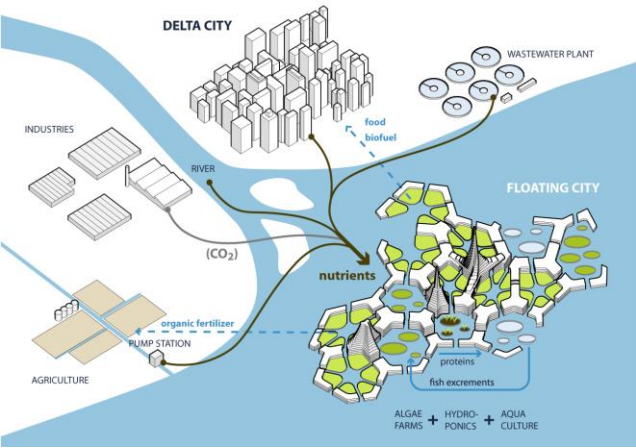


BLUEREVOLUTION

Potential of floating urbanization and food production for coastal/delta cities



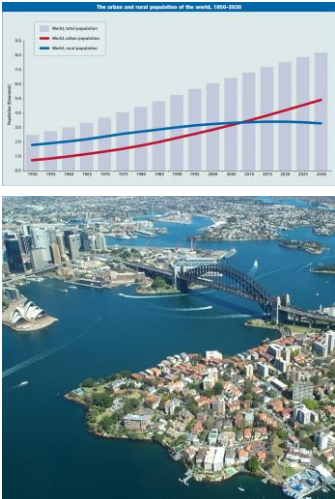
Bart Roeffen

Deltas in Times of
Climate Change II

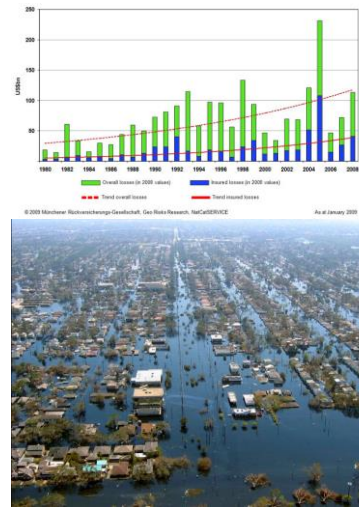
26 09 2014

Urban challenges of the 21st century

