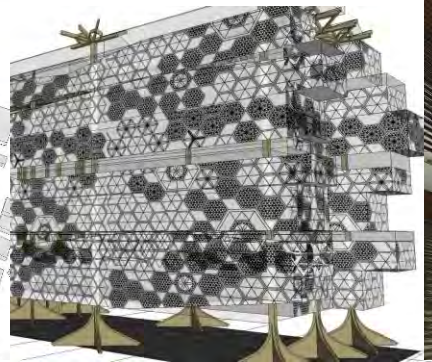
Circular Economy calls for Circular green space!

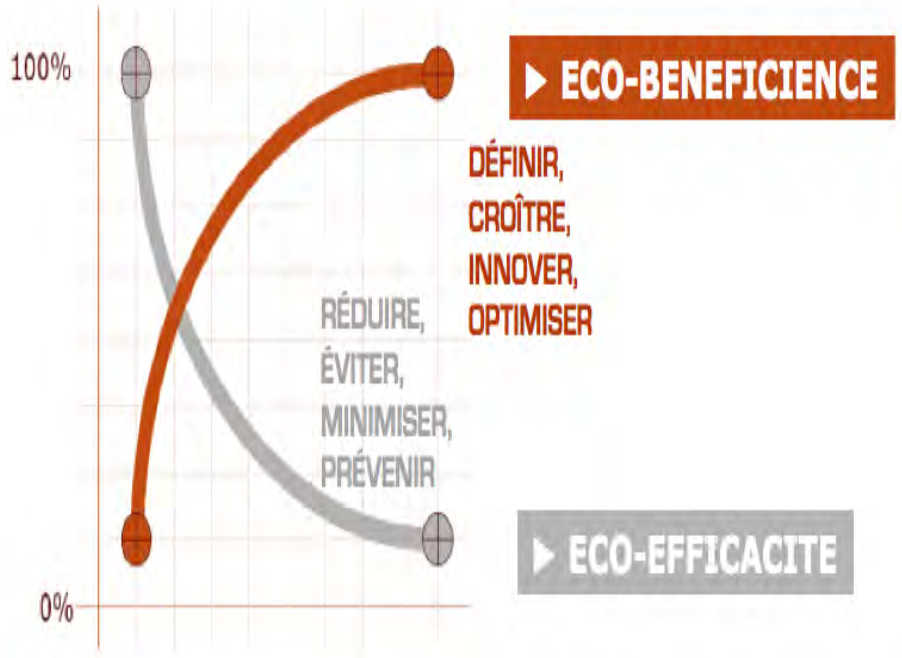
Steven Beckers

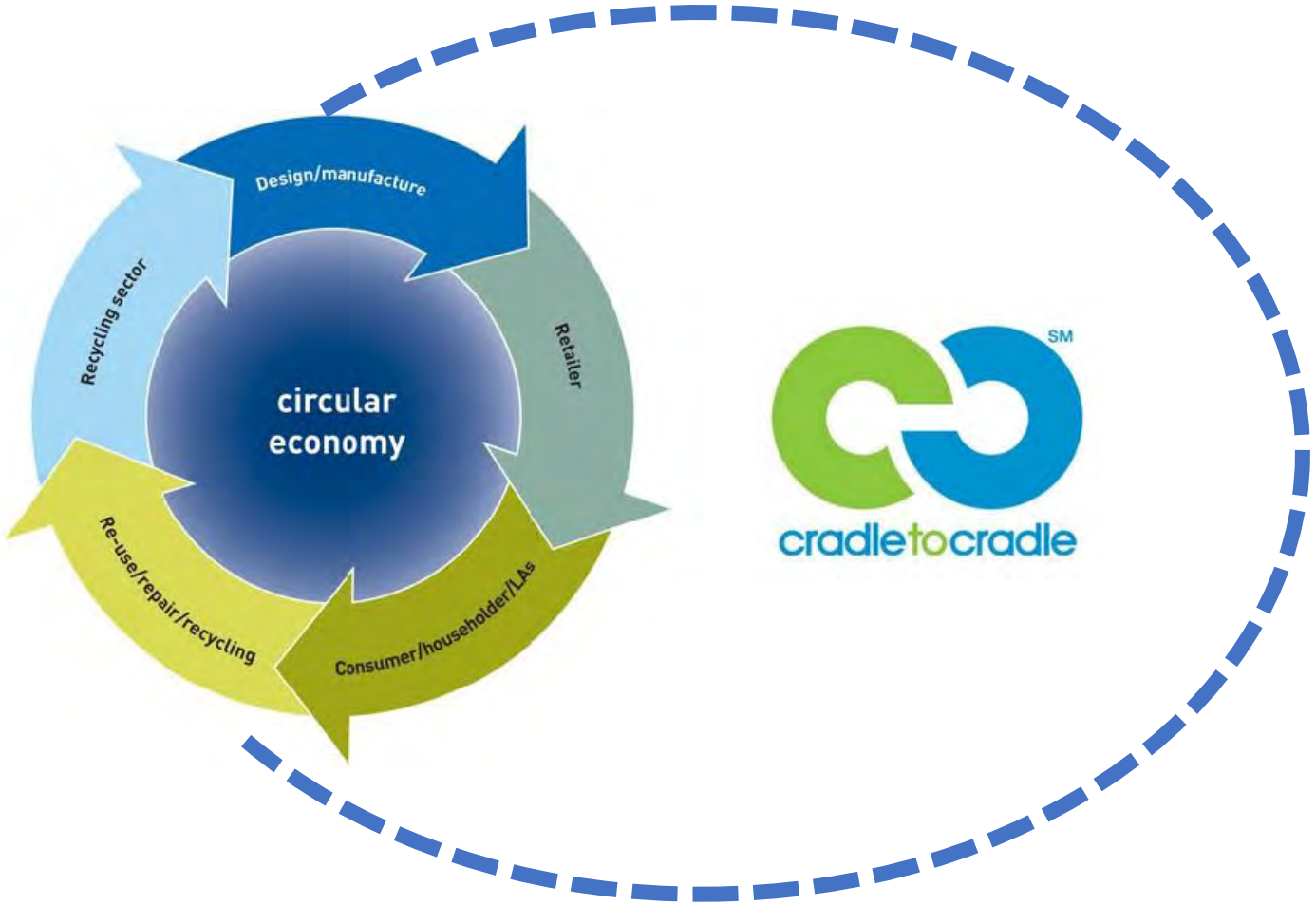
Chairman

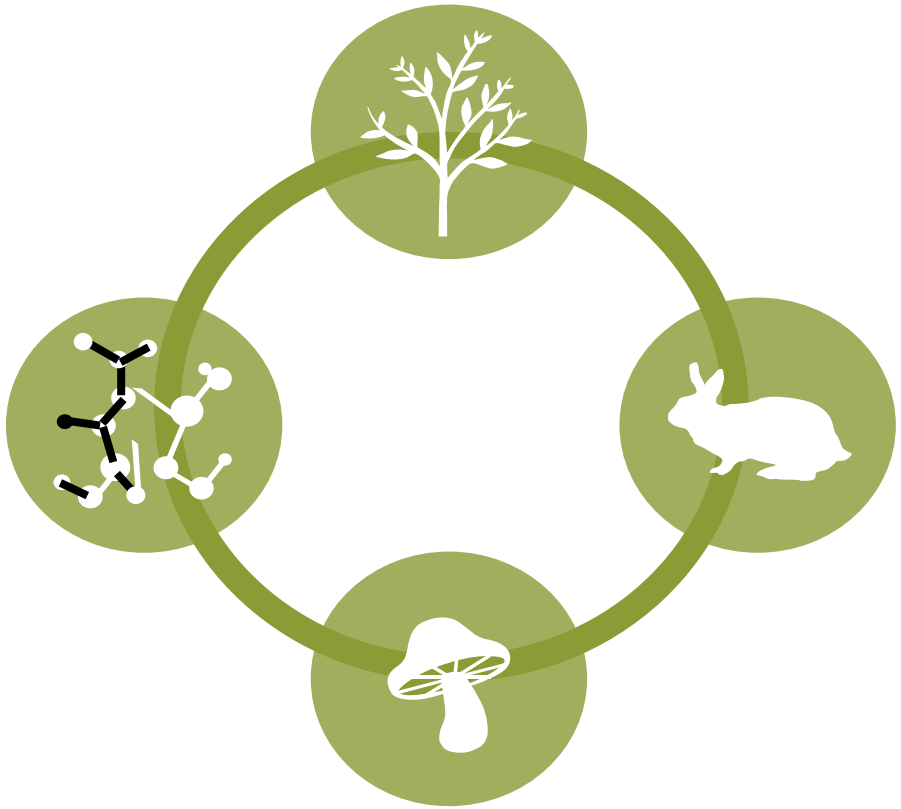
Lateral Thinking Factory

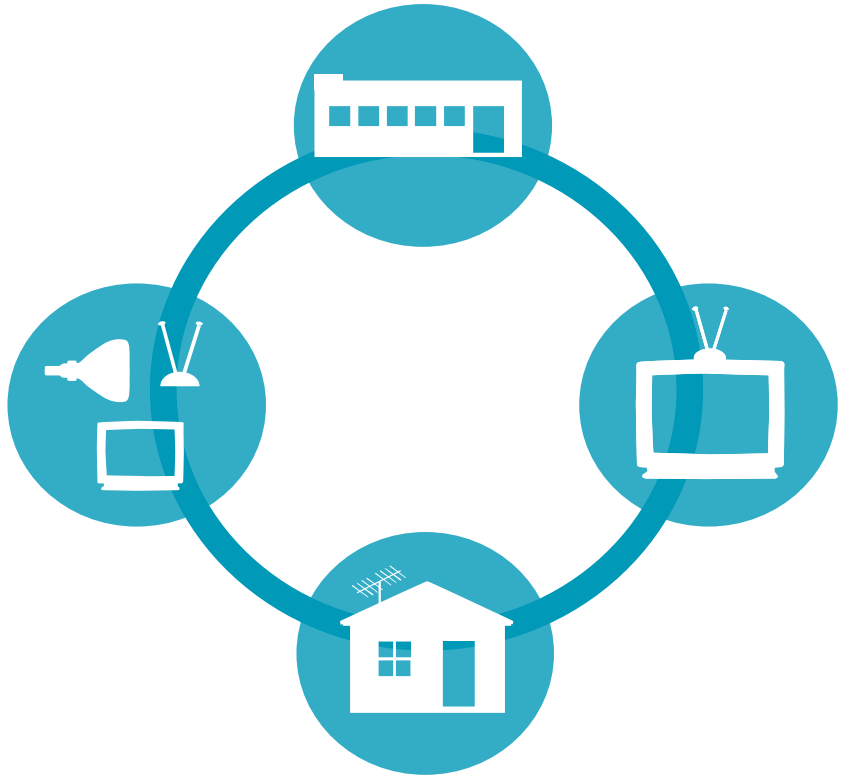
