Cradle to Cradle

The production- and building concept
for the 21st century

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Our current Cradle to Grave ‘Production Model’

make

Take

waste

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Phosphorus

20-50 years

- estimated remaining phosphate reserves

Mined Phosphate Rock

- contaminated with heavy metals e.g. Cadmium and Uranium
- Phostphate contained in mined rock: often at lower levels than incinerated sewage sludge (also in the Netherlands)

Cobber runs out before oil

RESERVES LEFT

- for about 50 years
- 28% of copper extracted by humanity until now considered definitively lost

RE-CYCLING/ RE-USE

- Only 25% of copper recycled 20 years after production
- Decreasing tendency

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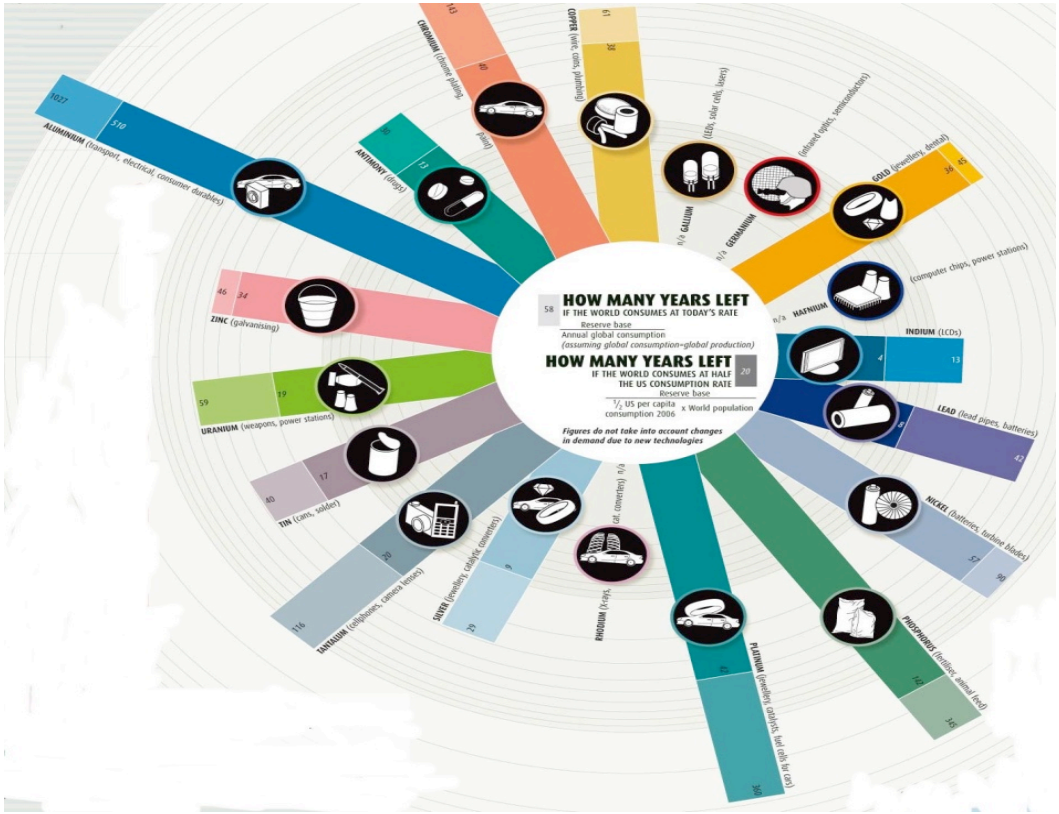
Materials disappear



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Outcome of our Cradle to Grave ’production concept’

40% af energy consumption
Indoor air 3-8 worse than outside air

Toxic chemicals and heavy metals all around us

over 40% of our children have allergies

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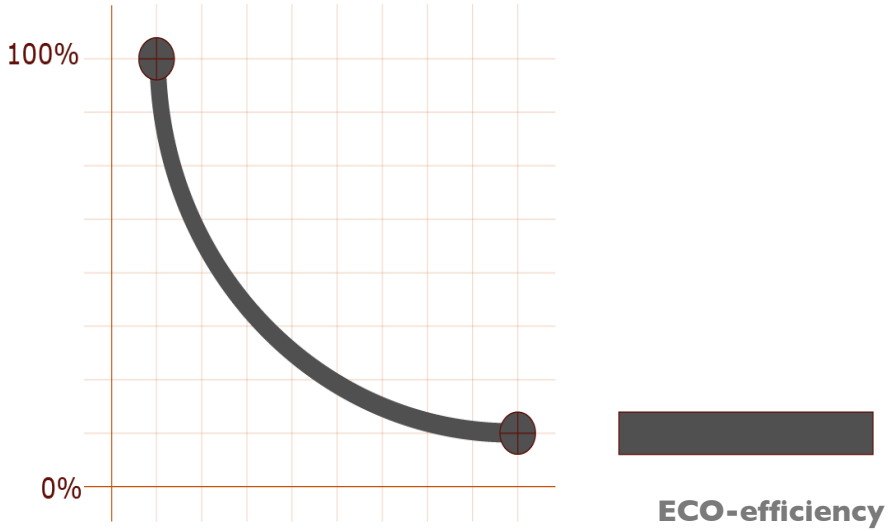
‘Cradle to Grave’ : Target is 0



Reduce, avoid, minimize, prevent

Is the purpose of being here to do less bad?