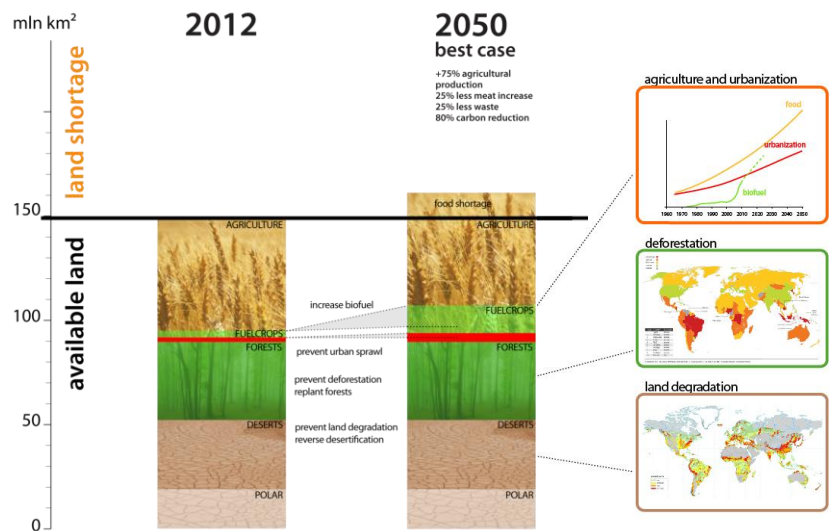
Urbanization



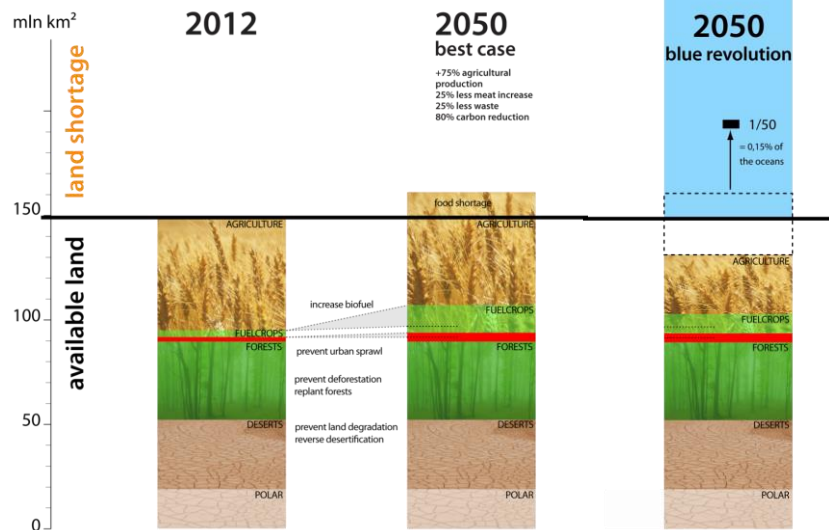
Flood risk / Climate change



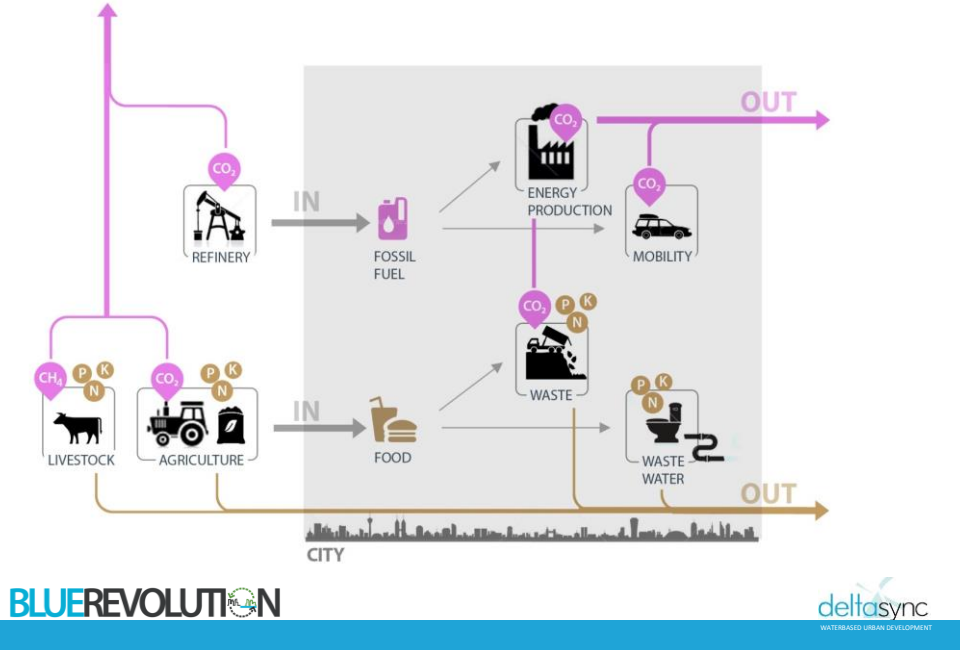
Global risk of land scarcity



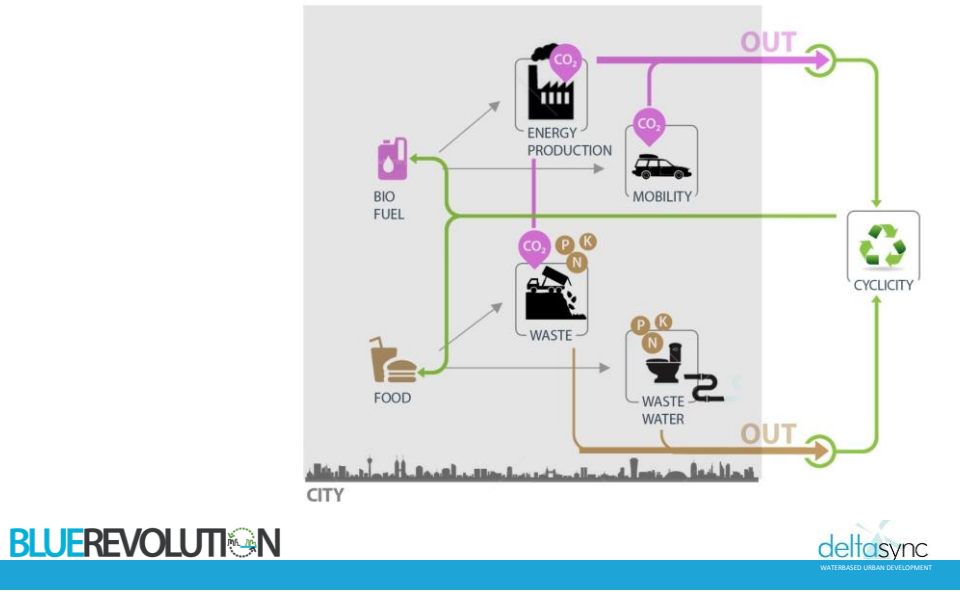
Blue Revolution alternative

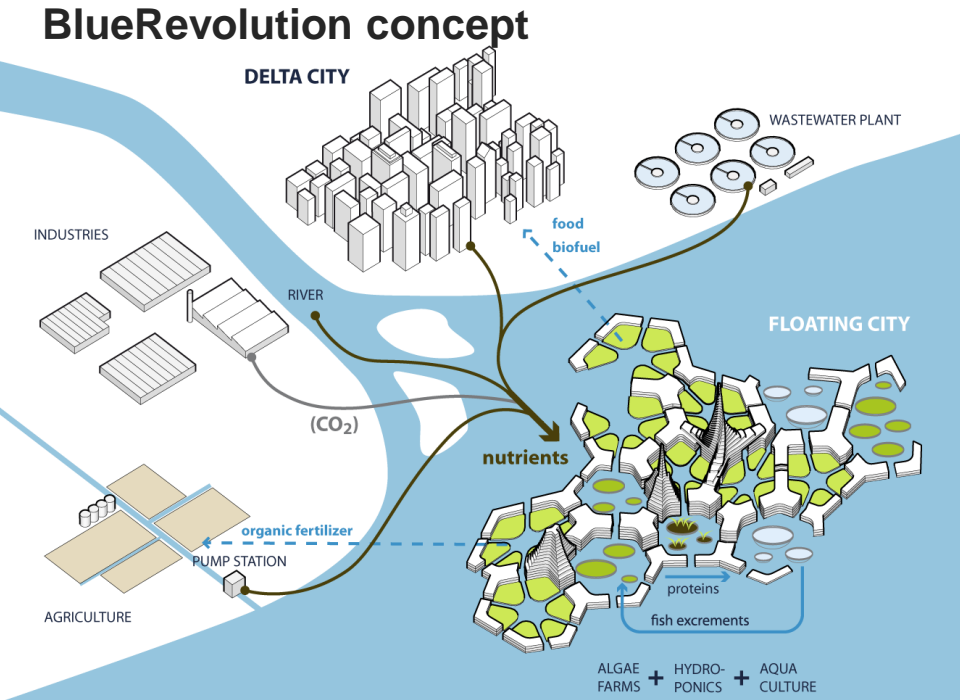


Urban Metabolism | CONVENTIONAL



Urban Metabolism | CYCLICAL





Case Study | Rotterdam

Rotterdam challenges | CLIMATE CHANGE



**FLOOD
RISK**



WATER SQUARE source: fastcoexist.com



GREEN ROOFS source: Erasmus MC

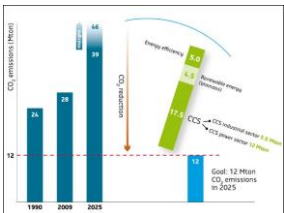


FLOATING EXPANSION

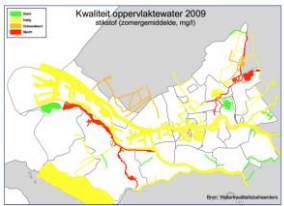
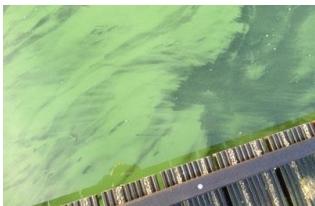
BLUEREVOLUTION

