology involvement

Ecological systems base on two main principles:

Flow of energy

Cycle of materials

Design criteria for sustainable system:

- All materials are degradable
- **Solar energy** is “yet” available and create no side effects
- **Gravity** as moving force
- Healthy environment support healthy **plants** which are a powerful supporters of **microorganisms** communities
- **Poly-cultural** systems are stable and stronger
- System **hydraulics**
- Landscape

Questions regularly asked:

Do natural systems are feasible any where and to any pollution?

Are they economical?

Are they easily marketed and well excepted?

Local on-site small scale applications

Green roofs

- Isolators
- Storm water buffers
- Sewage treatment
- landscape

PUBLIC MALL

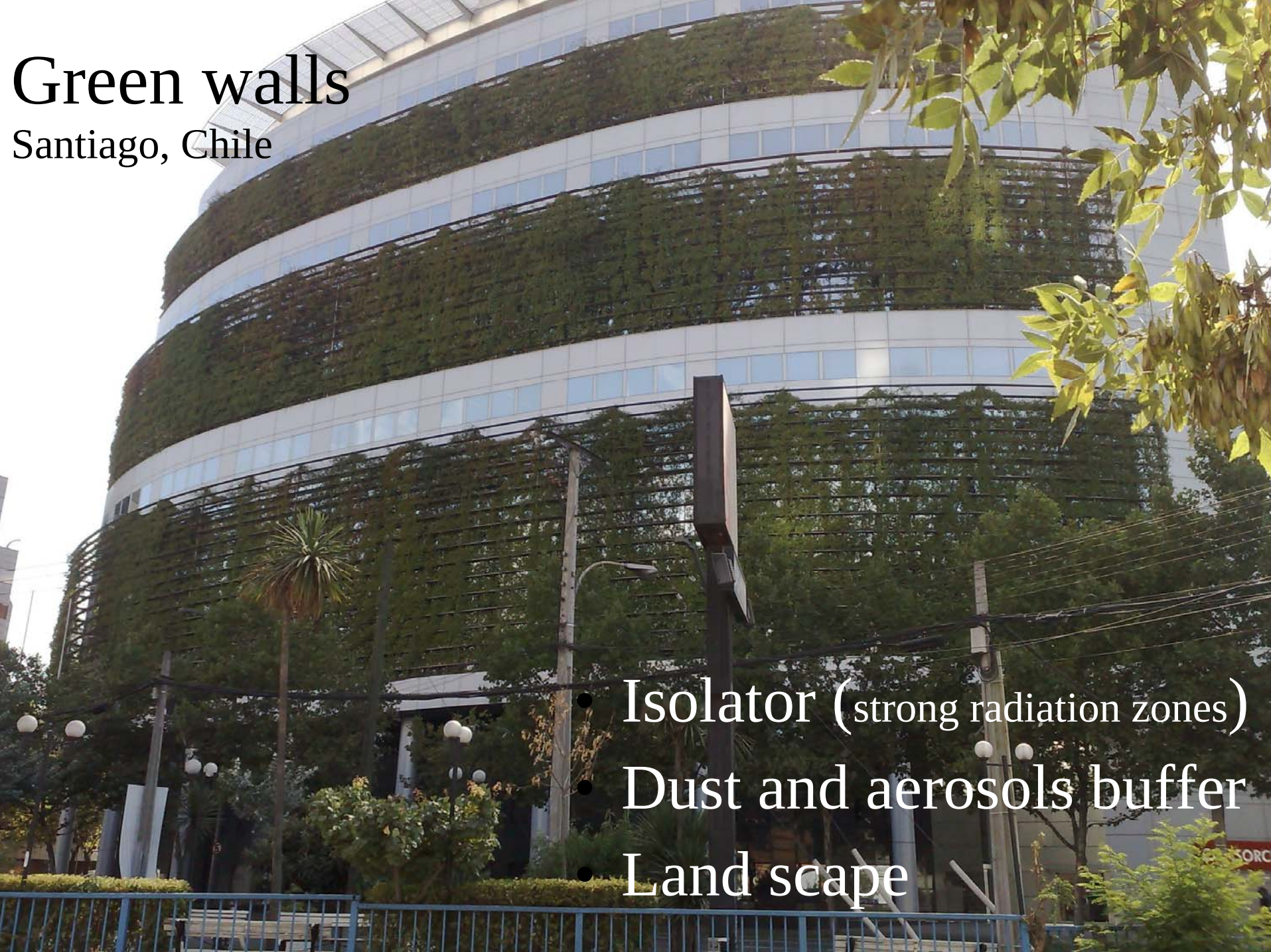
REDEFINING PUBLIC SPACES

AYALA WATER & ECOLOGY

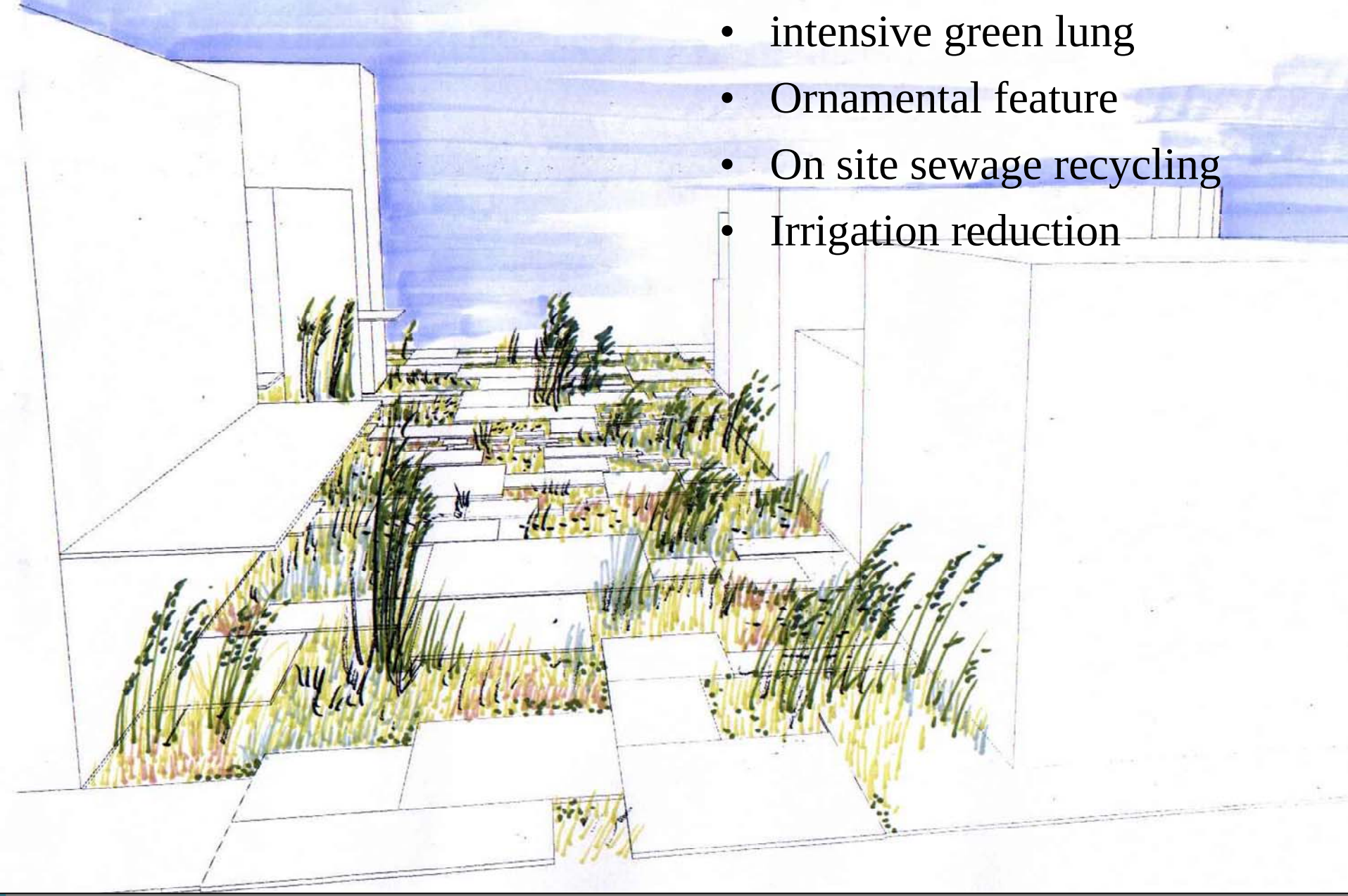
KNAFO KLIMOR ARCHITECTS