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Instead of Regulating the Past

Organize the Future

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CRADLE TO CRADLE

- **WASTE EQUALS FOOD (nutrients=nutrients)**
- **USE CURRENT SOLAR INCOME**
- **ACTIVELY SUPPORT DIVERSITY**

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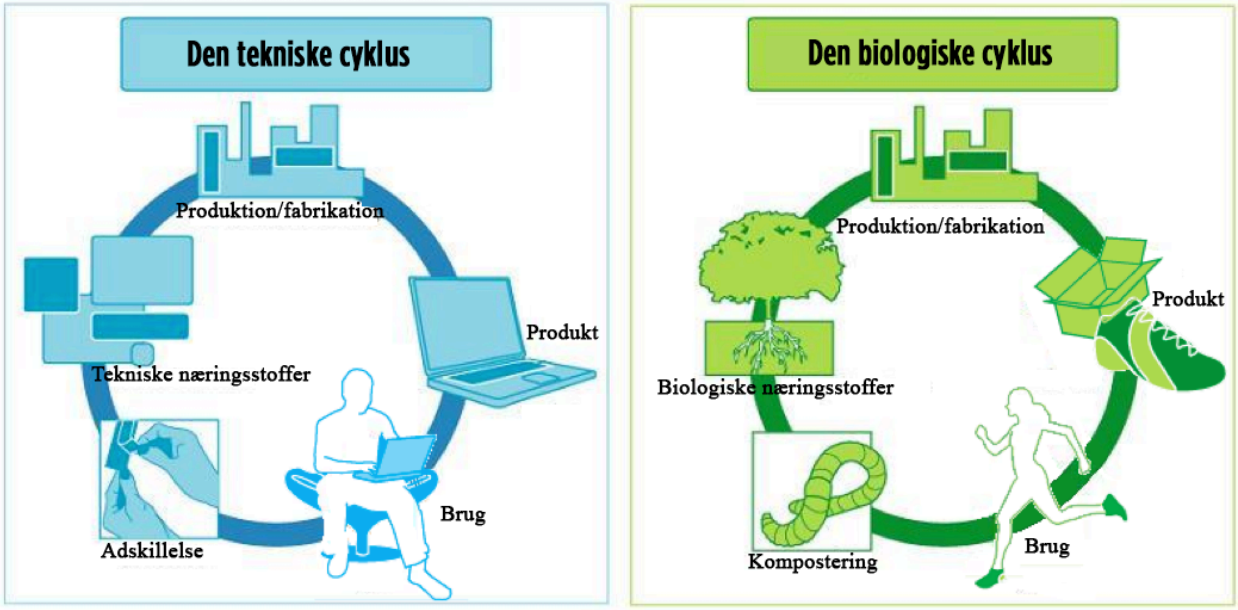
The technical and biological metabolism



Biological cycle

Climatex life cycle

Nike Considered

Cradle to Cradle product platform

(Many hundred products assessed and developed by EPEA over the past 25 years)

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Maersk container ships going Cradle to Cradle

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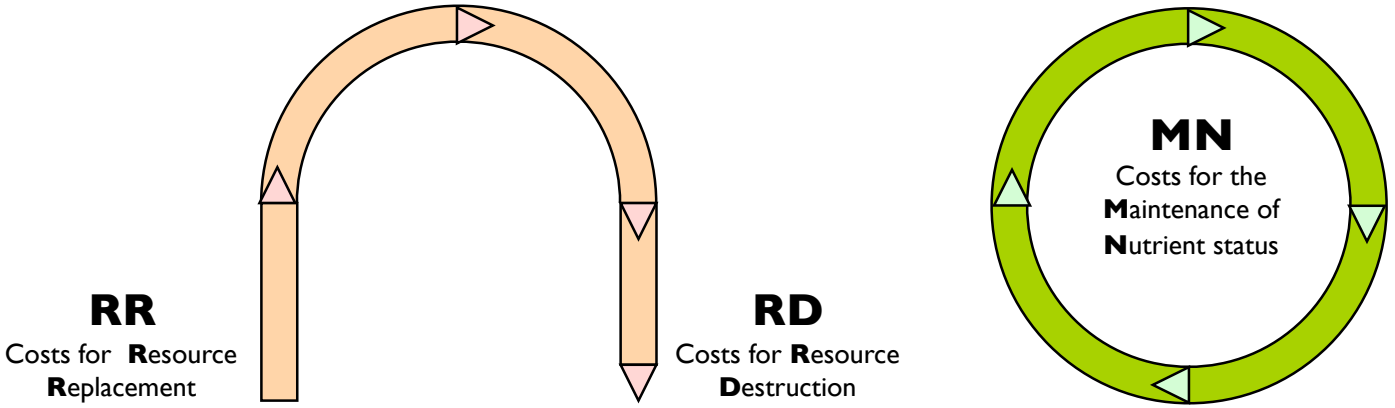
Link til Mærsk video: http://www.youtube.com/watch?v=Axs4MT8QCcg