deltasync
WATER-RELATED URBAN DEVELOPMENT

Rotterdam challenges | EMISSIONS



**CO₂
EMISSIONS**



**NUTRIENT
EMISSIONS**

BLUEREVOLUTION

deltasync
WATER-RELATED URBAN DEVELOPMENT

Rotterdam challenges | SUMMARIZED

TOO MUCH
WATER

TOO MANY
NUTRIENTS

TOO MUCH
CO₂



Rotterdam challenges | SUMMARIZED

TOO MUCH
WATER

TOO MANY
NUTRIENTS

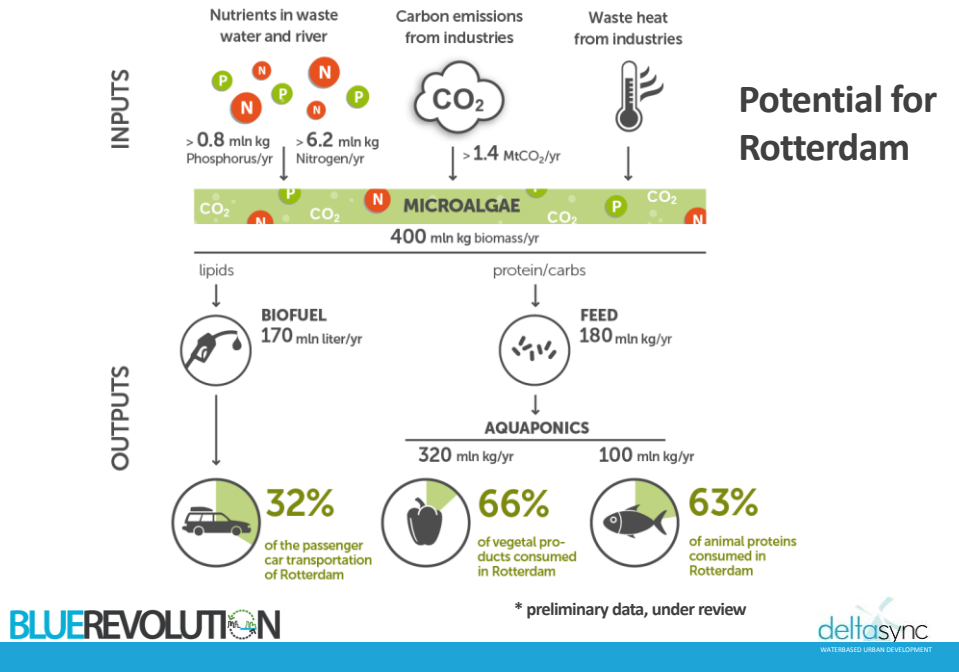
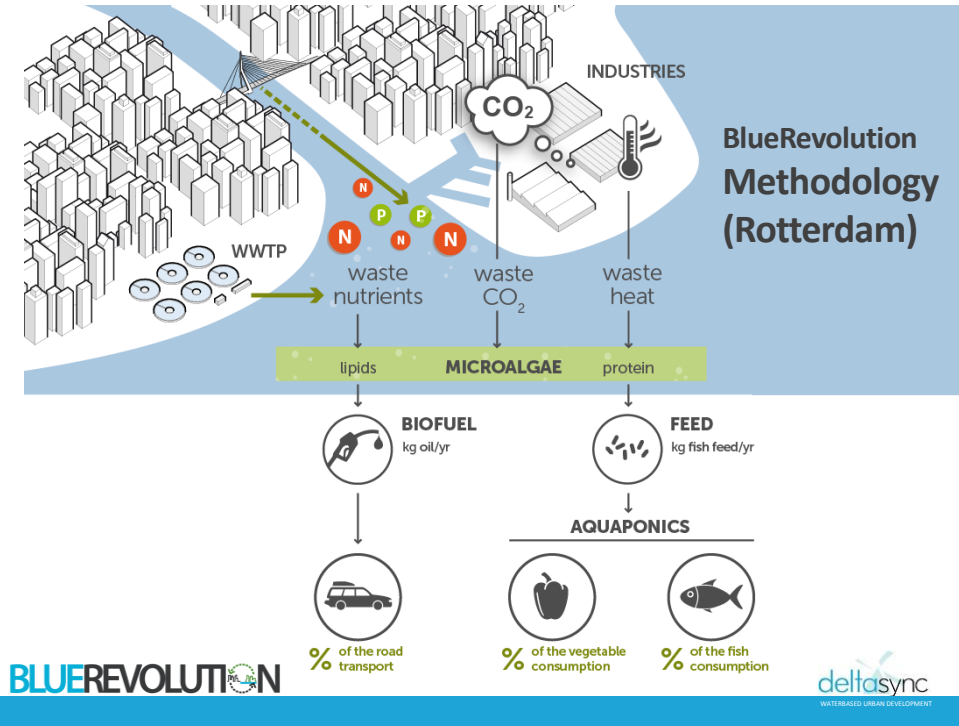
TOO MUCH
CO₂