Green walls

Santiago, Chile



- Isolator (strong radiation zones)
- Dust and aerosols buffer
- Land scape



- intensive green lung
- Ornamental feature
- On site sewage recycling
- Irrigation reduction

Pedestrian Street & Wetland - View trough Walkway

Grey water CW plant centre of Tel-Aviv

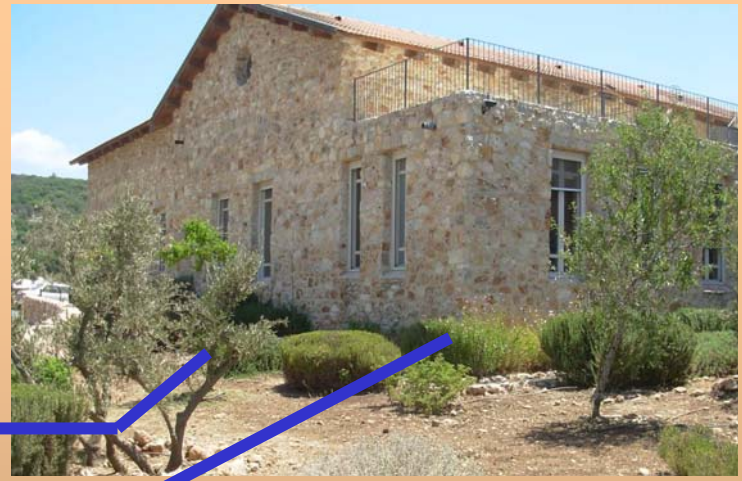
Contaminants:
BOD, COD, fats, detergents, boron, pathogens

Poleg residency – grey water CW

On-site urban sewage recycling

- **Gnei – Tikva, residential – on-site recycling system**

Amphorah – winery & olive mill



Photos by michel mench

Industrial

“AHAVA” cosmetic plant


Industrial
Oil factory
salinated water with high oils residues
3 month old

Industrial

Oil Tanks Depot – Crude oil degradation

Reduction of hydrocarbons from high salinity water (2-3%)

“Hiria” landfill – NBS & visitor center

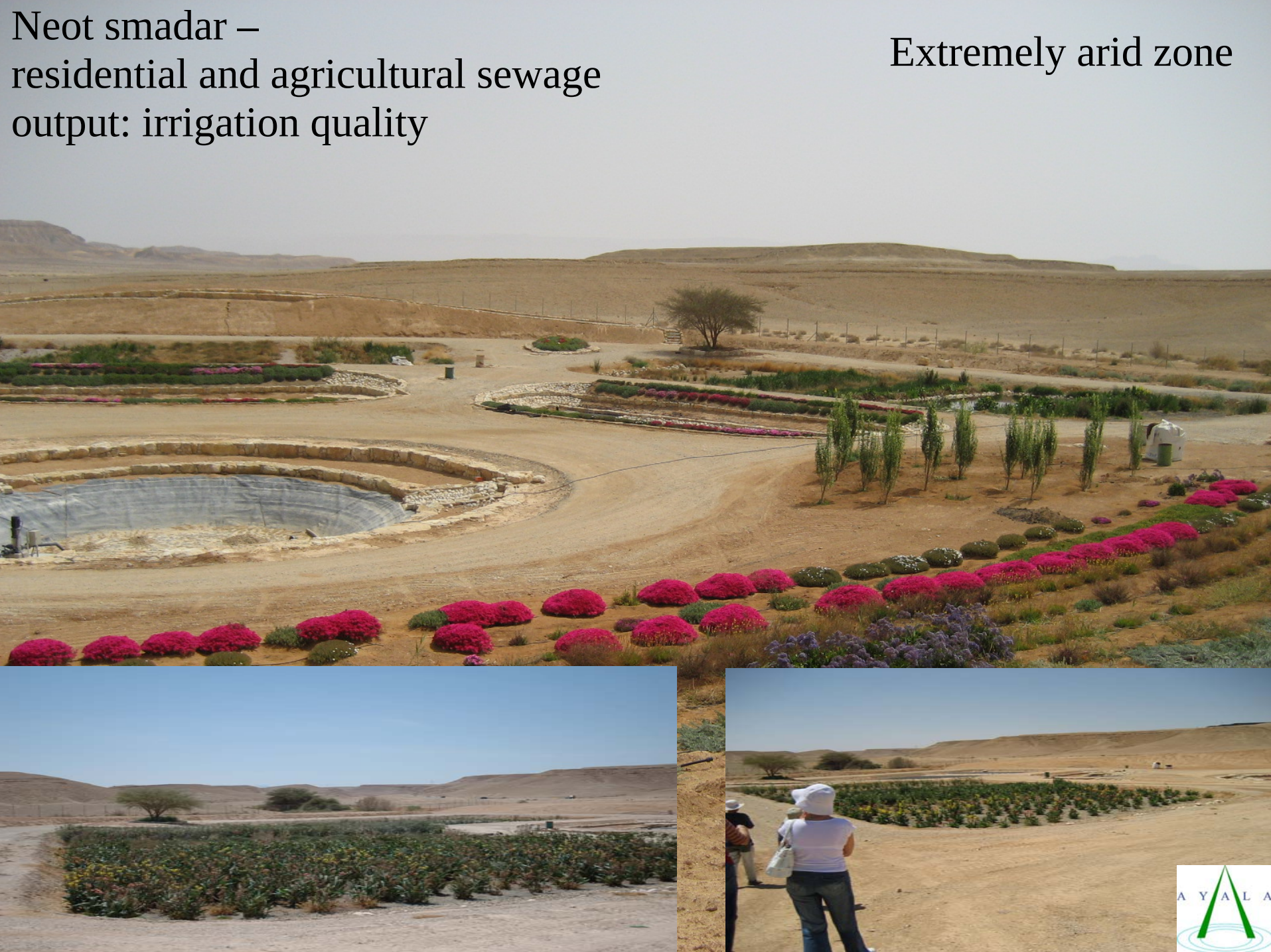
landfill leachate and raw garbage run off