CRADLE TO CRADLE APPROACH TO COST STRUCTURES

COMPETITION OF STRATEGIES



Research for / Design of the situation MN < RR + RD

Energy savings by recycling

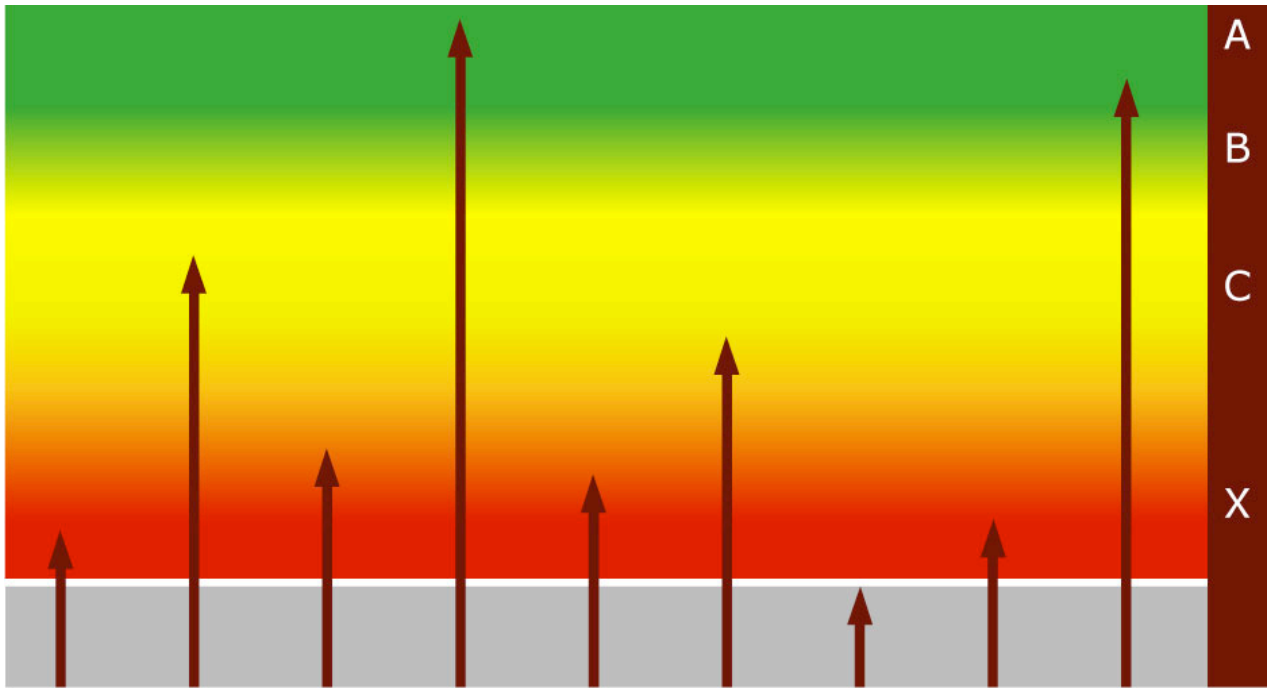
- Production based on rawmaterials from recycling uses much less energy than production based on virgin materials. The amounts of energy we save from recycling are:

- Steel 74%
- Aluminium 95%
- Copper 85%
- Lead 65%
- Paper 64%
- Plastic 80%

Source: Bureau of International Recycling

IDENTIFY THE BEST: ABC-X CATEGORIZATION

Cradle to Cradle is based on an advanced scientific methodology developed by EPEA and MBDC



OPTIMAL

OPTIMIZING

TOLERABLE

NOT ACCEPTABLE

NOT CHARACTERIZED

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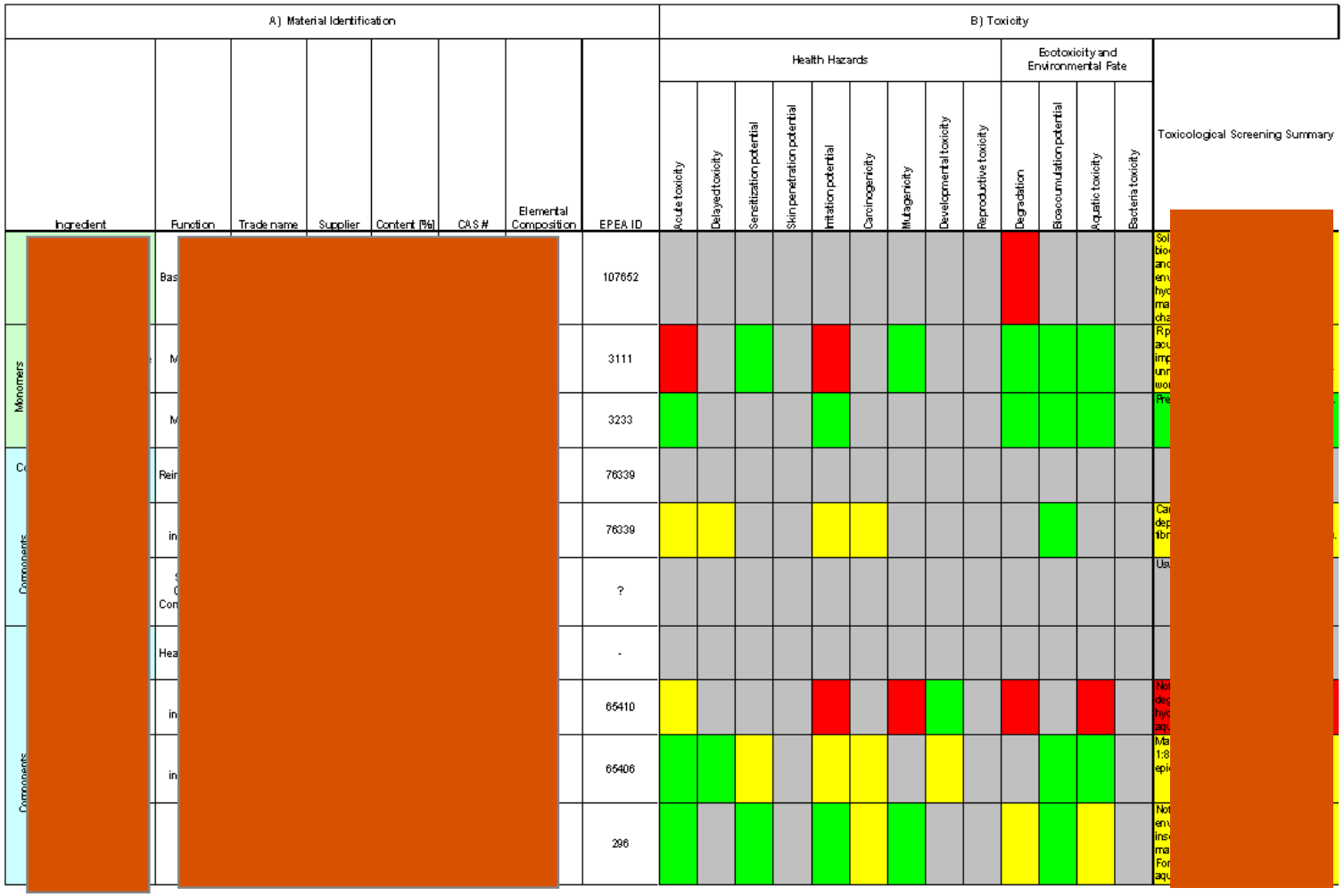
Product assessment by EPEA for a client– Example 2