BASICALLY THE
REQUIREMENTS
OF A PLANT

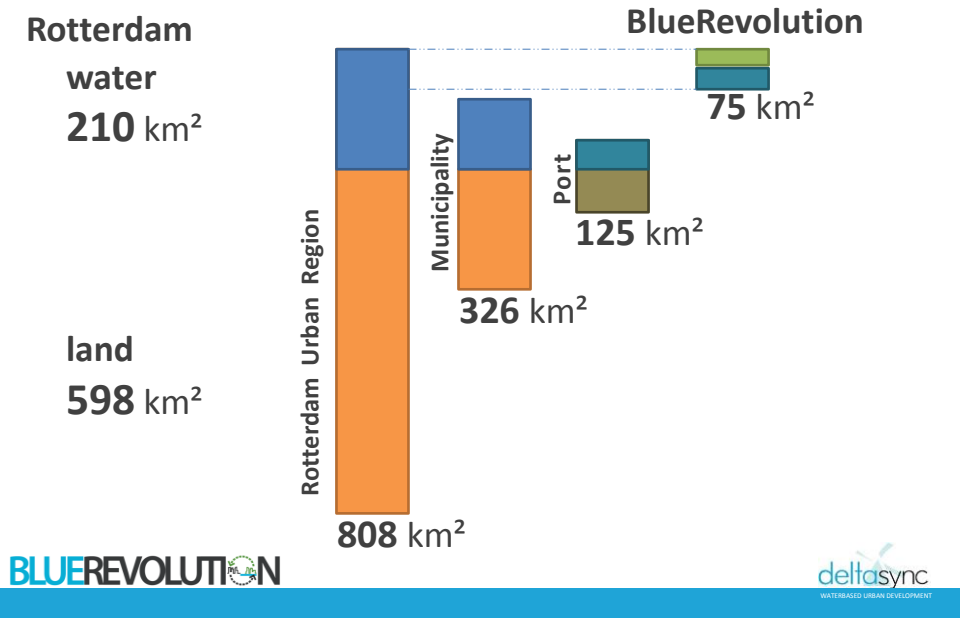
A photograph of a small green seedling with four leaves growing out of a mound of dark brown soil. The background is a bright, out-of-focus green with light rays filtering through from the top left.