Building Integrated Greenhouses

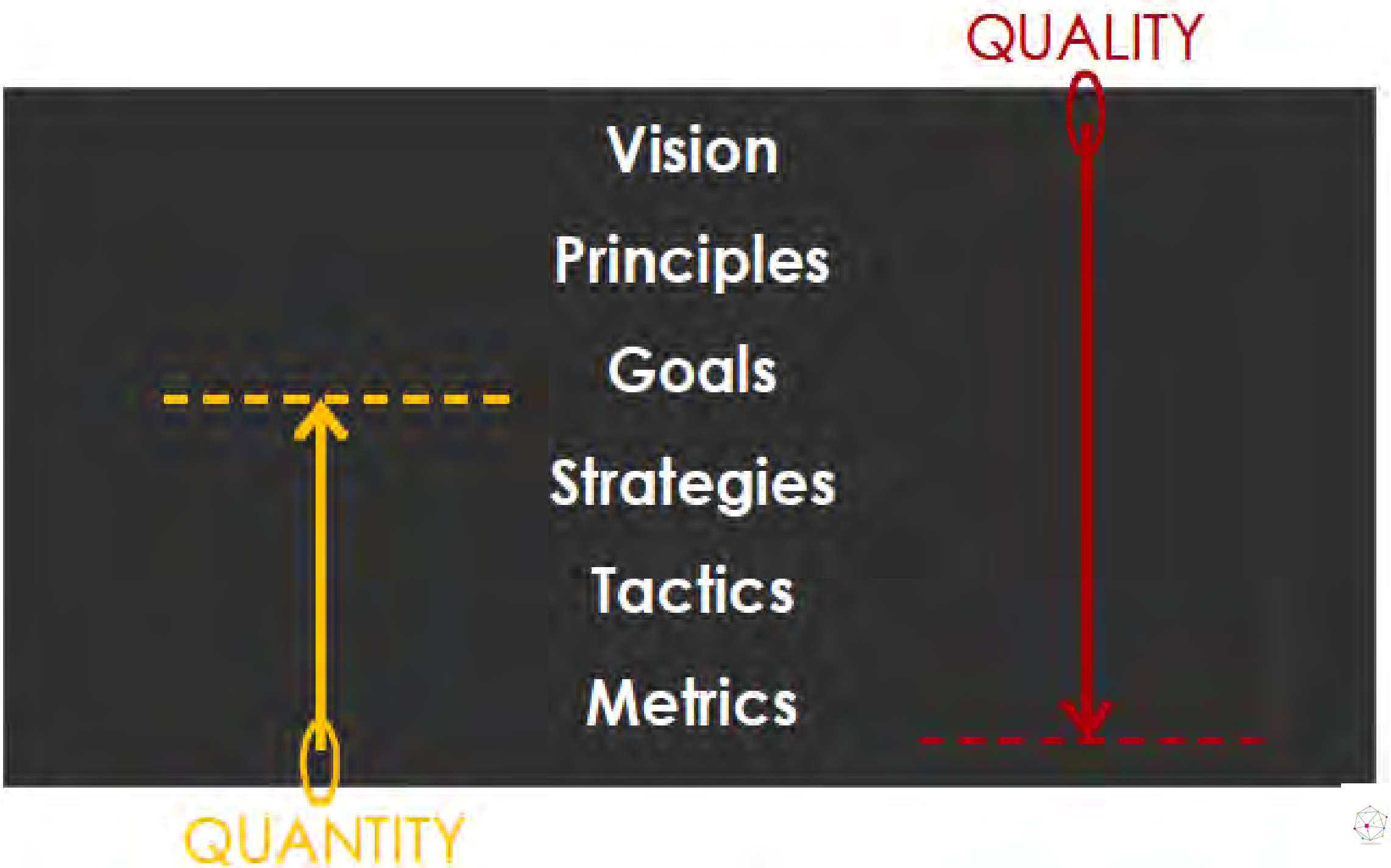


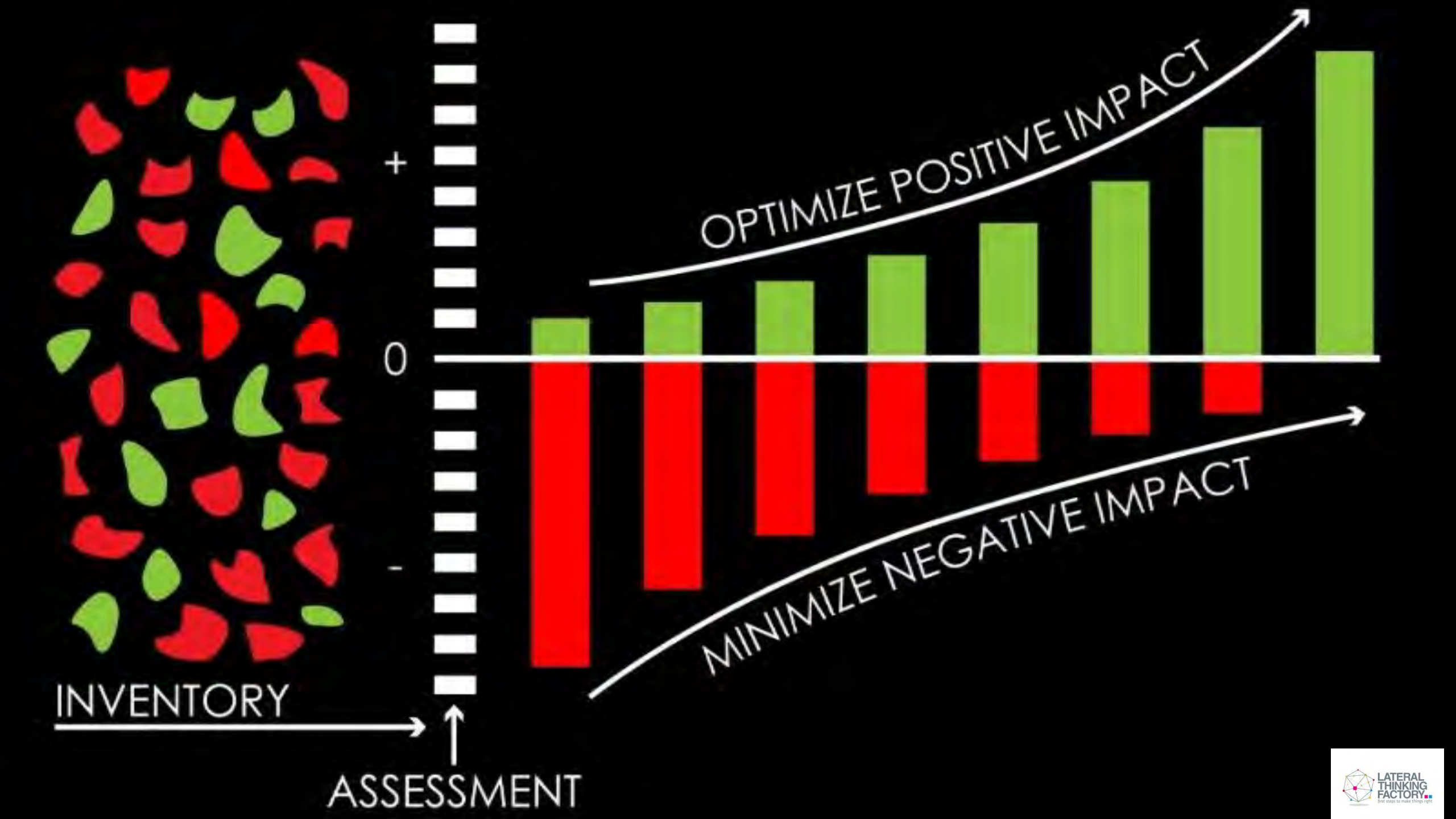









QUALITY
Vision
Principles
Goals
Strategies
Tactics
Metrics
QUANTITY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OPTIMIZE POSITIVE IMPACT
MINIMIZE NEGATIVE IMPACT
INVENTORY
ASSESSMENT