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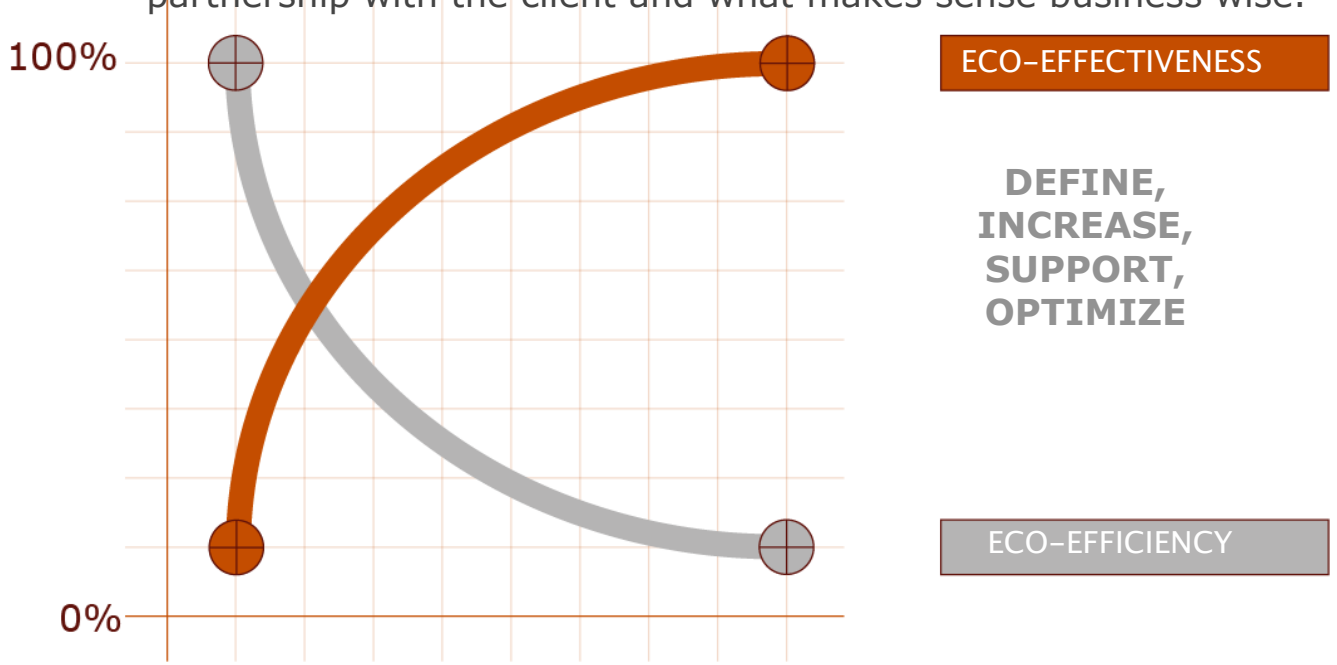
CRADLE TO CRADLE : THE GOAL IS QUALITY

When the product is properly assessed down to 100 PPM we have taken the first step towards a positive agenda. The goal is better business where we ensure healthy material streams for future production and generations.

Cradle to Cradle implementation does not happen over the night - it is a process that happens in a partnership with the client and what makes sense business wise.



