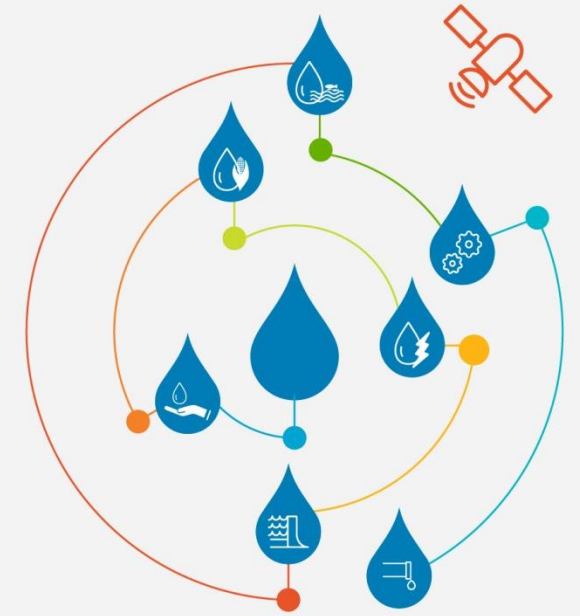


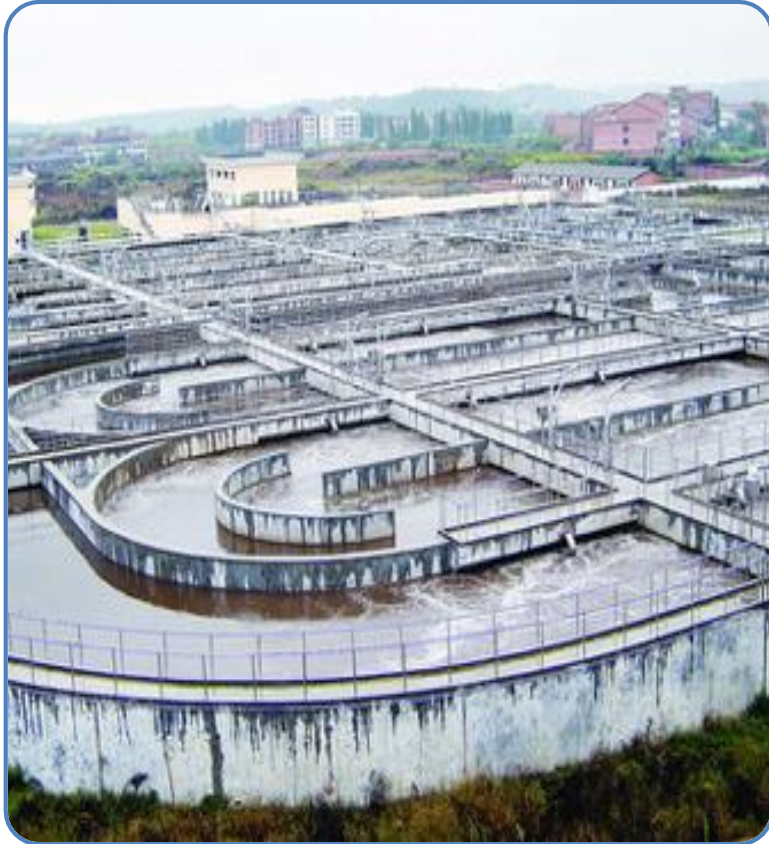
Innovative Wastewater Infrastructure for Sustainable Communities