Beyond Sustainability

Urban Vision

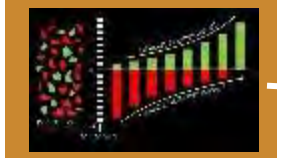
Project principles

Beyond Sustainability

Urban Vision

Project principles

Goals

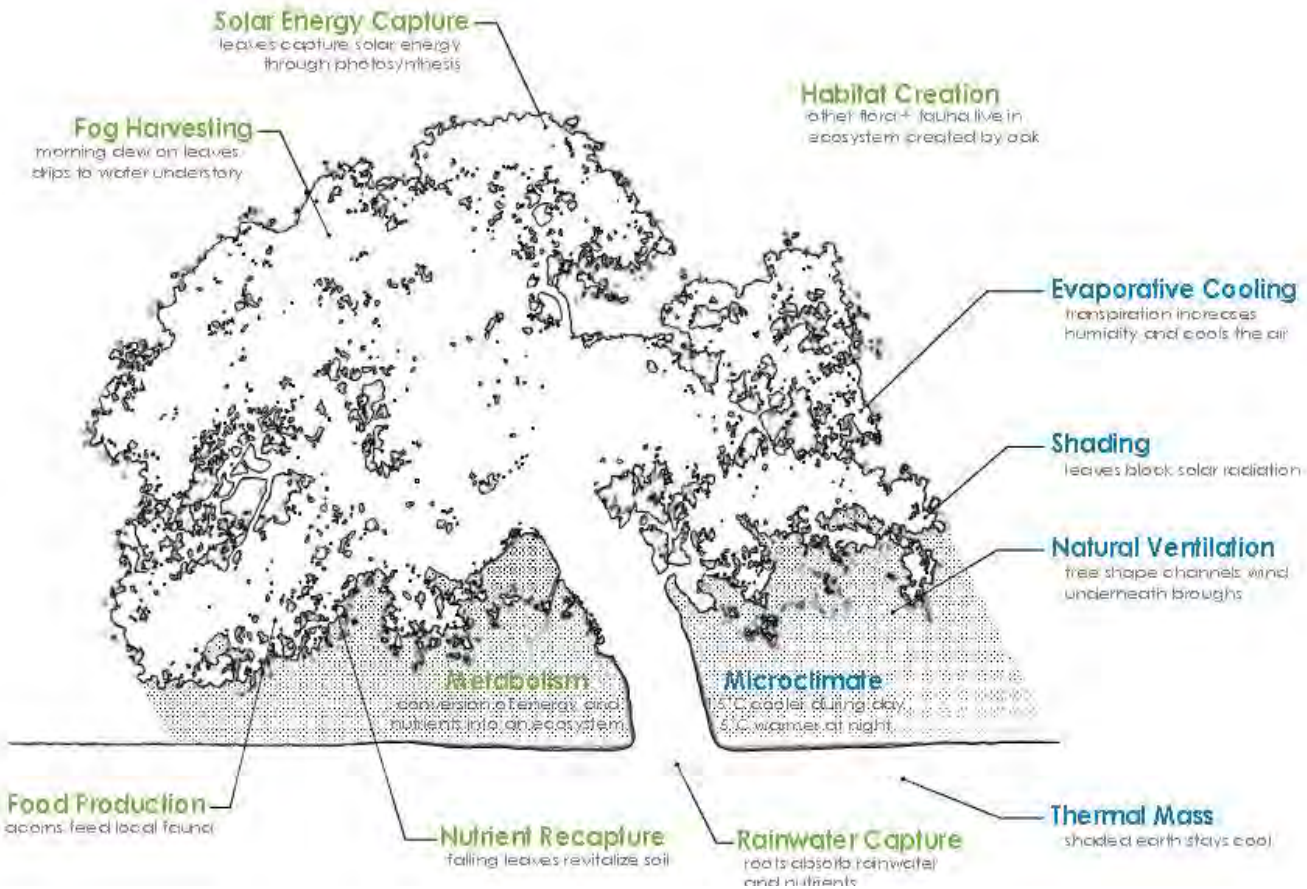


Strategies

- Site
- Water
- Energy
- Materials
- Interior Qual Env
- Biodiversit
- Food prod

« Building like trees…Cities like forest »
« Bâtiments arbres…Villes forêts »