gas stations

sanitary, restaurants, oil spills

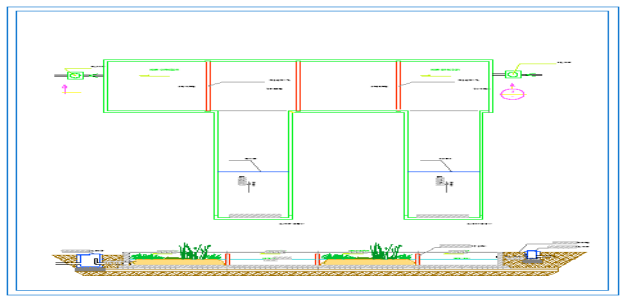
Neot smadar –
residential and agricultural sewage
output: irrigation quality

Extremely arid zone



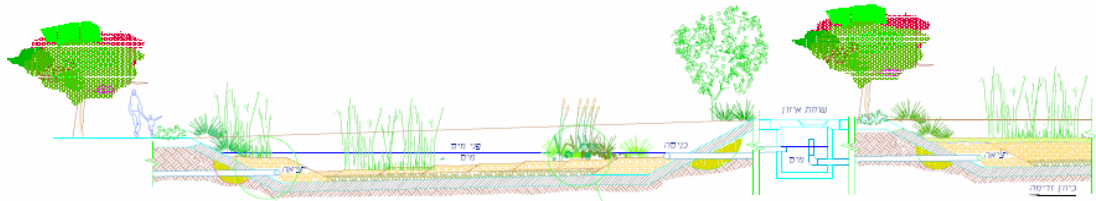
Kibutz Lotan –
Dairy & residential sewage
Extremely Arid zone

Sludge and straw separator

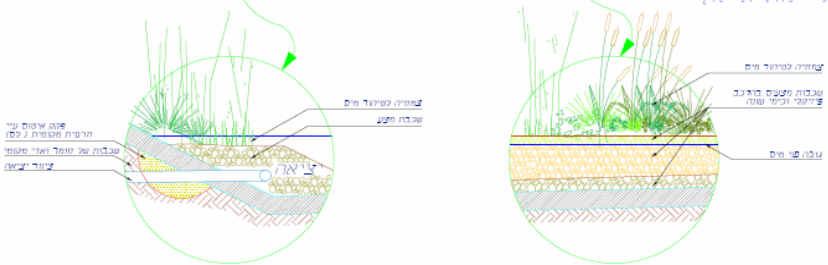


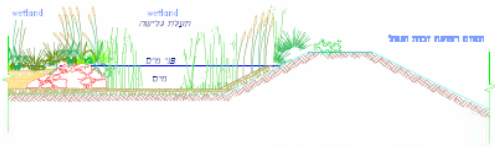
Rivers and lakes rehabilitation
Inside metropolis zone

Ayalon River – on-site water polishing



מערכת טיהור מים צמחית – נחל איילון
חתך אורכי





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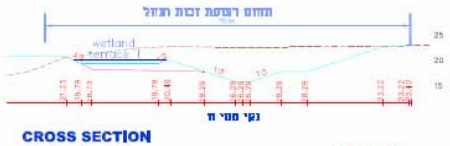
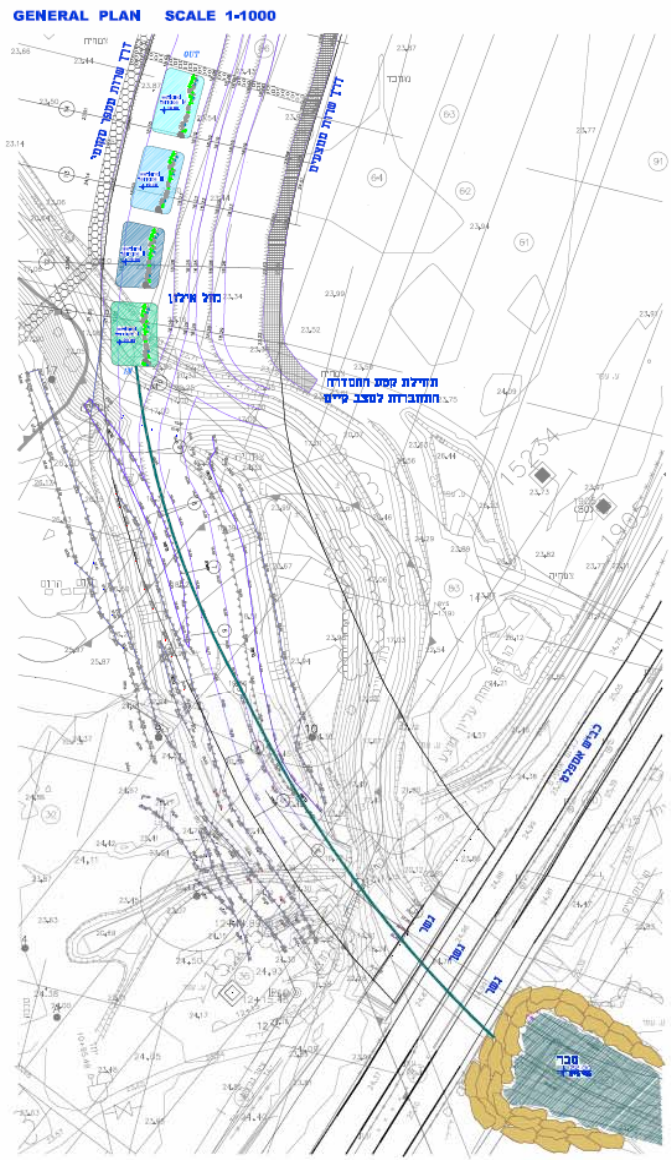
חתך רוחבי



CROSS SECTION
SCALE 1 - 500

OPTION 1

OPTION 2



REV.	DATE	INITIAL	DESCRIPTION

AYALA - WATER & ECOLOGY
ELI COHEN
MOSHAV ZIPPORI
I S R A E L 17910
TEL. 972-77-7008156
FAX. 972-77-7008156
PHYTOTECHNOLOGY APPLICATIONS