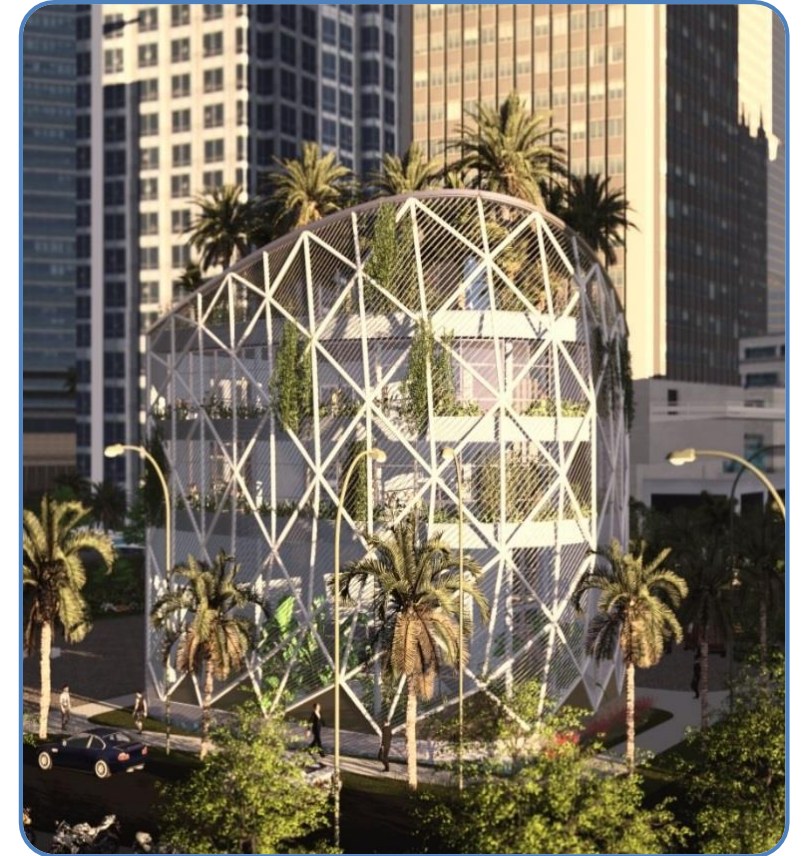
Akhil Barar
Organica Water Inc.
October 2, 2018

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