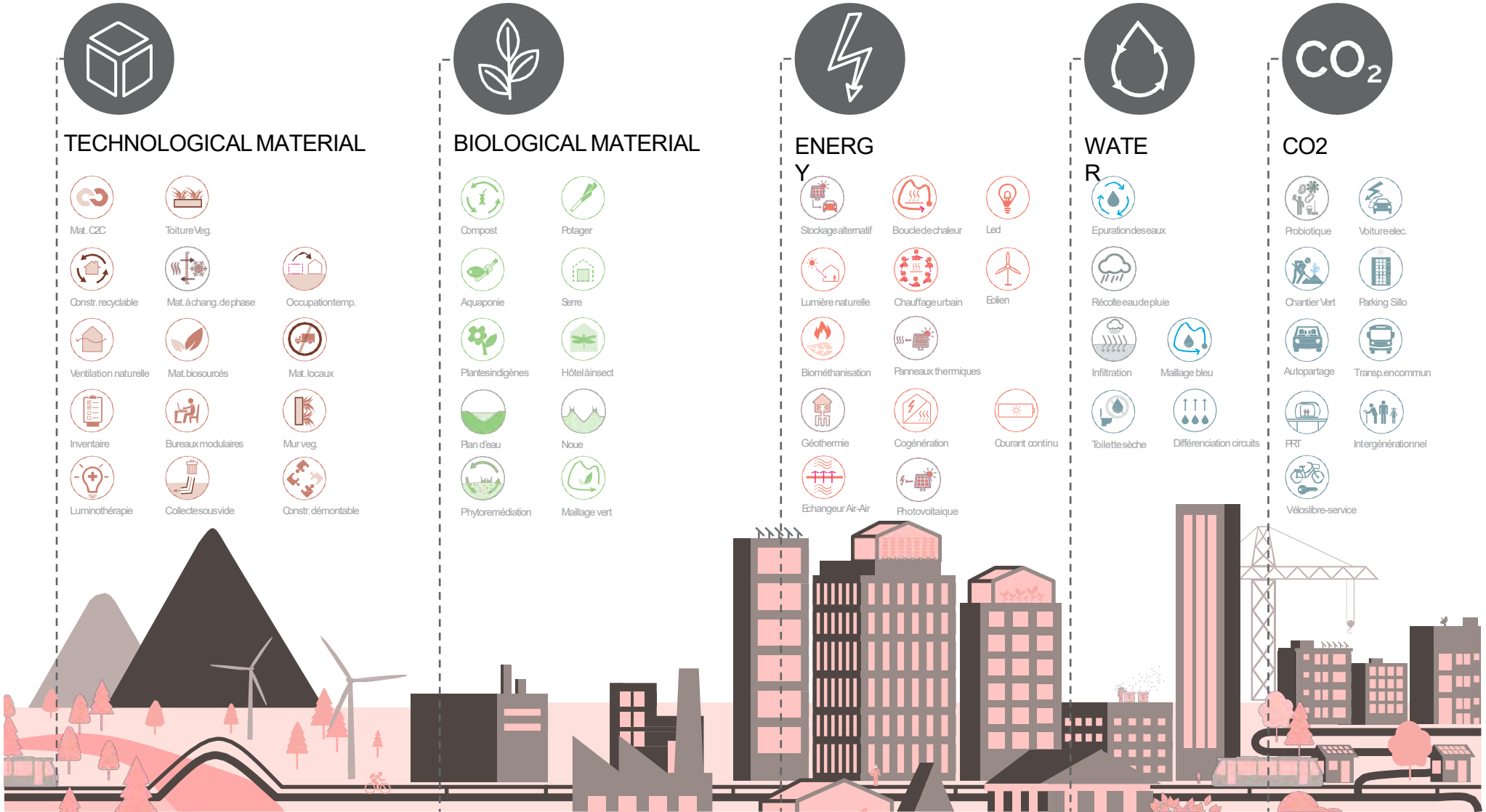
Michael Braungart & William McDonough



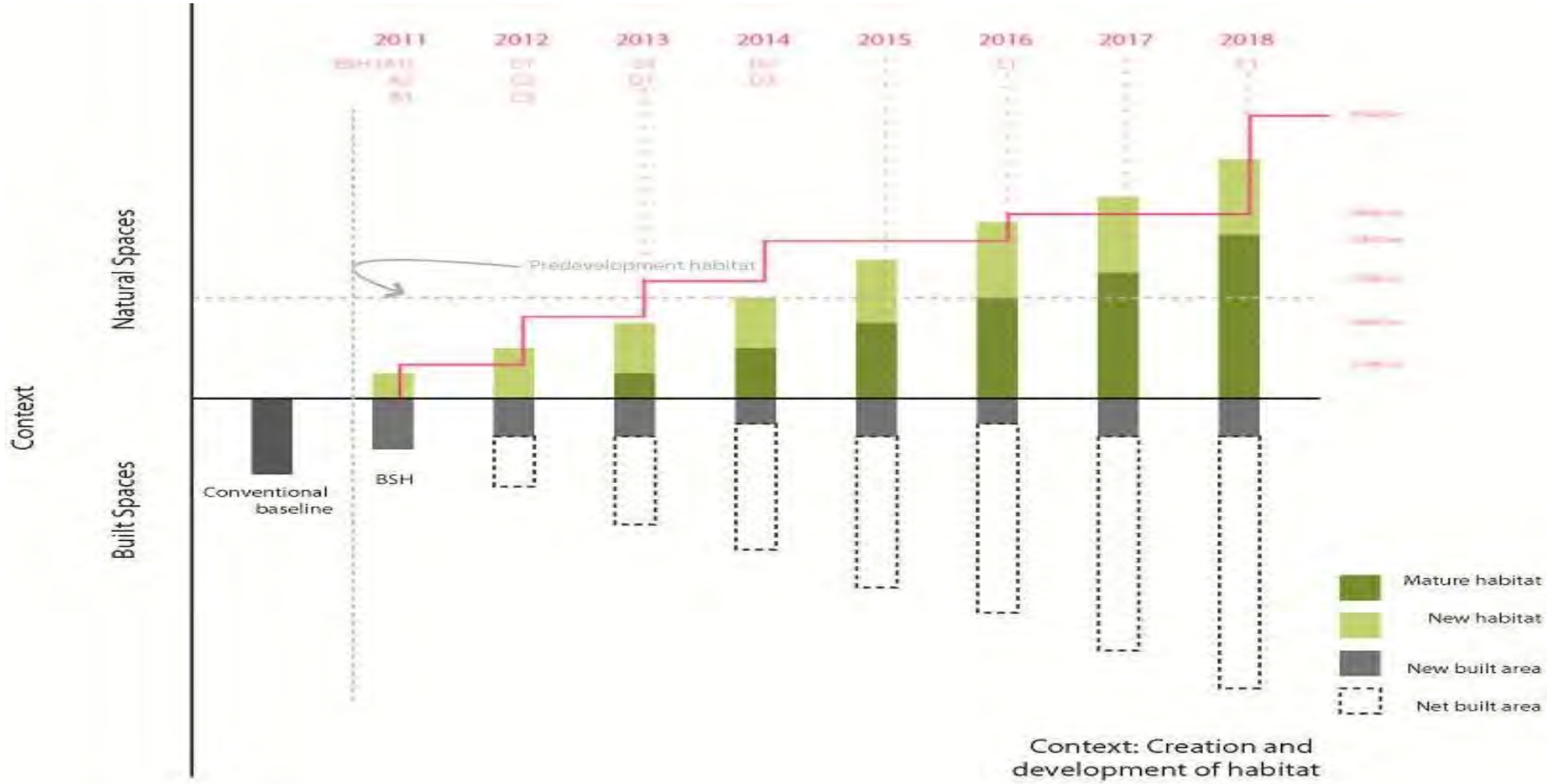
Building like trees should produce more than they use:

- Healthy materials for the future (Upcycling)
- Spatial agility, plasticity and upgrading capacity
- Quality renewable energy
- Capture CO2 to produce Food
- Clean water and nutrients/ humus
- Clean air and reduce fine particles
- Diversity (Bio diversity, Social and cultural)
- Well being, inclusiveness and safety

Improving ressources circularity



Improvement of Biodiversity & Soil



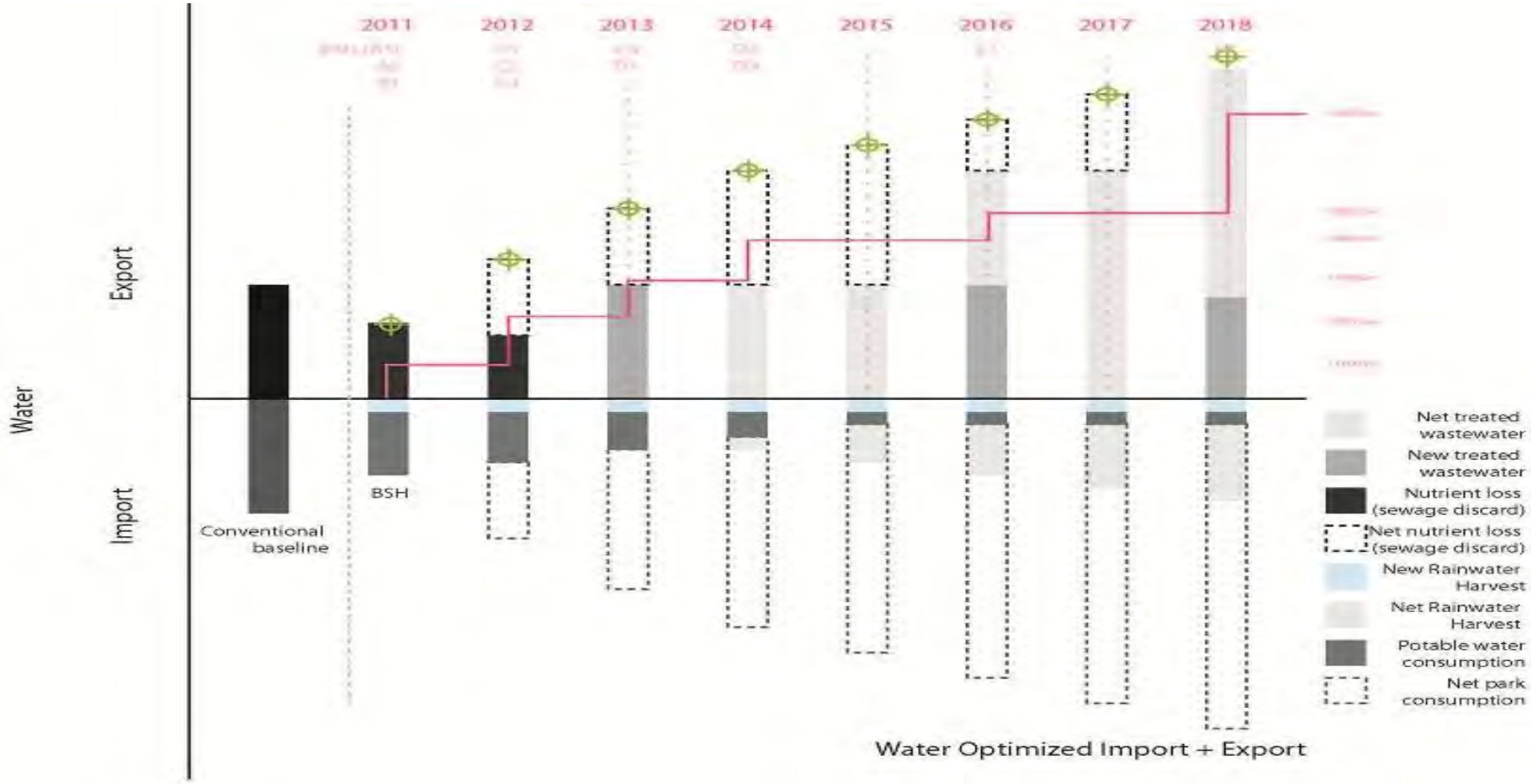
Pic:Courtesy Park 20/20 Delta Development