Project Title
PARK ARIEL RECYCLING SYSTEM

Drawing Title
SHCEMATIC SYSTEM

Date 2/10/09
Scale 1/1000

Drawing no. 01
Revision 0

R&D

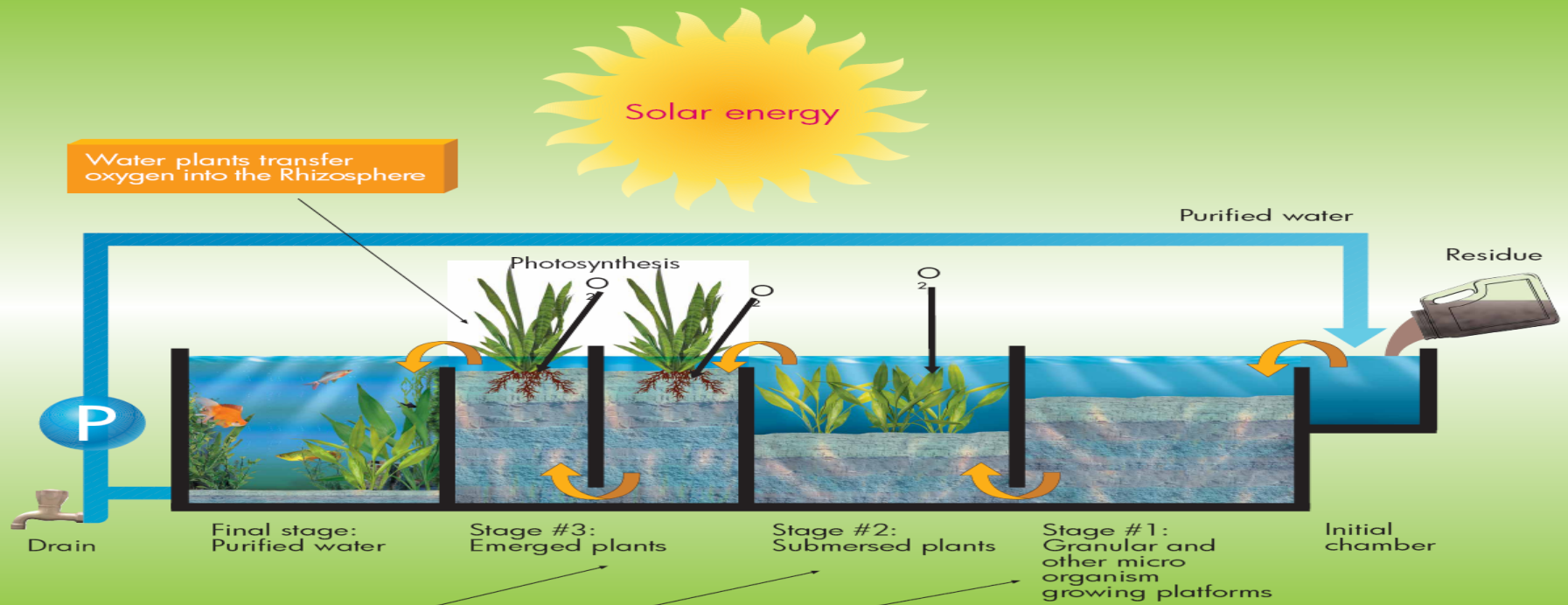
Pharmaceutical residues and hormones reduction

R&D constructed wetland system financed by the Italian Government

A peek into the future:

Experimental project for handling organic residues from the ink manufacturing process, using a phyto-bioremediation technique

Adapting Nature's own proven techniques for recycling organic materials



A saturated oxygen environment accelerates the aerobic processes and aids the development of thousands of types of microorganisms

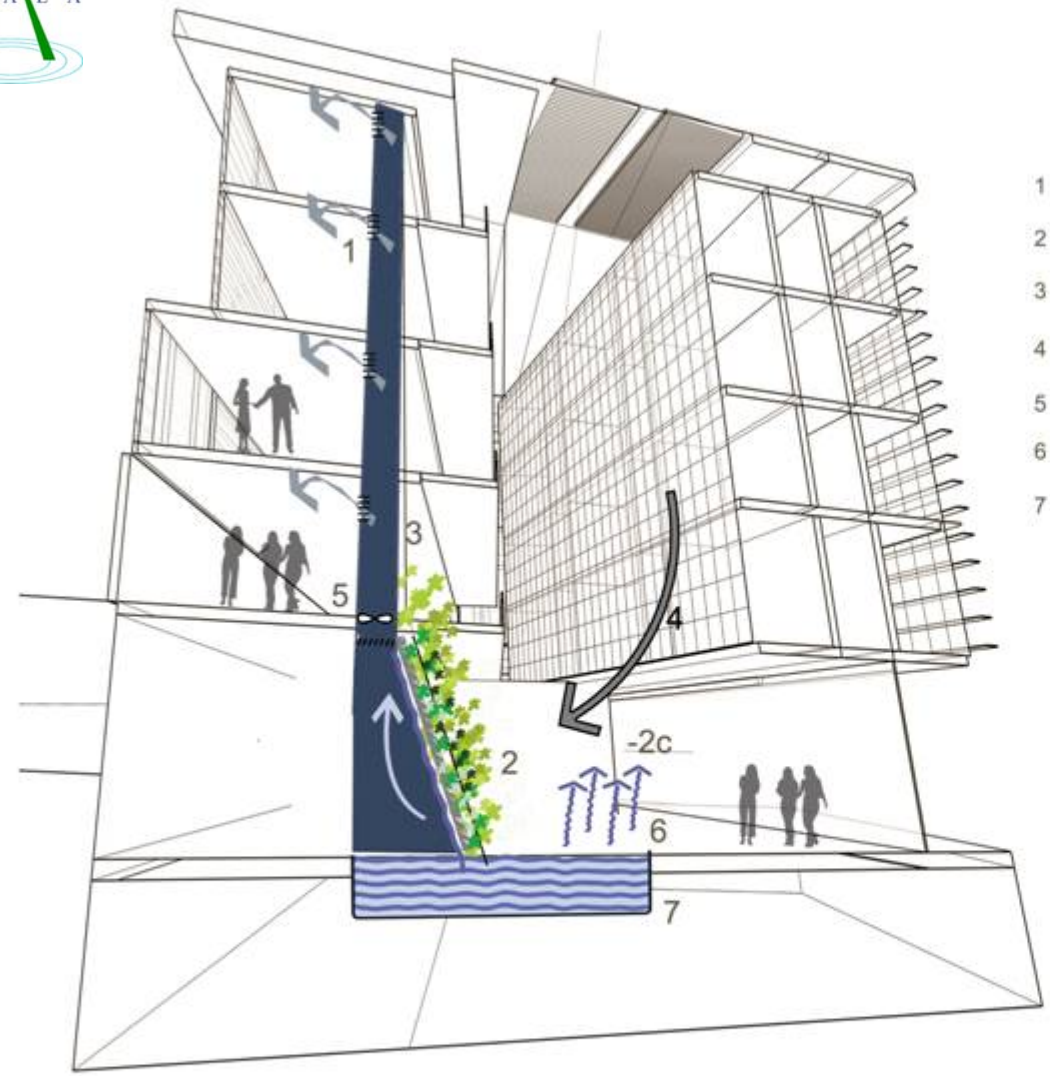
Microorganisms digest the organic byproducts, producing materials that can be used by the plants