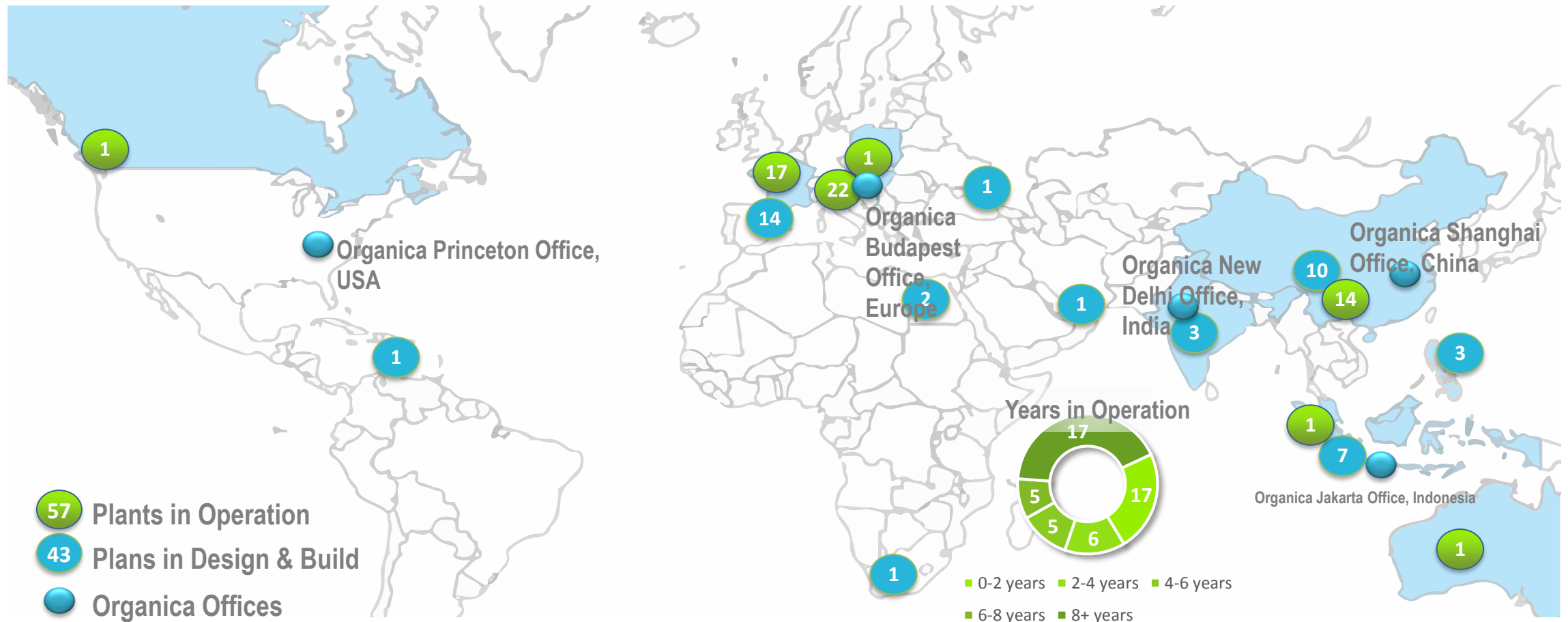
How to make LOCALIZED wastewater treatment and reuse viable:



Compact System
+
Odorless
+
Efficient
+
Aesthetic



A Proven Solution: 100 Plants Operating or Under Construction Treating >780,000 m³/d



Organica Biomodule and Food Chain Reactor (FCR) process

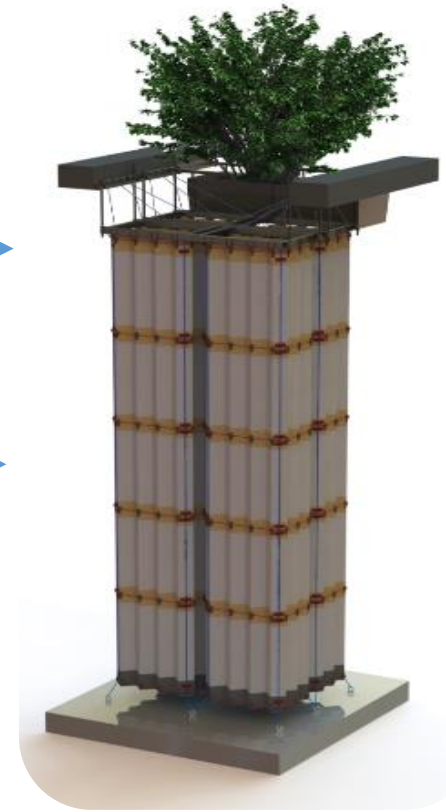
Walkway and plant supporting rack

Plants on the supporting mesh

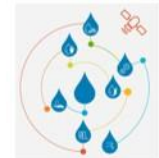
Fine bubble aeration

Root zone (1.5m) as fixed film carrier

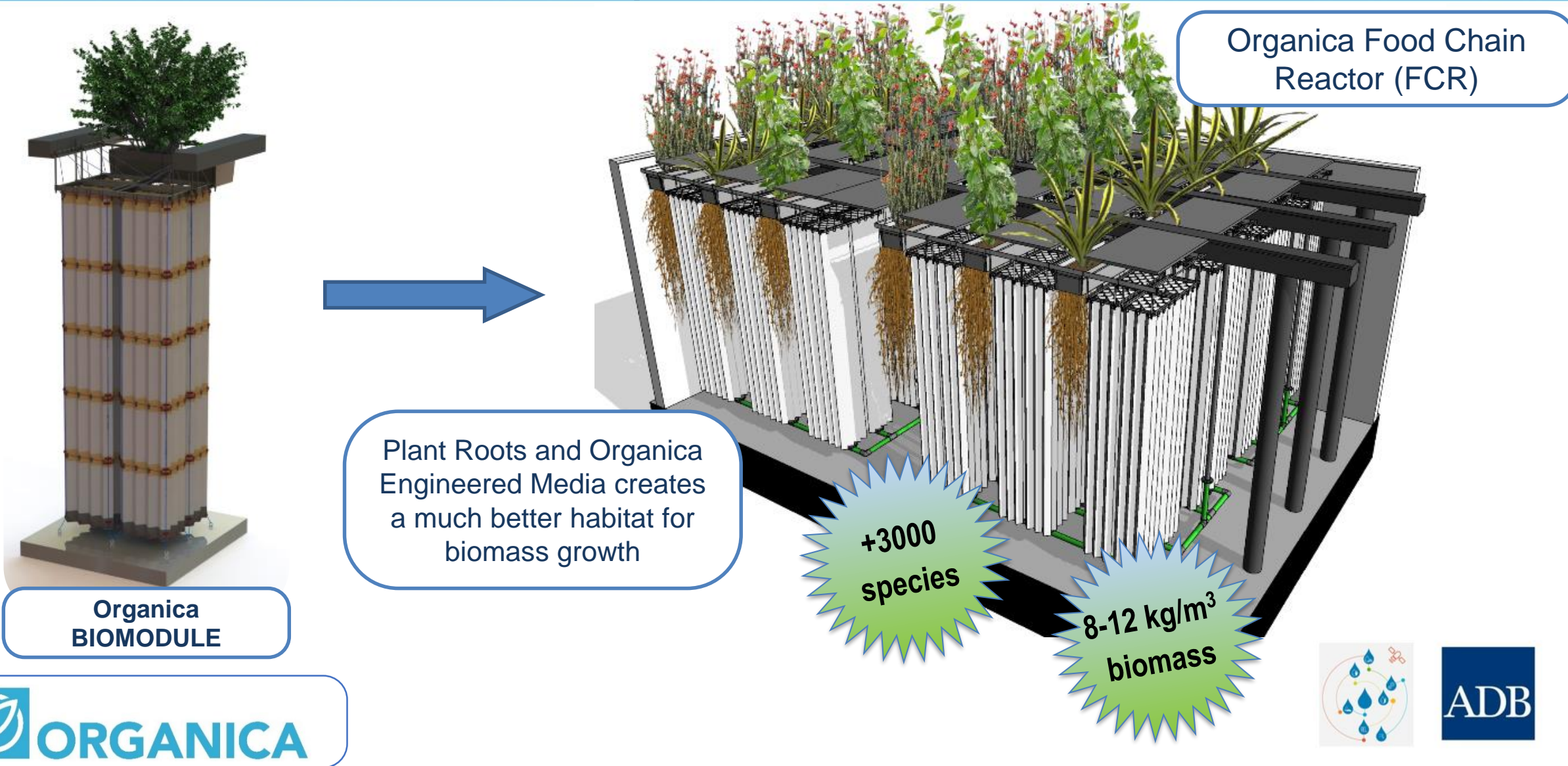
Artificial supporting media as fixed film carrier