Improvement of Biodiversity & Soil

Pic:Courtesy Park 20/20 Delta Development

CO2 as raw material for profit

Improvement of Water

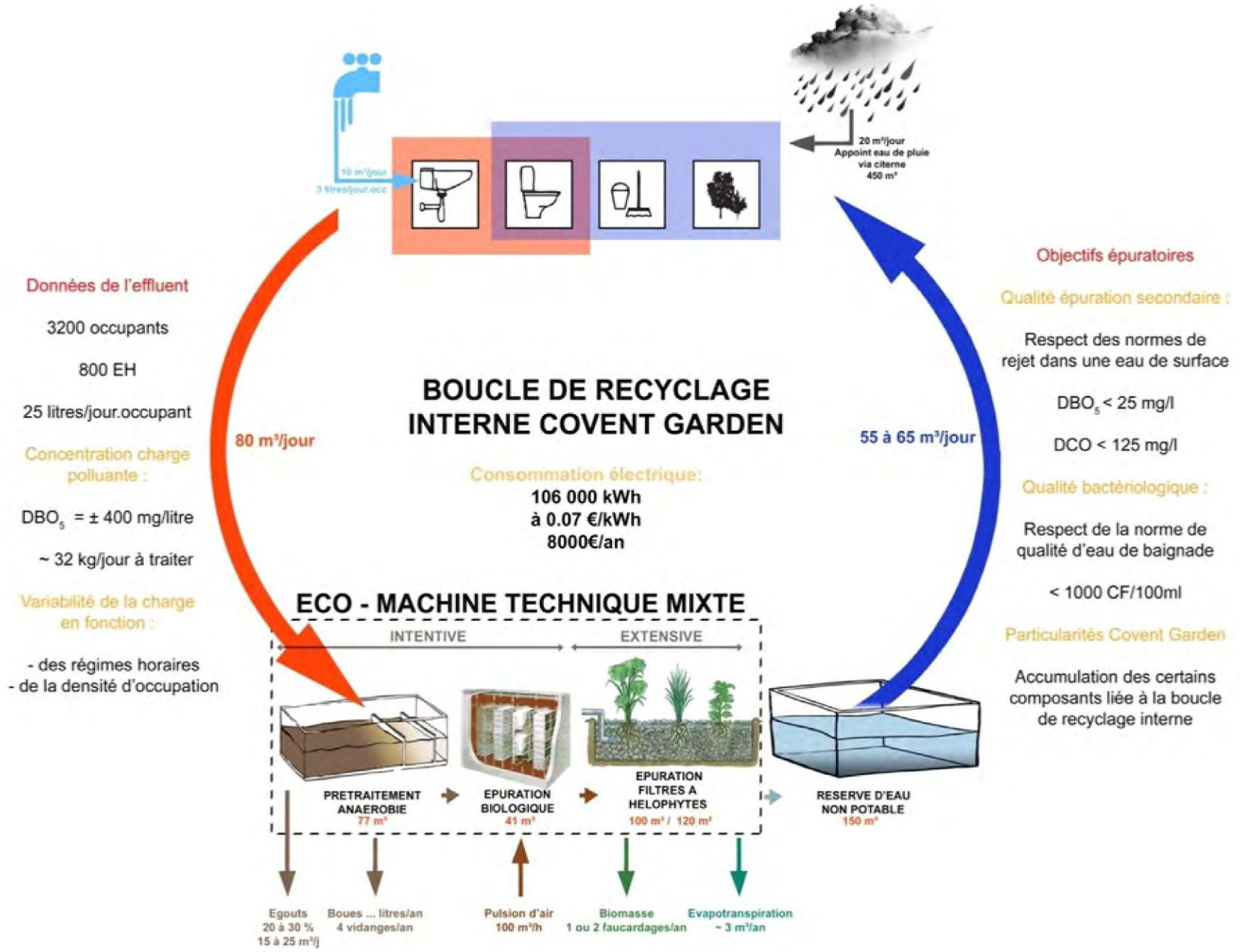


Pic:Courtesy Park 20/20 Delta Development

Use water recycling to Create a City Oasis

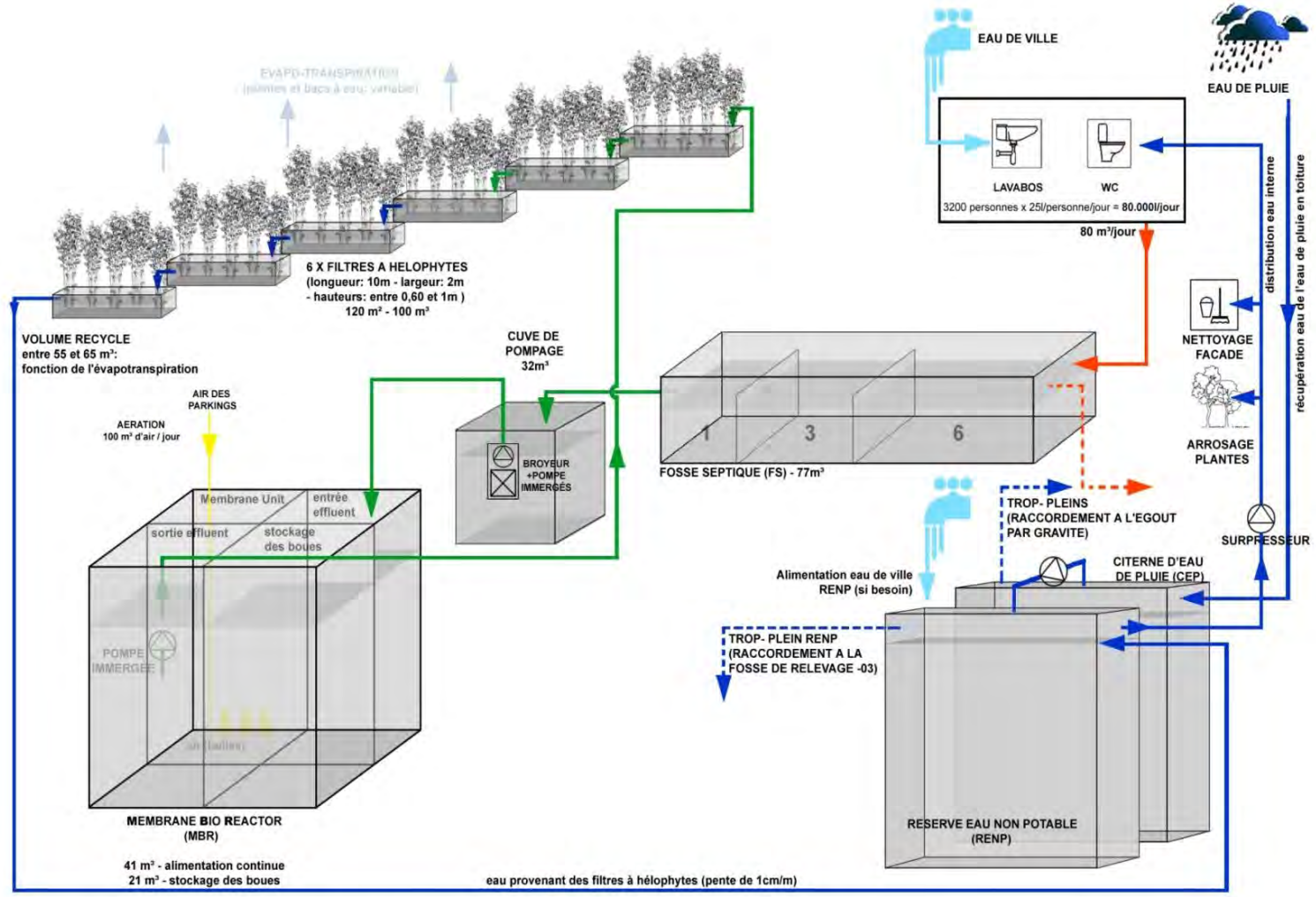
Courtesy of Steven Beckers & Art&Build

Courtesy of Steven Beckers & Art&Build


Données de l'effluent
3200 occupants
800 EH
25 litres/jour.occupant
Concentration charge polluante :
DBO5 = ± 400 mg/litre
~ 32 kg/jour à traiter
Variabilité de la charge en fonction :
- des régimes horaires
- de la densité d'occupation
10 m³/jour
3 litres/jour.occ
20 m³/jour
Appoint eau de pluie via citerne 450 m³
80 m³/jour
55 à 65 m³/jour
BOUCLE DE RECYCLAGE INTERNE COVENT GARDEN
Consommation électrique:
106 000 kWh
à 0.07 €/kWh
8000€/an
ECO - MACHINE TECHNIQUE MIXTE
INTENTIVE
EXTENSIVE
PRETRAITEMENT ANAEROBIE
77 m³
EPURATION BIOLOGIQUE
41 m³
EPURATION FILTRES A HELOPHYTES
100 m² / 120 m²
RESERVE D'EAU NON POTABLE
150 m³
Egouts
20 à 30 %
15 à 25 m³/j
Boues ... litres/an
4 vidanges/an
Pulsion d'air
100 m³/h
Biomasse
1 ou 2 faucardages/an
Evapotranspiration
~ 3 m³/an
Objectifs épuratoires
Qualité épuration secondaire :
Respect des normes de rejet dans une eau de surface
DBO5 < 25 mg/l
DCO < 125 mg/l
Qualité bactériologique :
Respect de la norme de qualité d'eau de baignade
< 1000 CF/100ml
Particularités Covent Garden
Accumulation des certains composants liée à la boucle de recyclage interne

NATURAL
« Technology »

- Phosphate recovery
- Biomass / Humus
- Biodiversity
- Pleasure space
- Indoor Air Quality
- Water saving> 90%