BLUEREVOLUTION

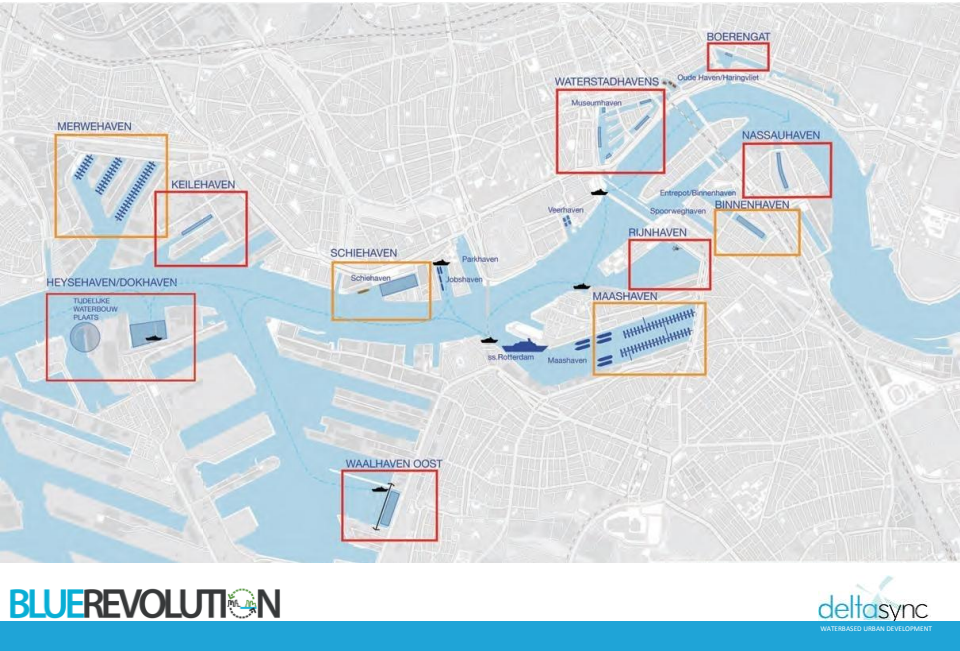
deltasync
WATER-RELATED URBAN DEVELOPMENT



Space requirements



Implementation | SMALL SCALE PILOTS



Implementation | SMALL SCALE PILOTS



Implementation | SMALL SCALE PILOTS



Algae Facade

source: www.fastcoexist.com / ARUP

BLUEREVOLUTION the blue revolution

deltasync
WATER-BASED URBAN DEVELOPMENT

Implementation | SCALING UP



BLUEREVOLUTION

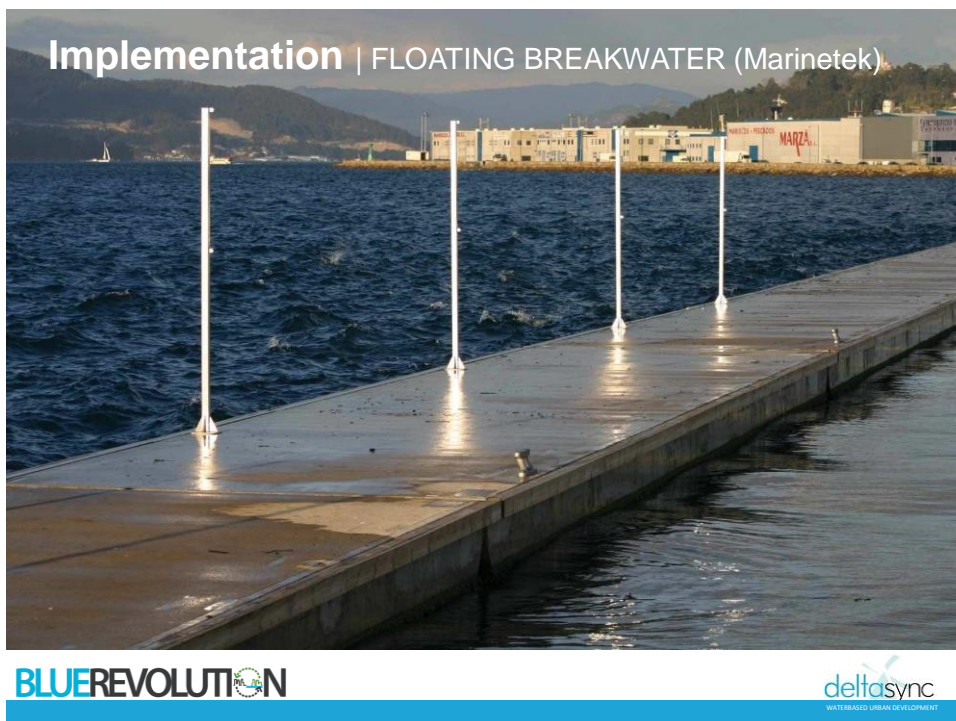
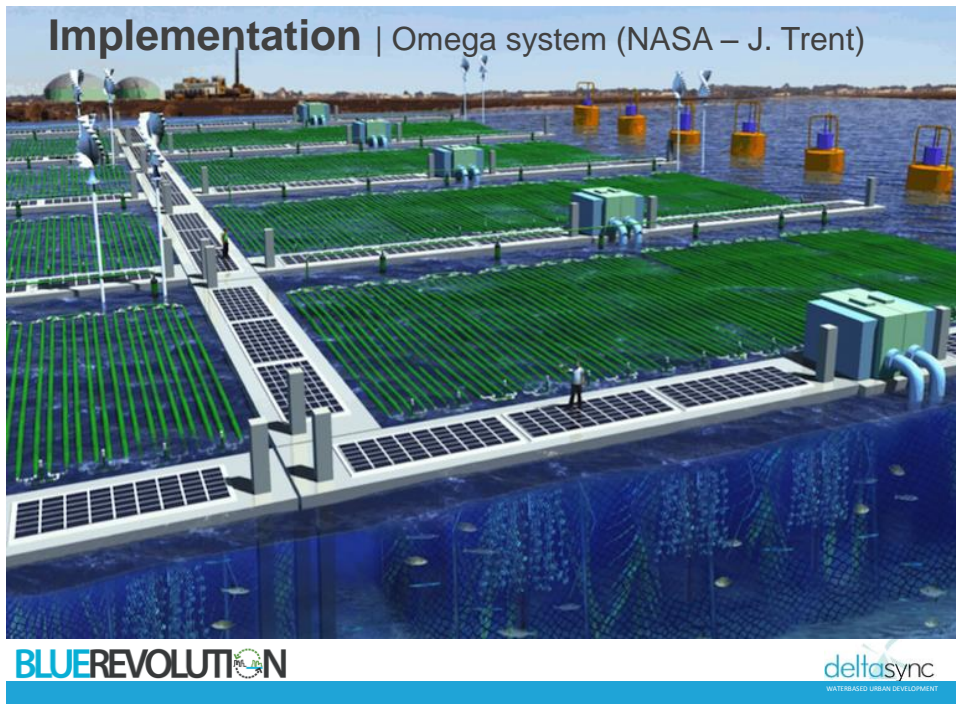
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WATER-BASED URBAN DEVELOPMENT