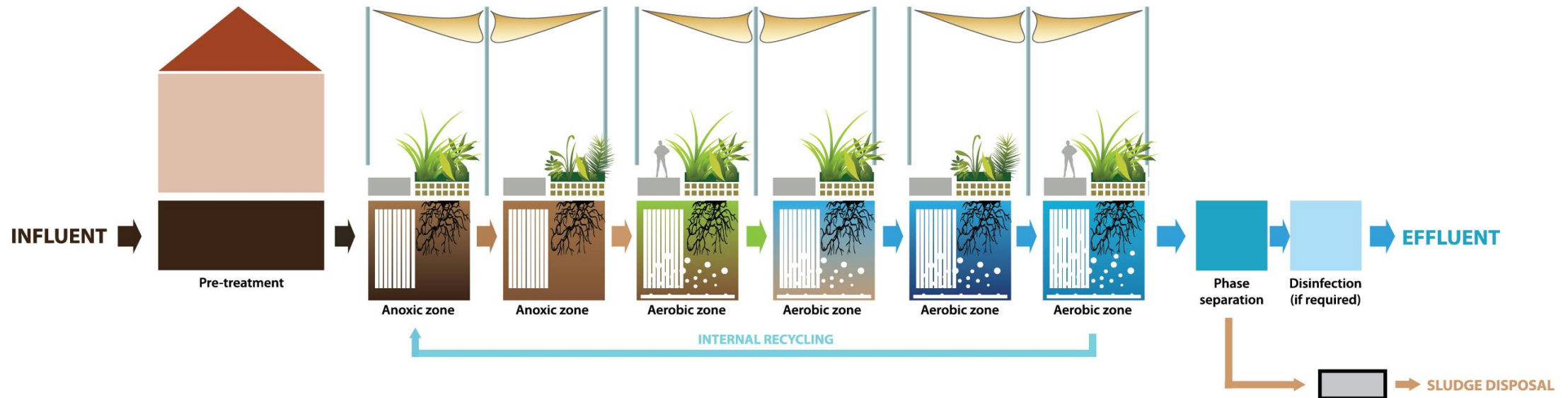
**Organica
BIOMODULE**



Organica Biomodule and Food Chain Reactor (FCR) process



Organica FCR (Food Chain Reactor) arrangement



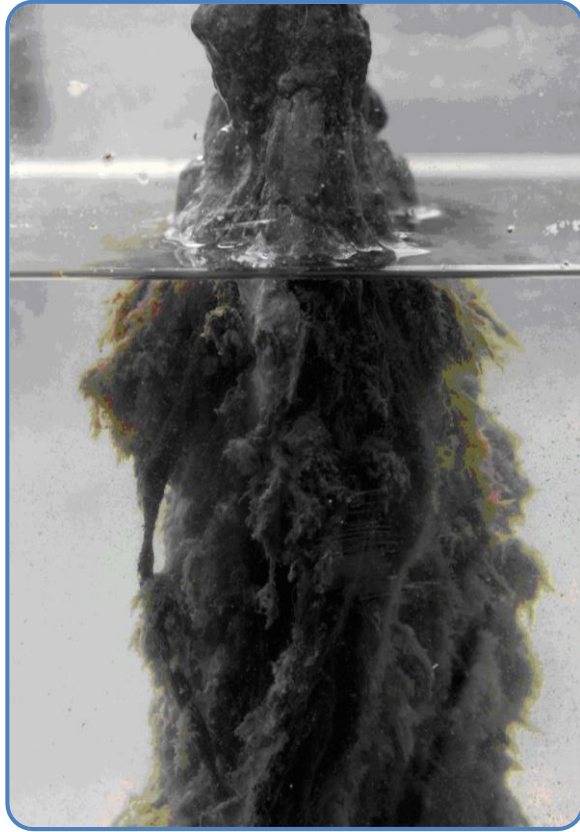
- ❑ The biological process takes place in a series of cascade reactors, with standard pretreatment at the beginning, and phase separation (via Organica Disc Filters or Secondary Clarifiers) and final polishing at the end (if required).
- ❑ As water flows through from one reactor zone to the next, different ecologies will grow and adapt to the conditions in each stage. This configuration allows the “food chain effect” to develop, as higher level organisms become predators for the simpler organisms.
- ❑ The result is enhanced removal efficiency and resiliency, while utilizing less energy and producing less sludge.

More biomass → Smaller Reactors → Less footprint → Lower Total CAPEX



- ❑ Attached biomass in Organica Biomodule is equivalent to 8 – 12 kg/m³ of biomass (in AS the concentration is 3 to 4 kg/m³).
- ❑ A higher concentration and more specialized biomass allows treating the **same wastewater** flow in **less reactor volume**.
- ❑ FCR reactors are typically 30% - 40% smaller than conventional activated sludge reactors for the same capacity.