NBS – The Natural Biological System developed by AYALA Water & Ecology Ltd. uses natural, biotic and a-biotic components to purify diverse types of organic & inorganic materials

AYALA

Hp experiment – sludge treatment

Pigments and Hydrocarbons



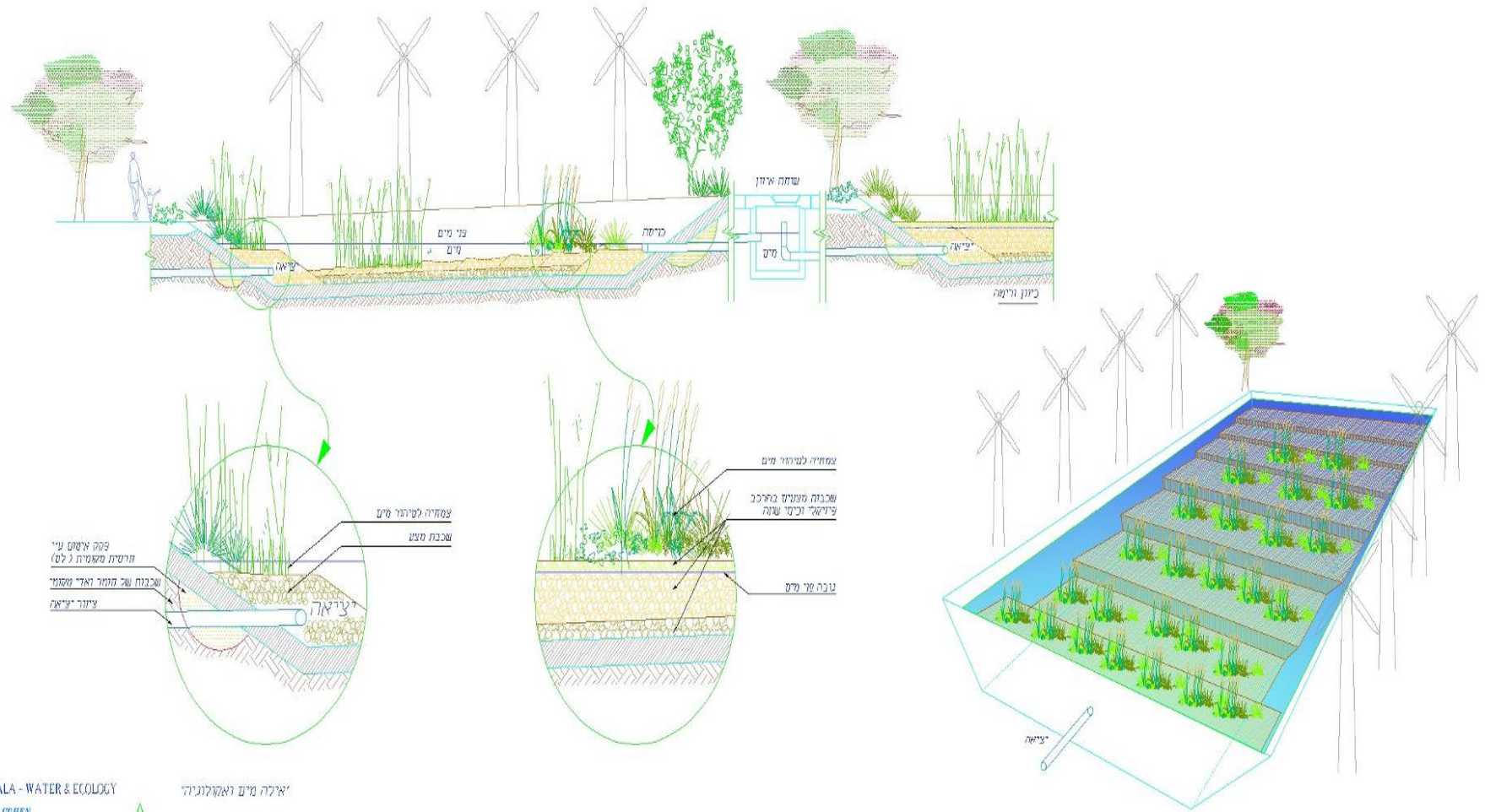
1 ■ ventilation shaft
2 ■ green curtain
3 ■ water curtain
4 ■ polluted air
purified air
5 ■ fan
6 ■ humidity
7 ■ pool

View from the atrium

Air purification diagram

Hybrid systems

alternative energy: wind mills



מערכת טיהור מים צמחית - מט"ש קצרין

AYALA - WATER & ECOLOGY
אילה מים ואקולוגיה
ELI COHEN
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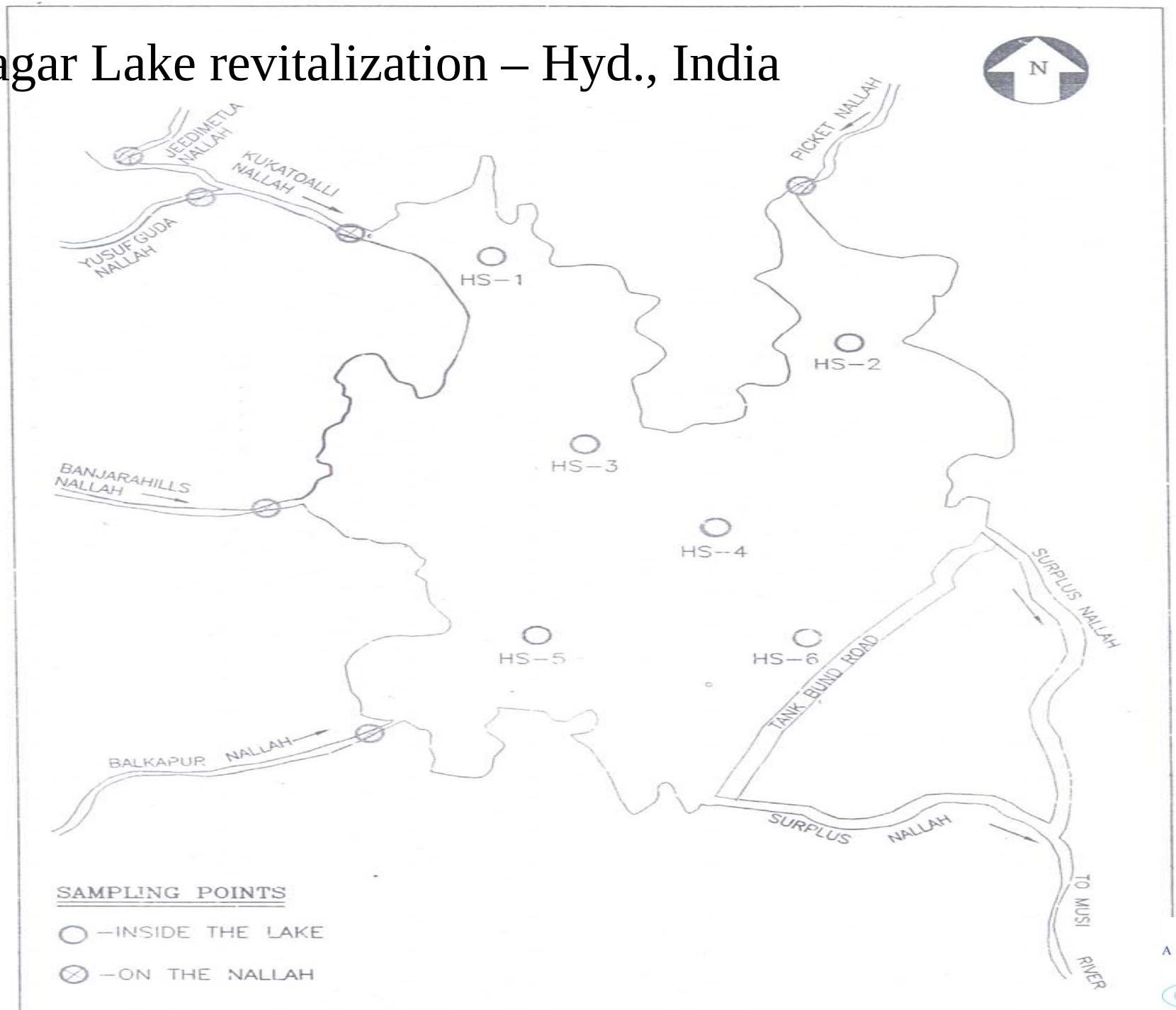
PHYTOTECHNOLOGY APPLICATIONS