Ford Rouge Centre Storm Water Strategies

Biodiversity generates
Savings from recycling
water and
Bioremediation

William McDonough + Partners
Architecture and Community Design

Courtesy of William McDonough & Prtnrs

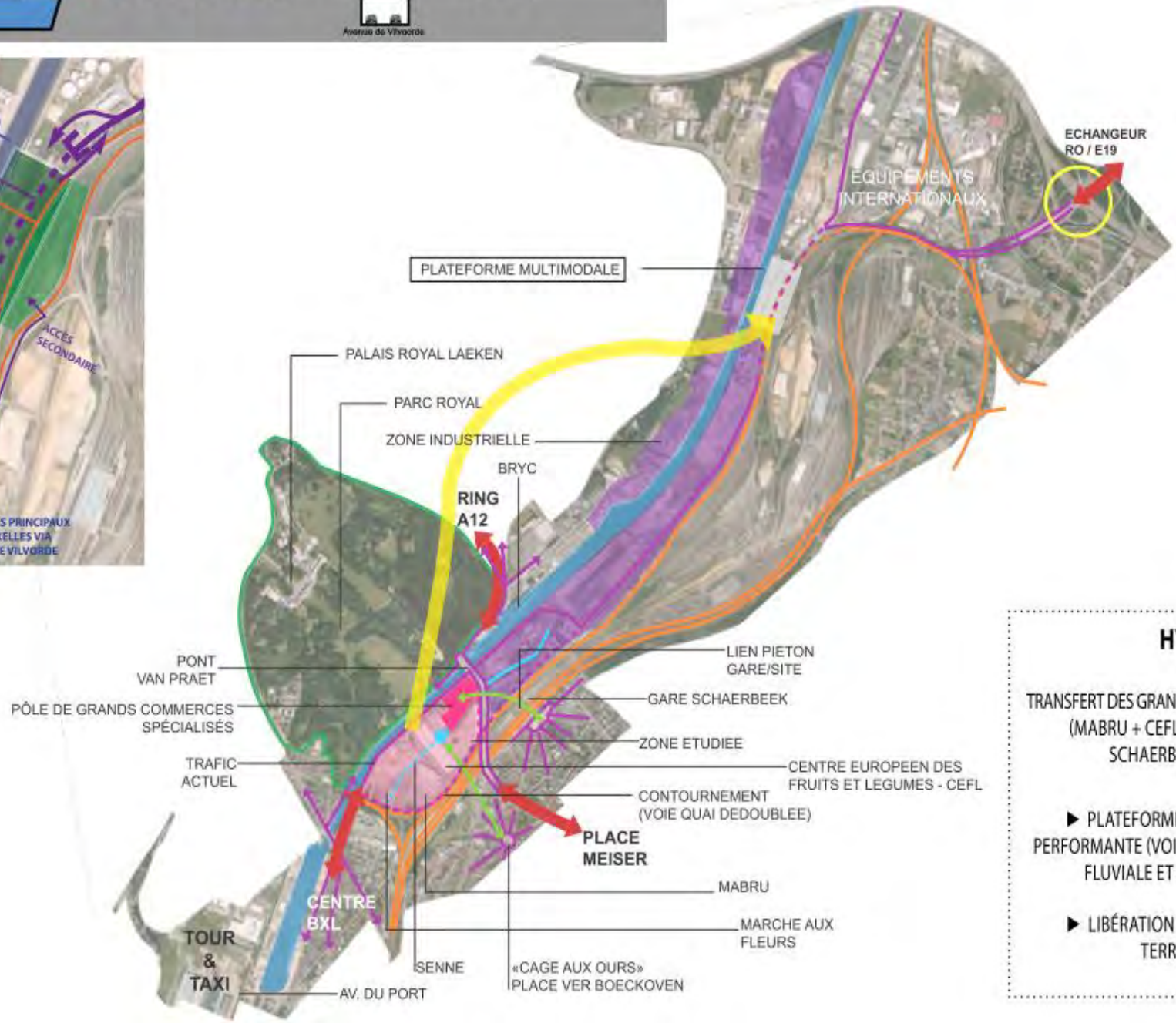
Courtesy of William McDonough & Prtnrs


Biodiversity & Water Recycling
to Establish
Community Sense of Ownership
Courtesy of Klaus Zahn: east Berlin city block


Courtesy of Klaus Zahn: east Berlin city block

Circular Masterplanning from constraints to benefits (B)

Reconversion de friche urbaine à Bruxelles



HYPOTHÈSES

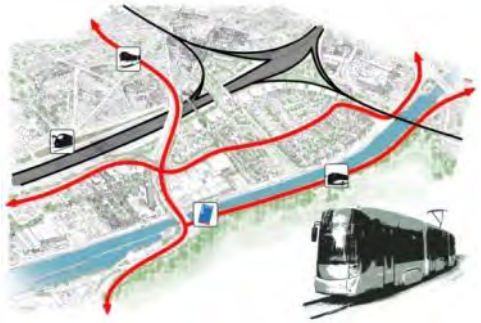
TRANSFERT DES GRANDS ÉQUIPEMENTS (MABRU + CEFL) SUR LE SITE DE SCHAERBEEK FORMATION

▶ PLATEFORME MULTIMODALE PERFORMANTE (VOIES FERROVIAIRE, FLUVIALE ET AUTOROUTIÈRE)

▶ LIBÉRATION D'UN NOUVEAU TERRITOIRE DE 30 HA

Phytoremèdiation

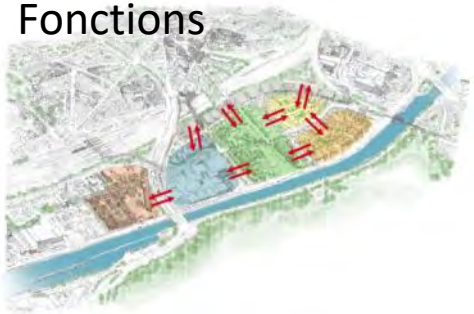
Mobilité Régionale



Couloirs biodiversité

Tri et récolte des nutriments

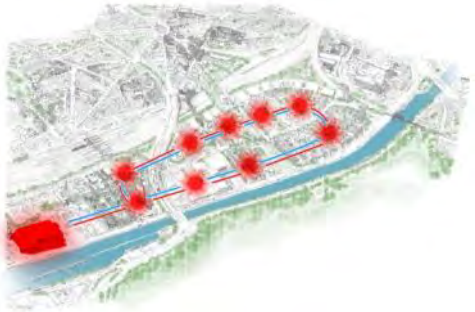
Echanges entre Fonctions



Mobilité douce

Traitement eau

Boucle tiède



Evolution vers 100% ENR

Mobilité Fluviale

Mixité & Inter-générationalité

Emploi & formation

Circular Masterplanning from constraints to benefits (B)

Masterplanning with Circularity performance in Kilen(S)

- Citizen
- Municipality
- Rail authority
- Transport
- Health, wellness, tourism and sport
- Production
- IT
- Shop keepers
- Education and science
- Local food production

Present

Future

SCENARIO 1

OUTDOOR PARK AND SCIENCE LAB

SCENARIO 2

BUSINESS, INDUSTRY AND LEISURE

SCENARIO 3

HEALTHY HOUSING AND LIFESTYLE

cradle2cradle showroom

stop shop for local farmer

databas for healthy material and products

development of bilogical products

healthy material and testing laboratory

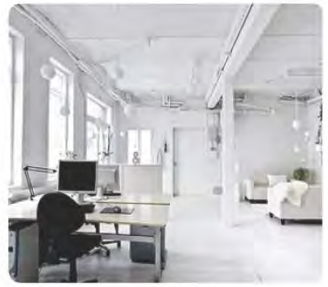
hub for the Waterjet lab etc.

kitchen lab with local product for kindergarden, older and restaurant

upcykling potentials

greenhouse for planting, learning and landscape lab

the flexible space for office and meeting point



BENEFITS

PRODUCTIVE URBAN FARMING

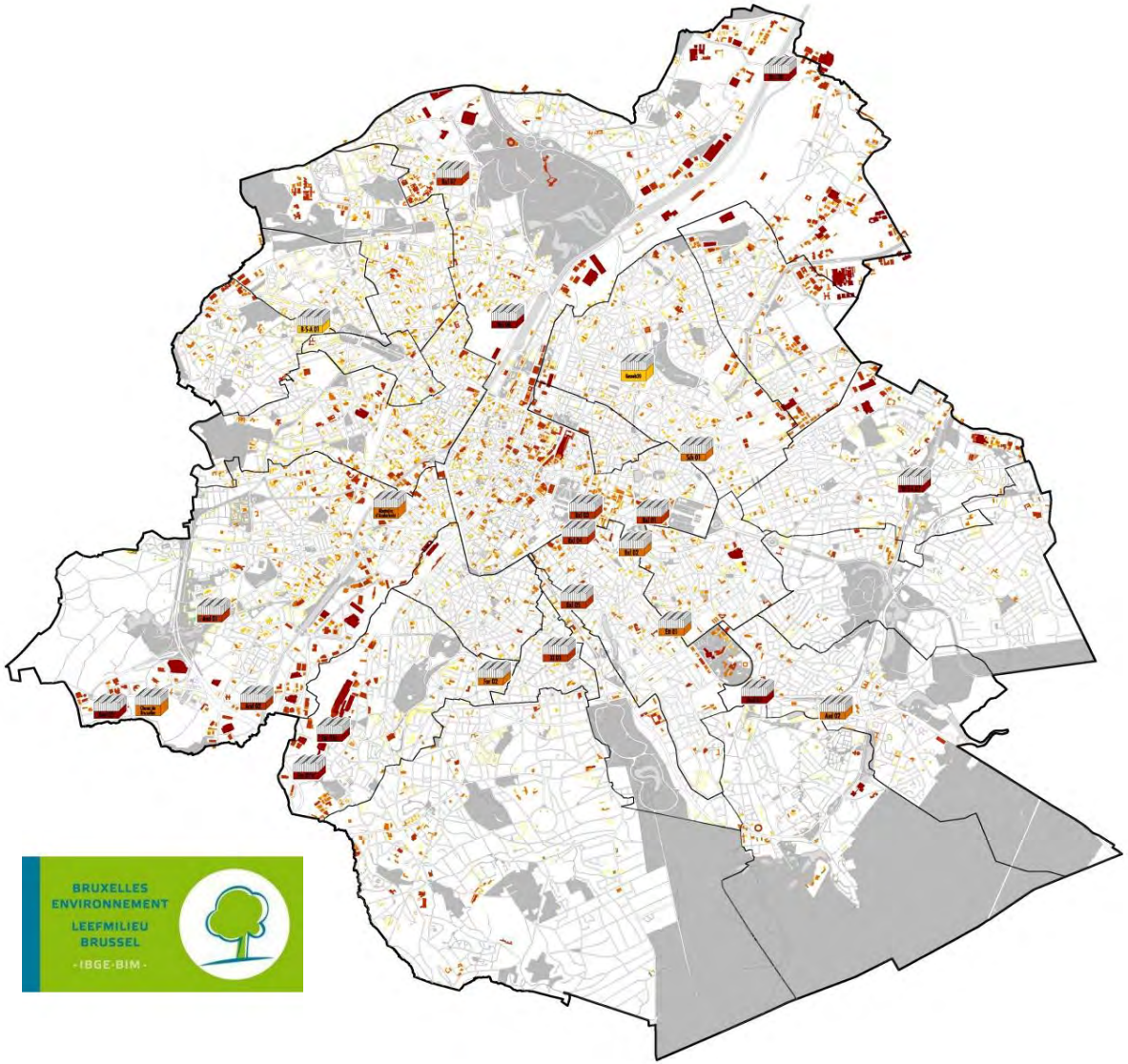
-a high added value urban farming production; from producer to consumer and “beyond bio” quality fruits, vegetable and fish with high added branded value (UF=Urban farmers CH)
-combined open air, greenhouse, indoor and blind areas agriculture (Philips LED)
-Building Integrated Photovoltaic (BIPV)

RBC Territory area
162.447.439m²

4377 promising flat roofs

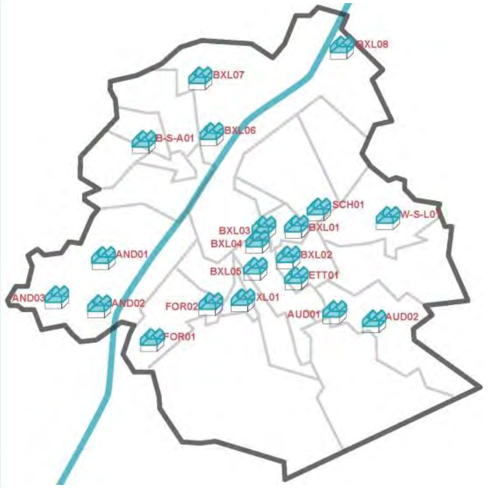
5.906.888m² on
Offices, Industries, car parks, schools, hospitals, housing, public buildings, Transport, retail…..