OPEX savings due to extremely efficient aeration in the reactor



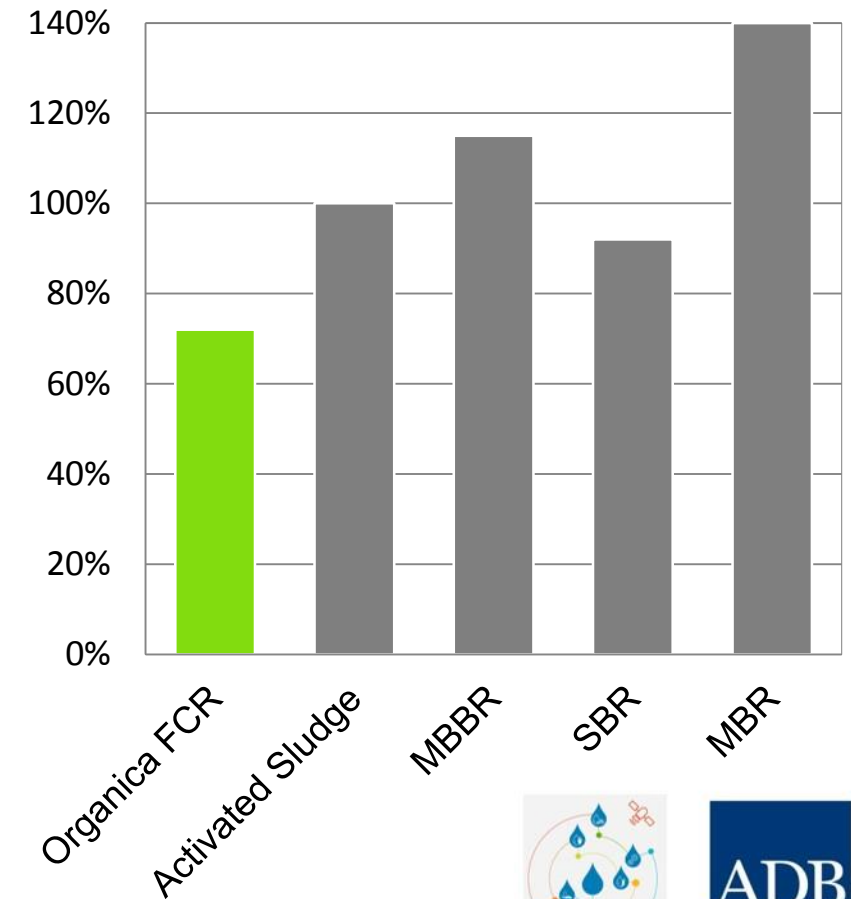
Organica FCR: attached biofilm
No biomass in suspension (MLSS) in the reactor

Suspended solids concentration in the Organica FCR reactor → 200 – 300 mg/l

therefore:

Oxygen transfer efficiency (alpha-factor) in Organica FCR reactors is extremely high (0,90 – 0,95)

Relative energy consumption in Organica FCR
relative to other technologies



Organica Water : Unique Differentiators



Up to 60% footprint savings
Up to 30% OPEX savings
Digital Monitoring and Efficiency
Botanical Garden Look & Feel
Odorless installations