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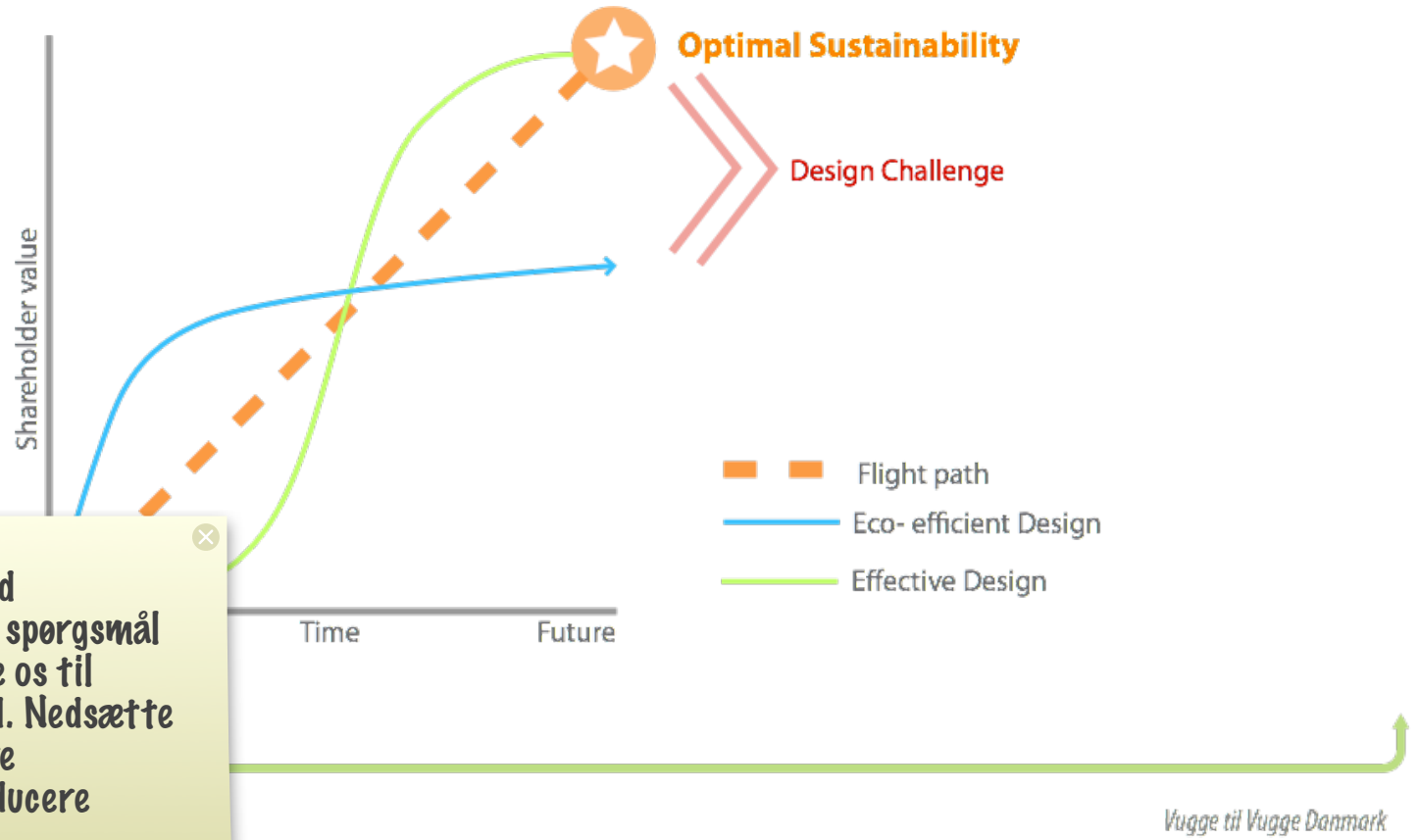
Design challenge



Det samme med bygninger - et spørgsmål om at reducere os til bæredygtighed. Nedsætte energien, færre materialer, reducere vandforbrug, energiforbrug

Når vi arbejder med bygninger arbejder vi med de sm principper, men det er bare mere kompliceret.

C2C in buildings

Is it a biological or technical nutrient?

Are the materials recyclable or compostable?

Can it be taken apart?

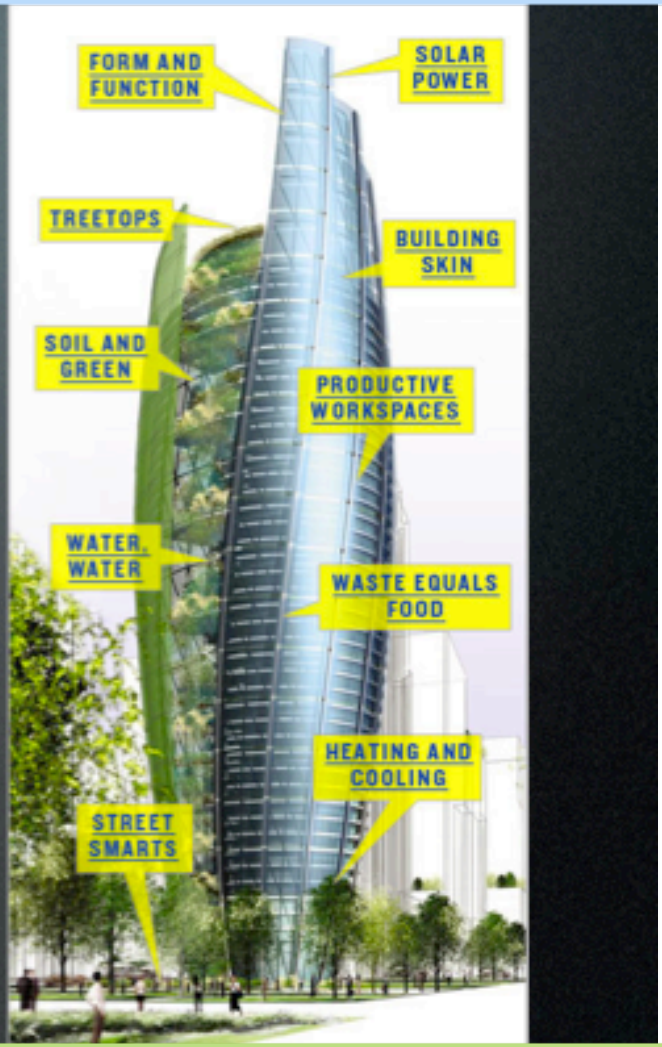
Does your energy come from renewable energy sources?