Sustainable solutions – on the Macro

Hyderabad metropolis
on-site sustainable solution

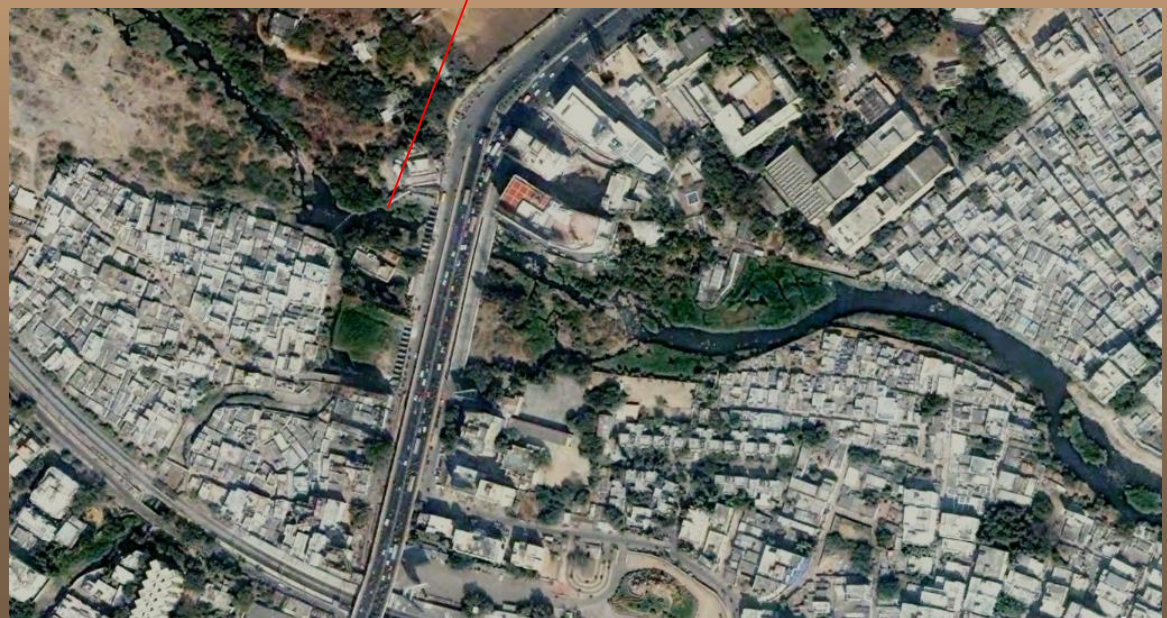
Sagar Lake revitalization – Hyd., India



Effluent pipes , Metal ,Paints & Plastic Industries

Metal Industry, powder coatings and Paints discharging into nala

Nala Flow at Begumpet



KUKATPALLY NALLA

Bypass

Bypass

Bypass

KUKATPALLY NALLA

Wetland Bypass

KUKATPALLY NALLA

FATHE NAGAR

Bypass

DAM

PUBLIC SCHOOL

BEGUMPET ROAD

VARUN MOTORS

Bypass

wetland I

wetland II

wetland III

Dam

Monson over Flow

section width B-B

NECKLACE ROAD

SANJIVAIAH PARK

wetland

HUSAIN SAGAR LAKE

Lake wetland section

WATER LEVEL

section width A-A

BUDDHA STATUE

wetland

wetland

BALKAPUR NALLA

AYALA - WATER & ECOLOGY
"thkv nho uteukudhv"
ELI COHEN
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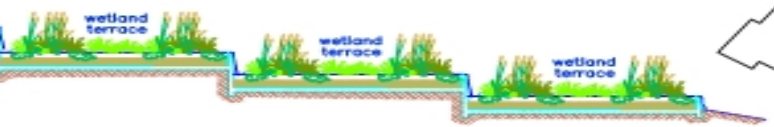
PHYTOTECHNOLOGY APPLICATIONS

Potential locations for on-site treatment

and section



th A–A

Design and work principles:

- Locating sources of pollutions and treatment on-site
- Survey and construction is being done by local professionals
- Using local sediments and plants
- Using local labor as much as possible
- Minimal use of electricity
- Recycling of non-degradable elements