Localized Wastewater Treatment: Industrial Park

45 MLD -> Bekasi, Indonesia

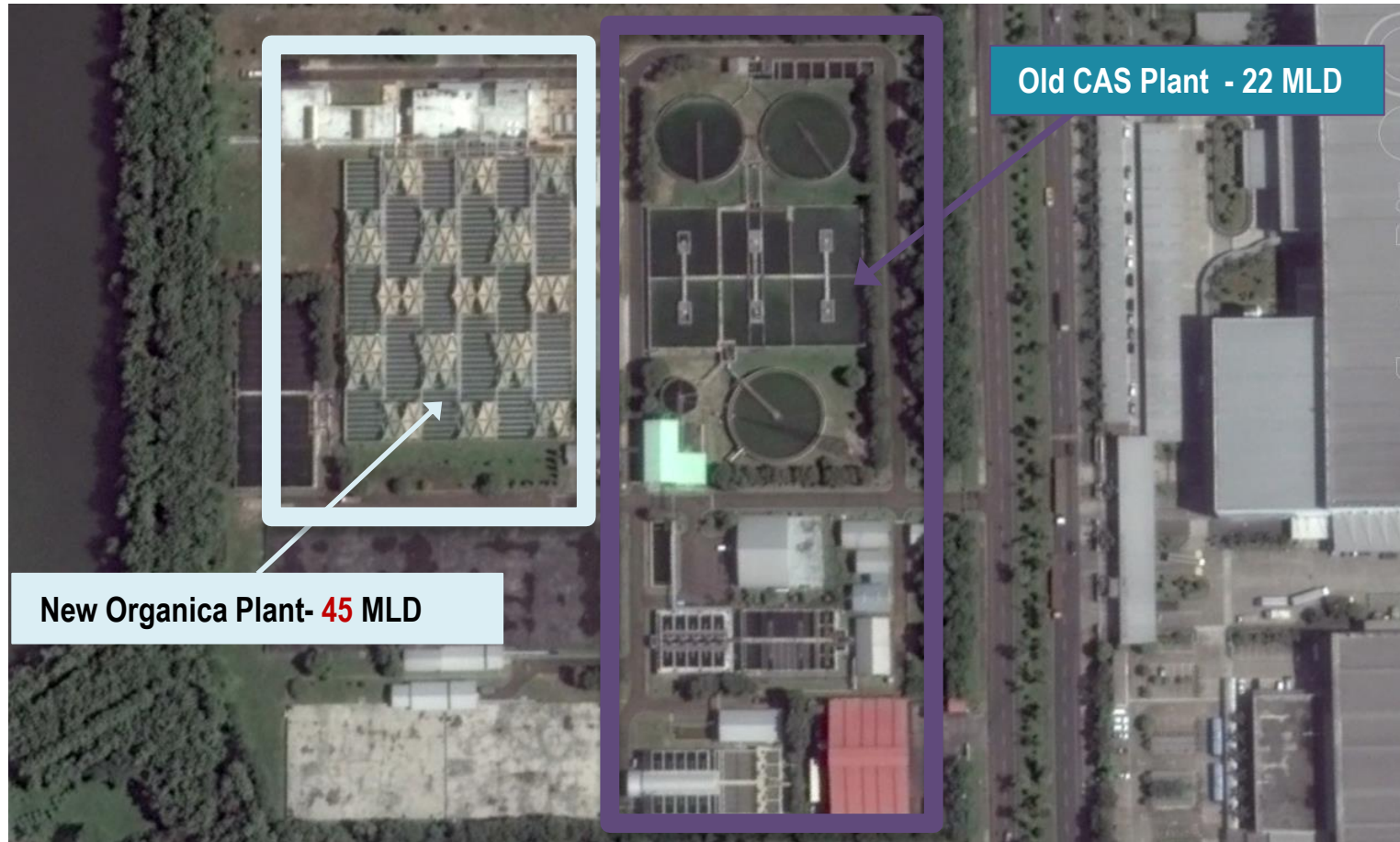
Project:	Industrial Estate WWTP; design, build
Population Served:	200 000 PE
Project Type:	Greenfield
Contract Award:	March 2013
Hydraulic capacity:	45 000 m ³ /day
Design Completion:	October 2013
Construction Begins:	January 2014
Commissioned:	November 2015

Parameter	Influent Average (mg/L)	Effluent/Limit (mg/L)
COD	1000	50
BOD	500	25
NH ₃ -N	-	1
TKN	47	-
NO ₂ -N	-	1
NO ₃ -N	-	20
TSS	220	50
Water temp.	23°C min.	31°C max.



Localized Wastewater Treatment: Industrial Park

45 MLD -> Bekasi, Indonesia



The largest industrial park in Indonesia needed to double wwtp treatment capacity while preserving land value.

The Organica plant has **2x CAPACITY WHILE OCCUPYING 50% OF THE LAND**. The solution allows the developer to sell the land adjacent to Organica plant including the plot occupied by the old CAS plant.



Residential areas closer than 50 m, Hainan, China

Capacity: 7.000 m³/day, enabling direct reuse

Organica plant in the middle of the traffic circle