Is the water cleaner when is comes out of your building than when it came in?

Are you practicing social responsibility?

Tower of tomorrow

- A Cradle to Cradle building is a living building functioning like a tree
- A building that makes oxygen, distills water, produces energy, changes with the seasons – and is beautiful!



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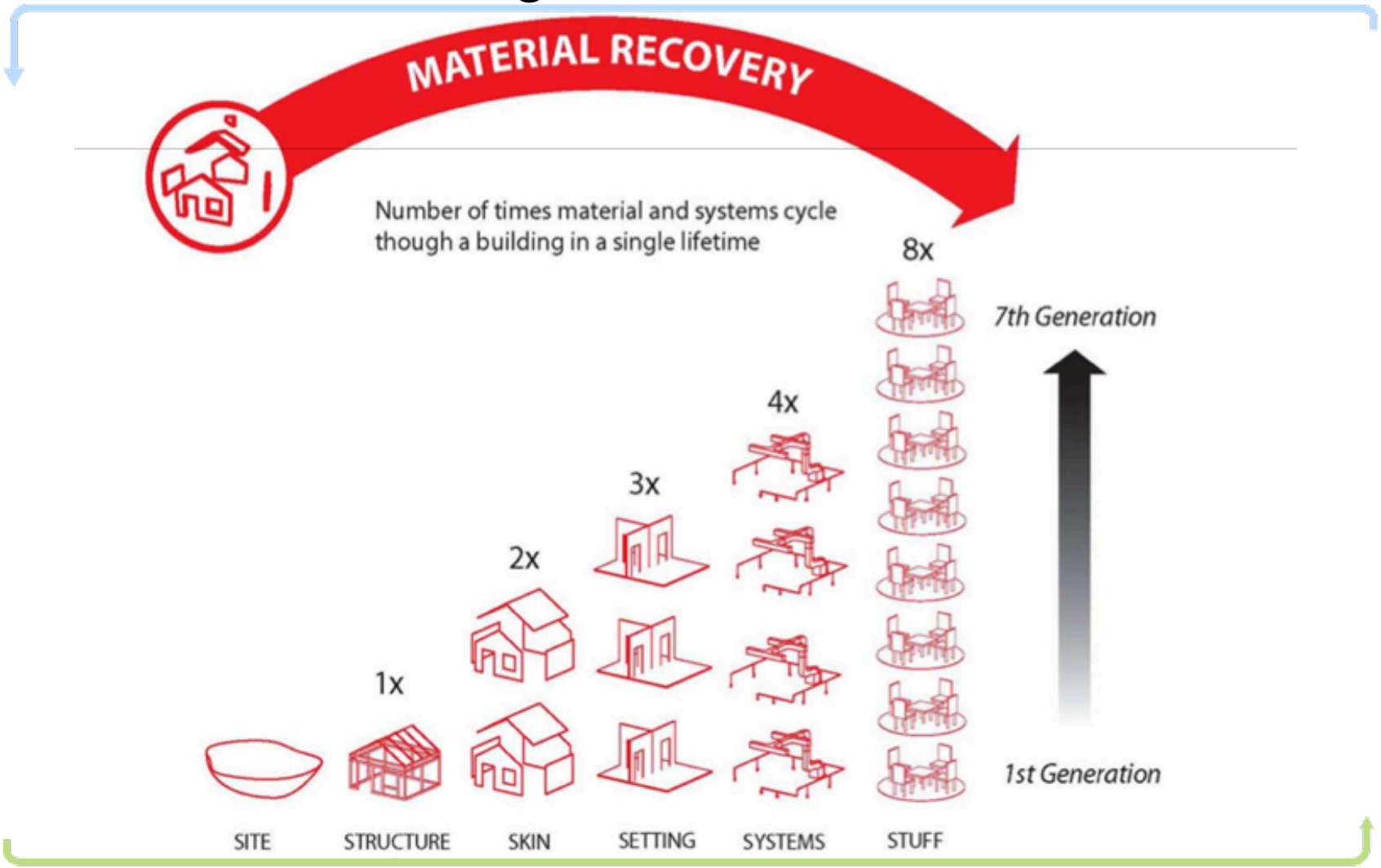
A building is a material bank



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Dutch waste company + furniture producers - new concept

BIONORICA AG– PRODUCERER URTEMEDICIN – NYT HOVEDKONTOR

HEIDELBERGCEMENT

DESSO
The Floor is Yours

backhausen
interior textiles

SCHÜCO

xero floor

ahrend

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Titanium Oxide - NOX to nitrate, solar cells instead of roof tiles, windows leased, C2C interior, green walls