Implementation | SCALING UP



BLUEREVOLUTION

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WATER-BASED URBAN DEVELOPMENT



Blue Revolution benefits

Improving Resilience



32%
of the passenger
car transportation
of Rotterdam



66%
of vegetal pro-
ducts consumed
in Rotterdam



63%
of animal proteins
consumed in
Rotterdam

Mitigation of Emissions



7.5%
reduction
(rotterdam+port)



60%
reused

Reducing Fish Depletion

replace **40%**
of wild caught fish
(Dutch annual quota)

BLUEREVOLUTION

delta**sync**
WATER-BASED URBAN DEVELOPMENT

...more benefits

- Creates extra space without land
- Creates safe, green and climate-proof expansion
- Provides economical benefits and jobs

BLUEREVOLUTION

delta**sync**
WATER-BASED URBAN DEVELOPMENT

Applicability and limitations

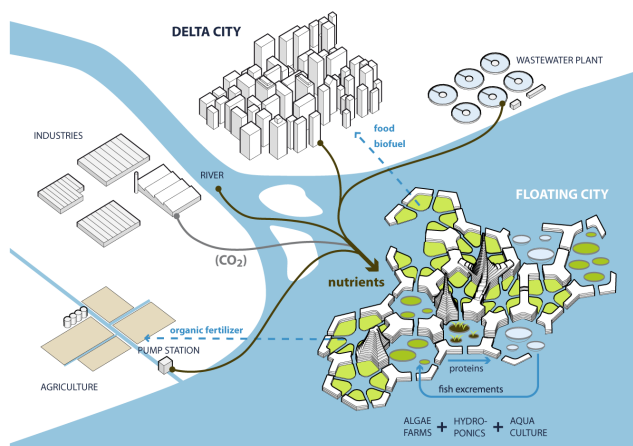
- Results are the maximum potential, based on all available nutrients
- Further research should point out how much can be captured
- Limitations of reusing waste water that is possibly contaminated
- Commercial feasibility

BLUEREVOLUTION

deltasync
WATER-RELATED URBAN DEVELOPMENT

BLUEREVOLUTION

Potential of floating urbanization and food production for coastal/delta cities



More info:

www.Blue21.org

www.deltasync.nl