Plaine du Var & town of Nice project

West8 architects, Rotterdam - leading office

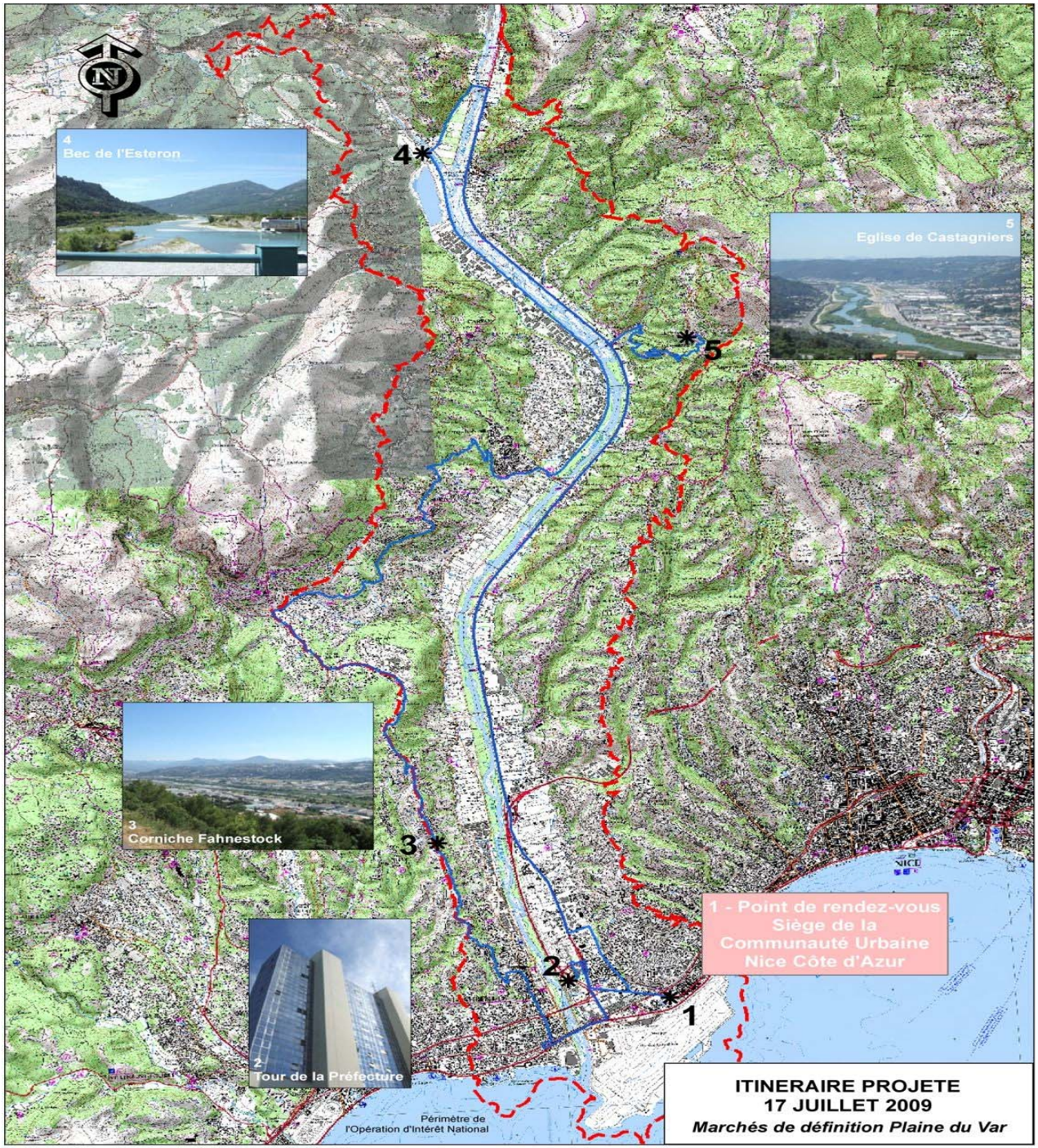
Main issues to be confront by designing team:

- Flooding hazards
- Contamination of the upper and lower level aquifers
- Rehabilitating the Mediterranean nature of the valley
- Preserving wild life and vegetation
- The concept should be based on sustainability approach which means using as much as possible only natural solutions

Design concept:

On-site sustainable solutions:

- Storm & surface water buffers
- Water harvesting and infiltration to upper aquifer
- On-site sewage treatment as part of parks and landscape
- Redesign of river bed,

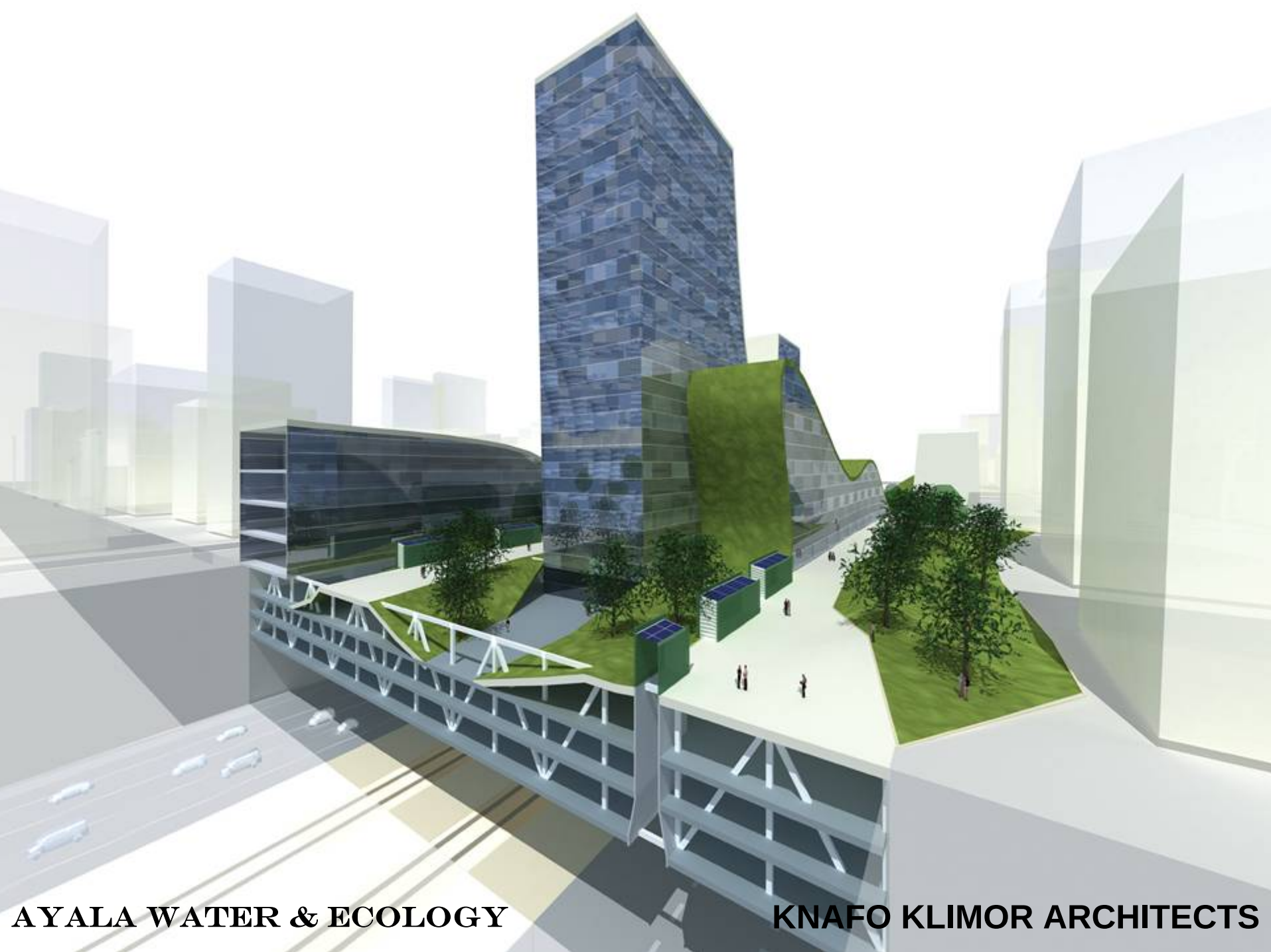

4
Bec de l'Esteron
5
Eglise de Castagniers
3
Corniche Fahnestock
2
Tour de la Préfecture
4*
*5
3*
2*
*1
1 - Point de rendez-vous
Siège de la
Communauté Urbaine
Nice Côte d'Azur
Périmètre de
l'Opération d'Intérêt National
ITINERAIRE PROJETE
17 JUILLET 2009
Marchés de définition Plaine du Var