UCSF Medical Center at Mission Bay, San Francisco, California

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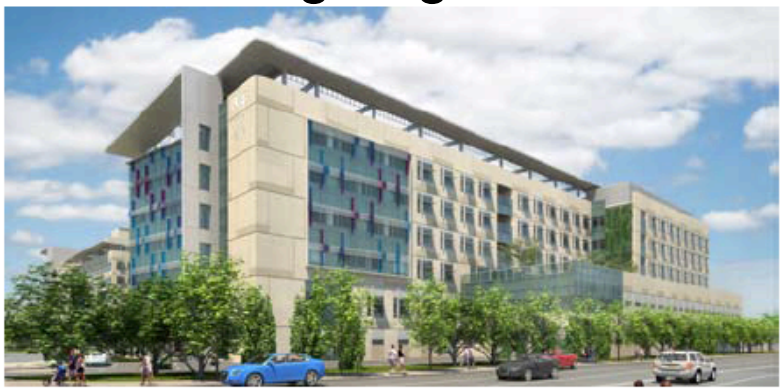
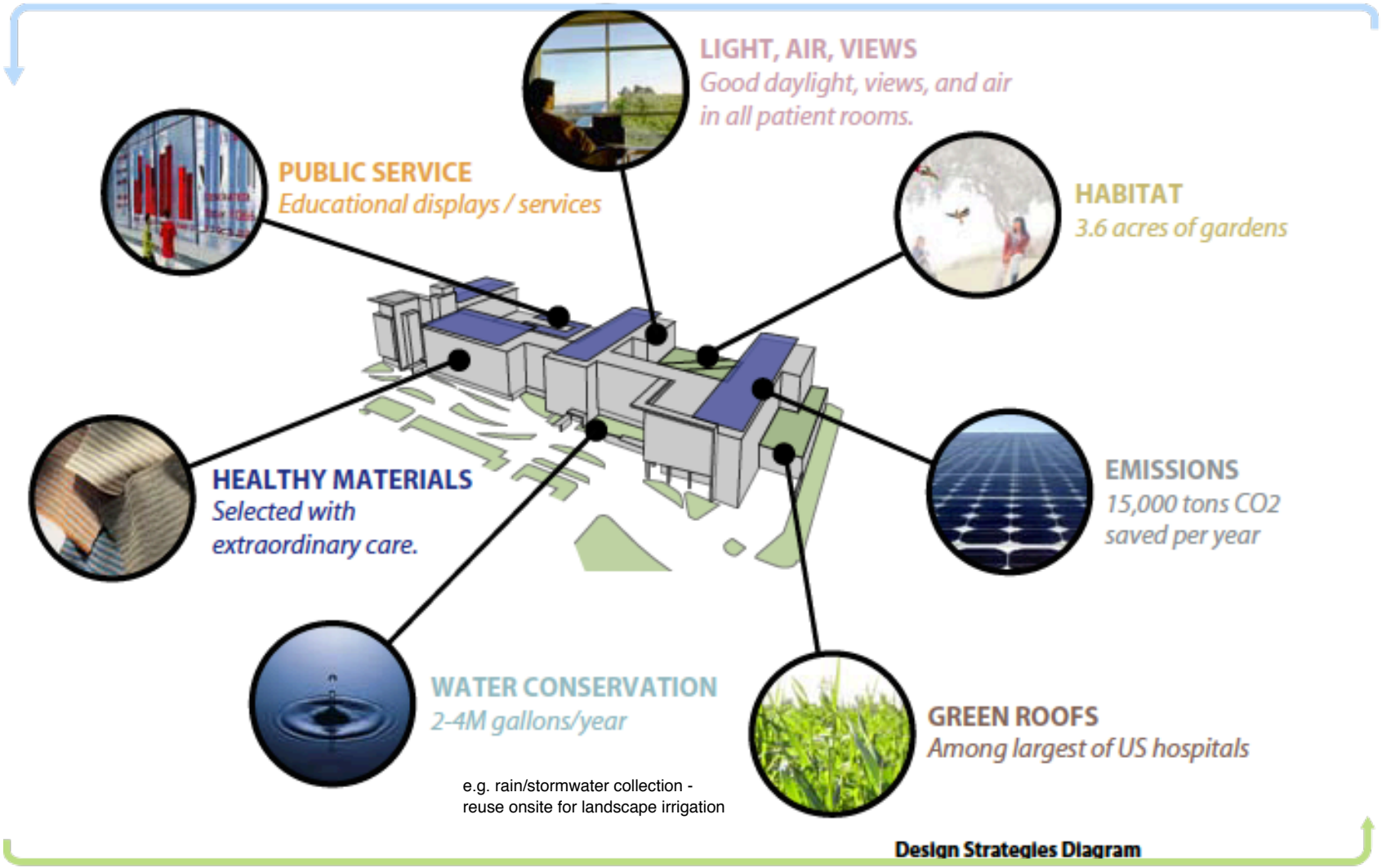
William McDonough & Partners working on the project

Latest research in evidence-based design combined with the leading edge of sustainability practices