3,6% of the region.



BRUXELLES ENVIRONNEMENT
LEEFMILIEU BRUSSEL
- IBGE-BIM -

Avenue Charles-Quint
Dendermondsestraat
Georges Remystraat



BXL08
BXL07
B-S-A01
BXL06
SCH01
W-S-L01
BXL03
BXL01
BXL04
BXL02
AND01
BXL05
ETT01
AND03
AND02
FOR02
XL01
AUD01
AUD02
FOR01

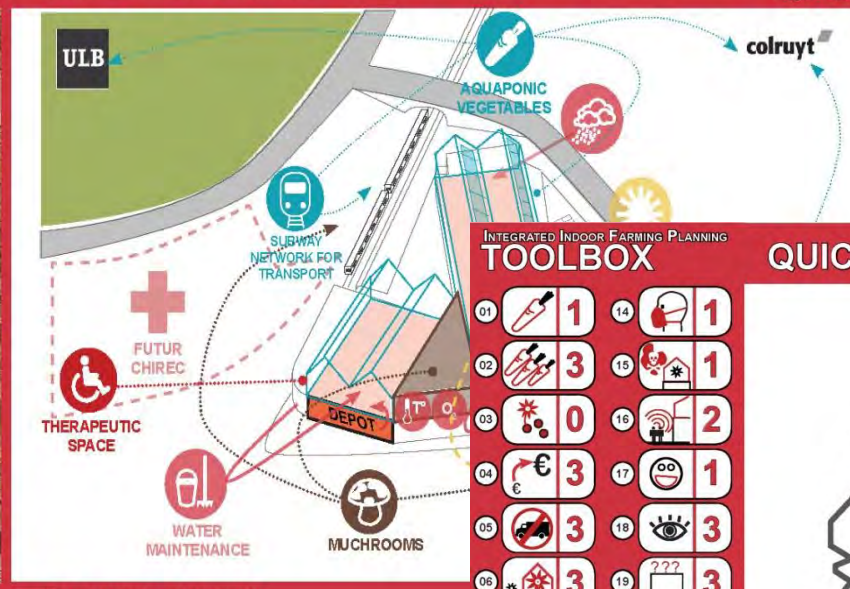
INDOOR FARMING IN RBC // 2014

AUD01 Delta

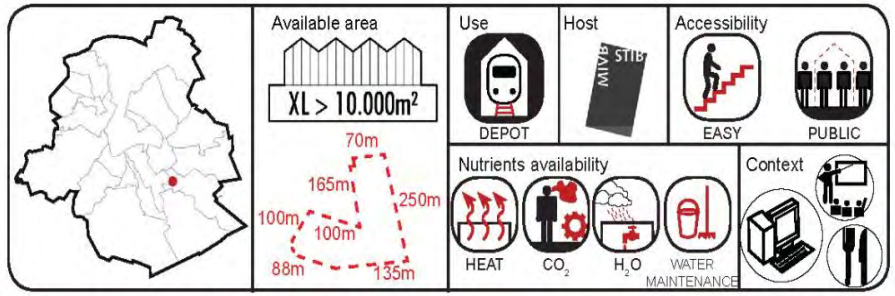
LATERAL THINKING FACTORY

ResilieNtWEB
Innovate for a sustainable business

PROJECT
SYSTEM-HOLISTIC DIAGRAM



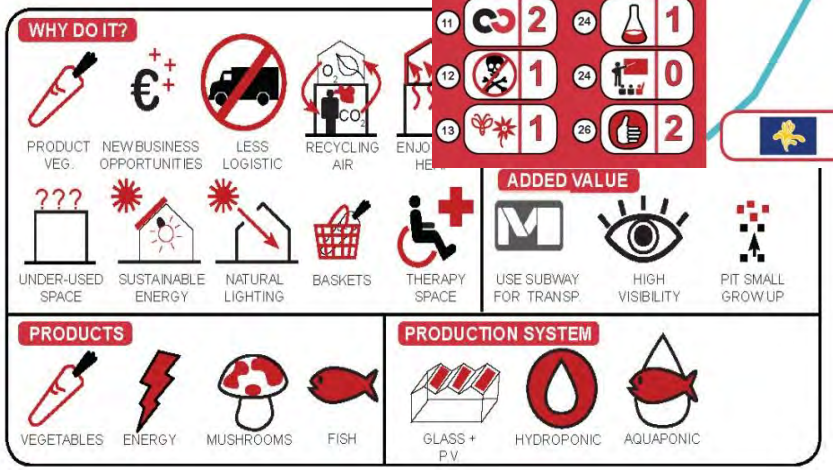
KNOW WHAT YOU HAVE



Available area	3,4 Ha (34.000 sqm2) the whole roof area is available. Not currently accessible.
Building use and structure	STIB bus depot, maintenance and cleaning. The rooftop is accessible from adjascent space and new access seems easy to create. Structure has not been studied and needs an in depth technical survey.
Context	Located in a mixed use neighborhoud with offices, housing and production activities. Some restaurants, no retail. High visibility from the E411 Highway. Close to the ULB and VUB sites, European School and the new CHIREC Hospital (in construction).
Nutrients availability	Potential use of Heat and water coming from the building behind, explore potential use of the Subway Network for night goods transport, potential to use nutrients coming from the future hospital (to be defined).Check heat production from electrical transformer.

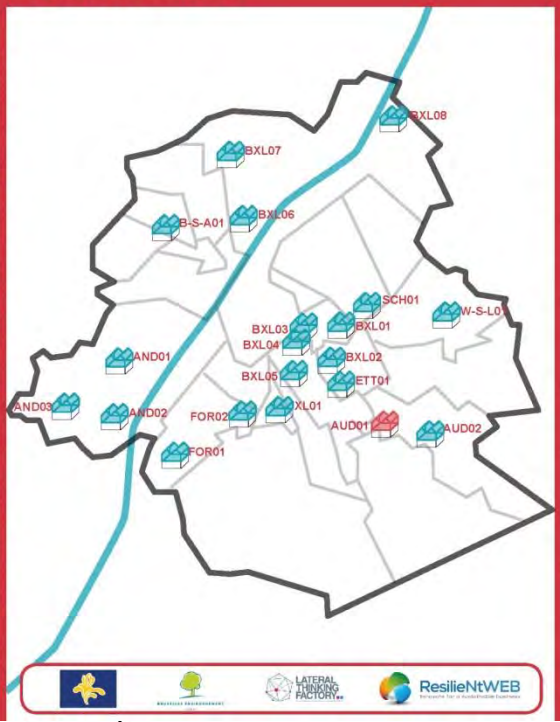
KNOW WHAT YOU WANT

The Delta bus depot being one of the large of the c
growing vegetables to use all the ressources from
building's performances by generating added valu
the E411 highway and the subway, STIB will have
trucks, light ransport or subway, depending of whe
create a therapeutic area with CHIREC to help hea