HIGHWAY HABITAT

REDEFINING HIGHWAY SPACES

AYALA WATER & ECOLOGY

KNAFO KLIMOR ARCHITECTS



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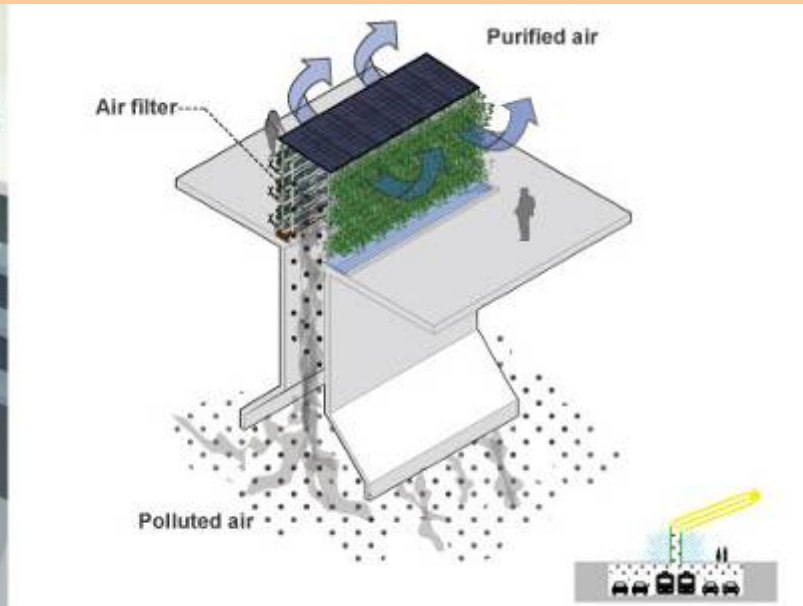

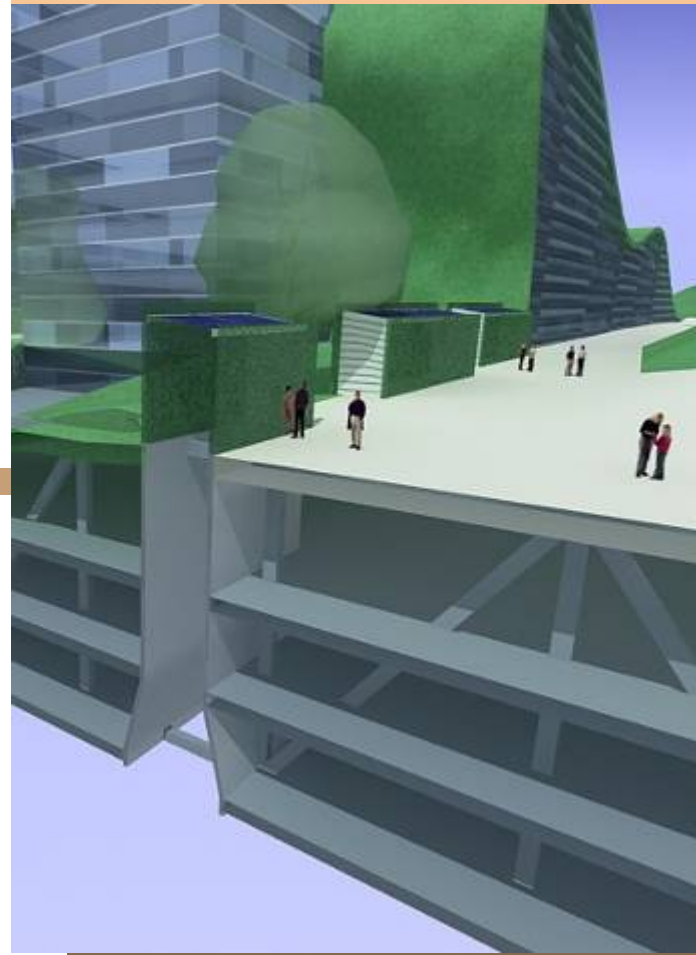

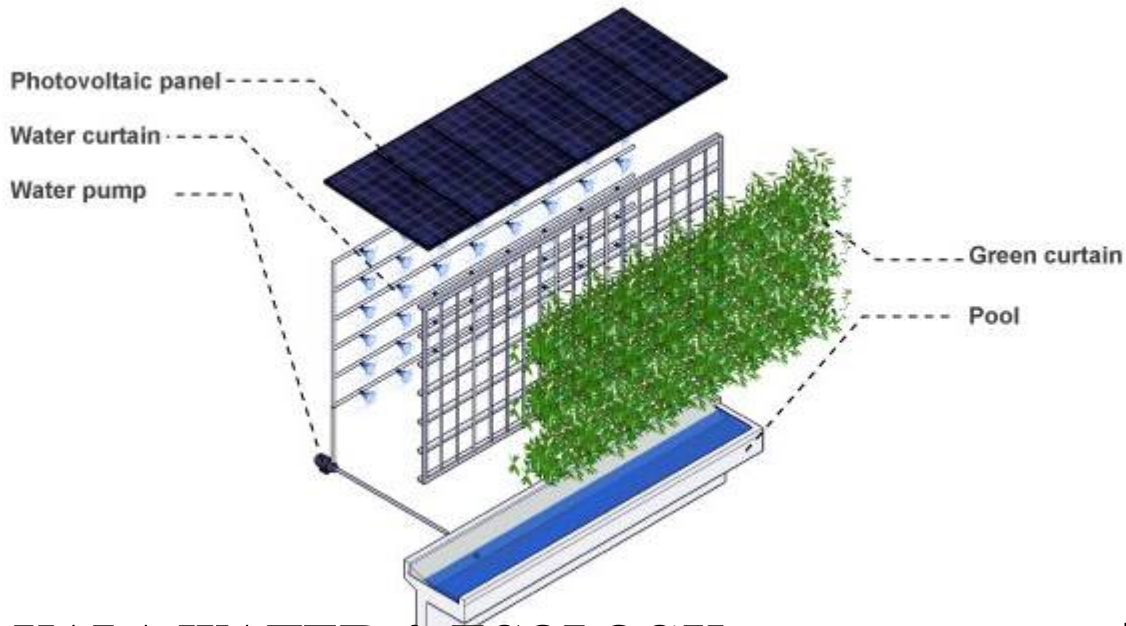

AYALA WATER & ECOLOGY

KNAFO KLIMOR ARCHITECTS

Sustainability –

design with nature

inevitable approach for healthier environment

Thank You