INTEGRATED INDOOR FARMING PLANNING TOOLBOX

QUICK WINS



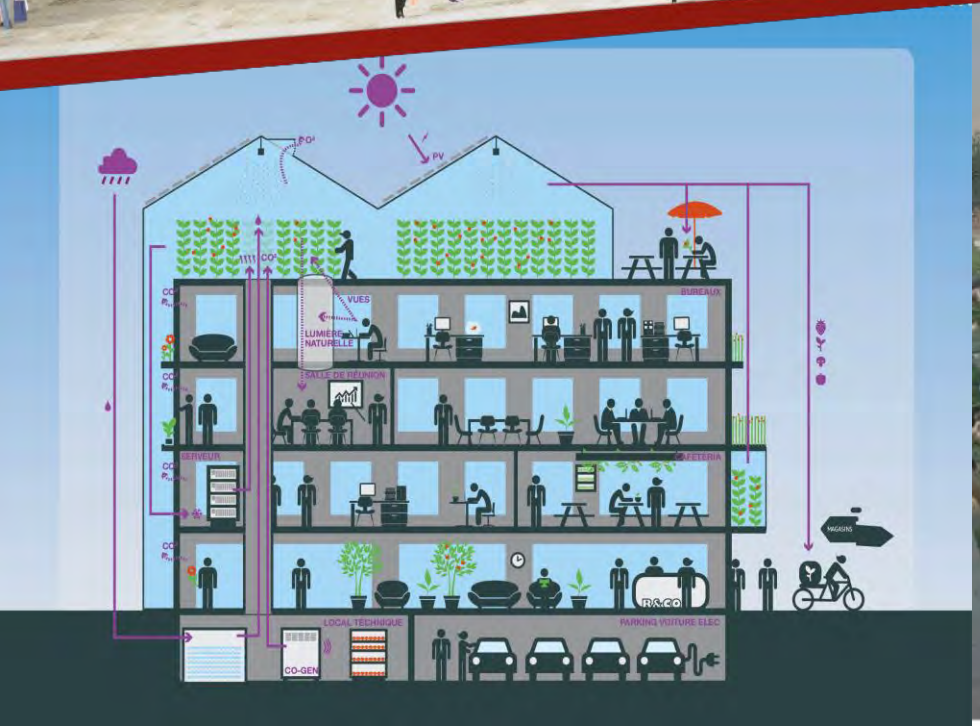
START TO PLAN

- STEP 1 — IDENTIFY STAKEHOLDERS, THEIR GOALS & ORGANISATIONAL CULTURE.
- STEP 2 — QUICKSCAN FINANCIAL RESOURCES.
- STEP 3 — IDENTIFY POTENTIAL VALUE-ADDED SERVICES.
- STEP 4 — COMPARE POTENTIAL VALUE-ADDED SERVICES TO STAKEHOLDER GOALS.
- STEP 5 — IDENTIFY GROWING METHODS, PARTNERS, STRUCTURES.
- STEP 6 — IDENTIFY POTENTIAL QUICK WINS.
- STEP 7 — ALIGN EXPECTATIONS WITH REALITY
- STEP 8 — FINALLISE BIG FEATURES
- STEP 9 — ROADMAP TIMETABLE

WIN-WIN SITUATION

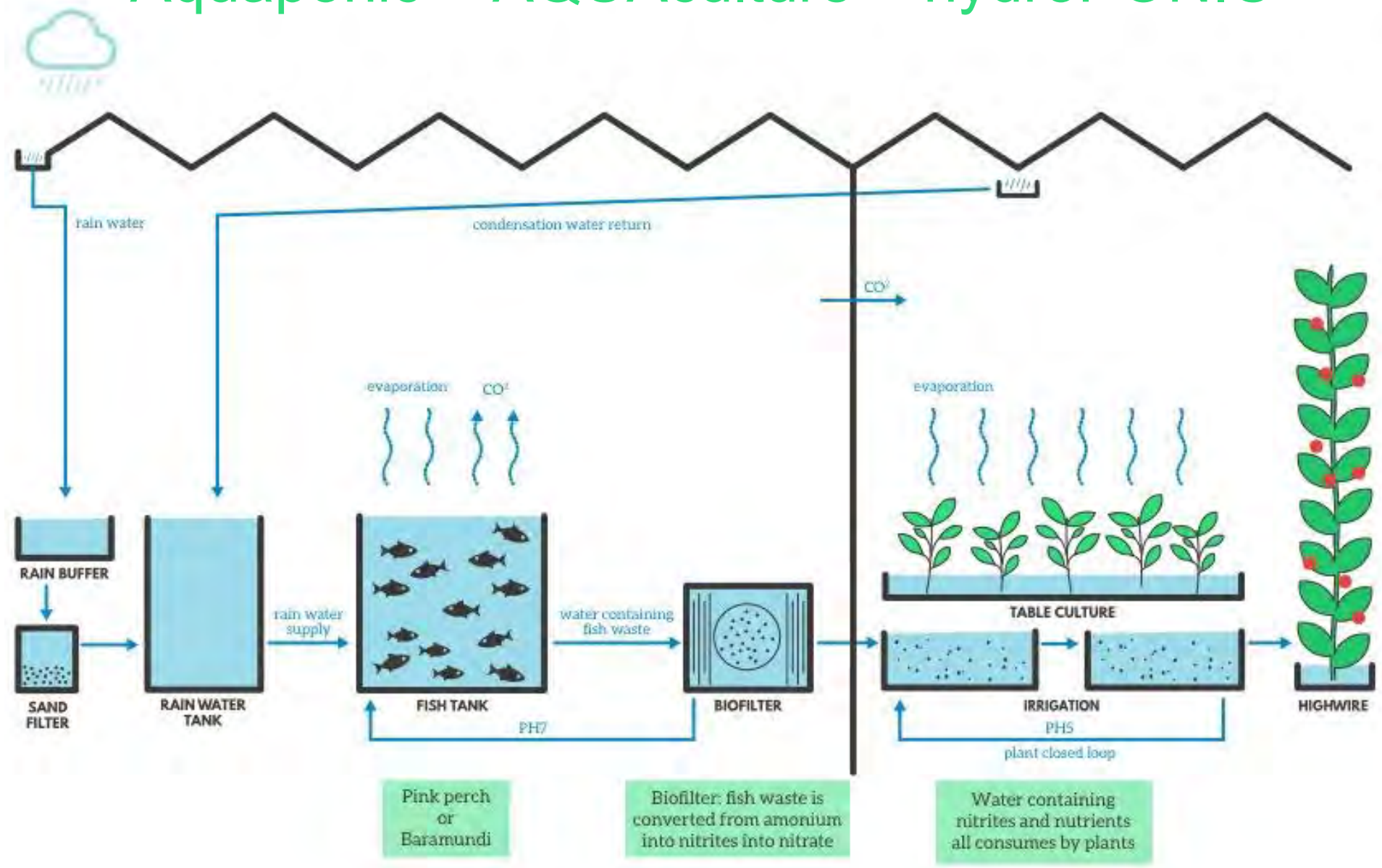
Rooftop CO_2 capture & all year Local Food production

Rooftop CO2 capture & all year Local Food production



HOW?

Aquaponic = AQUAculture + hydroPONIC

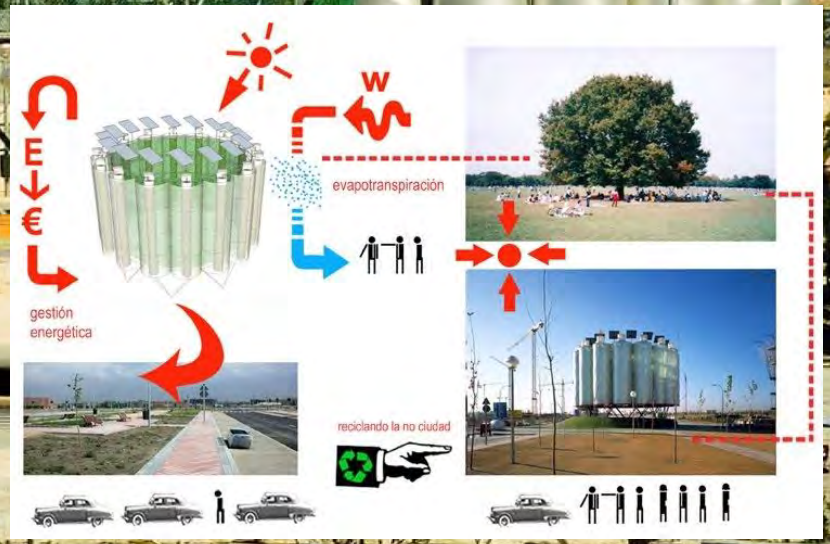


ECF Aquaponic Farm Berlin

Biodiversity support & Climate control in Madrid (Sp)

ecobulevar
Madrid 2008

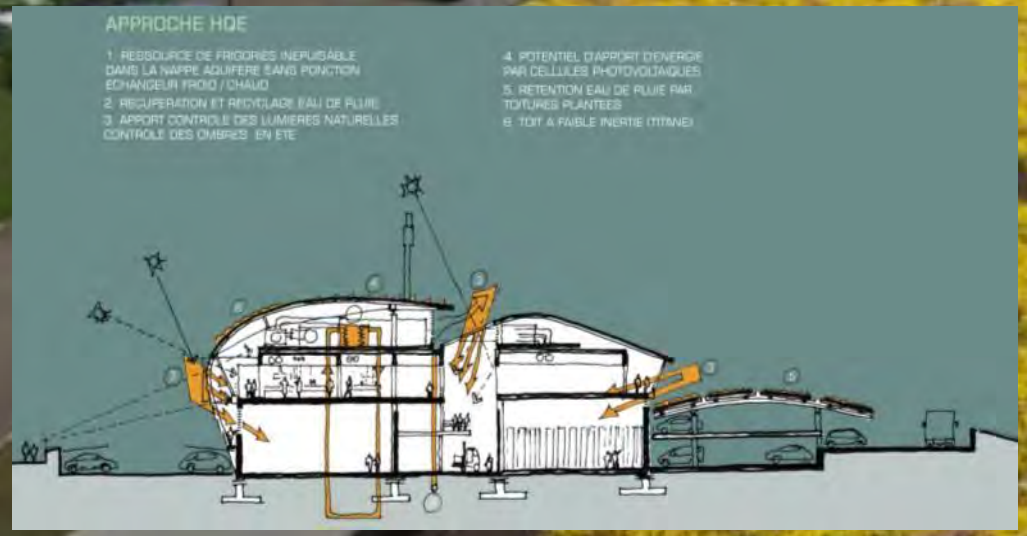
ecosistema urbano



Biodiversity continuity & Climate control in Oeiras (P)

Courtesy of Steven Beckers & Architecturo EEIG

Biodiversity continuity & Building protection Pharmacopea Strasburg



Circular Economy calls for Circular green space!

Thank you

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