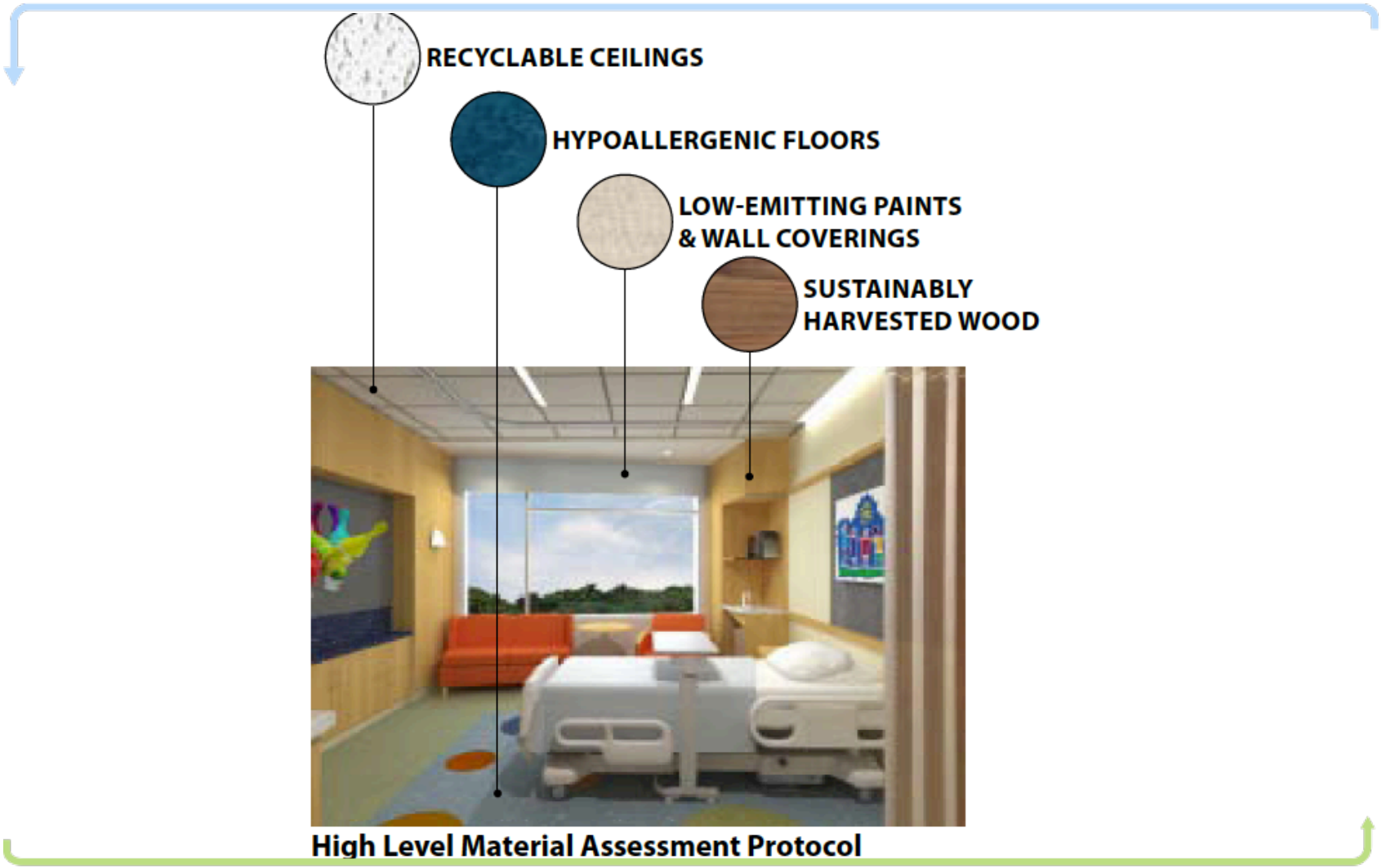


Access to light and nature from all rooms *Vugge til Vugge Danmark*

William McDonough & Partners working on the project



William McDonough & Partners working on the project



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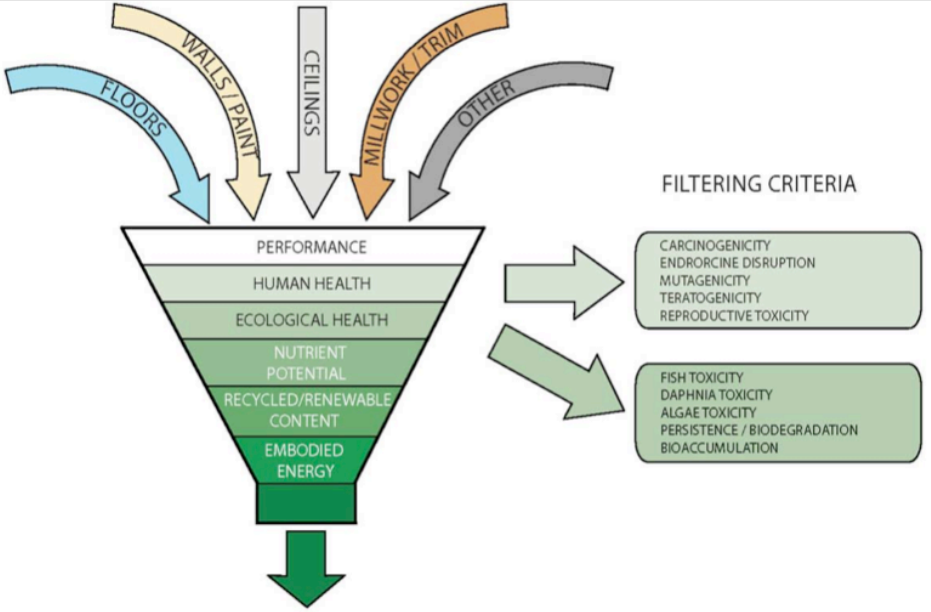
Available materials



Acceptable materials (<10%)

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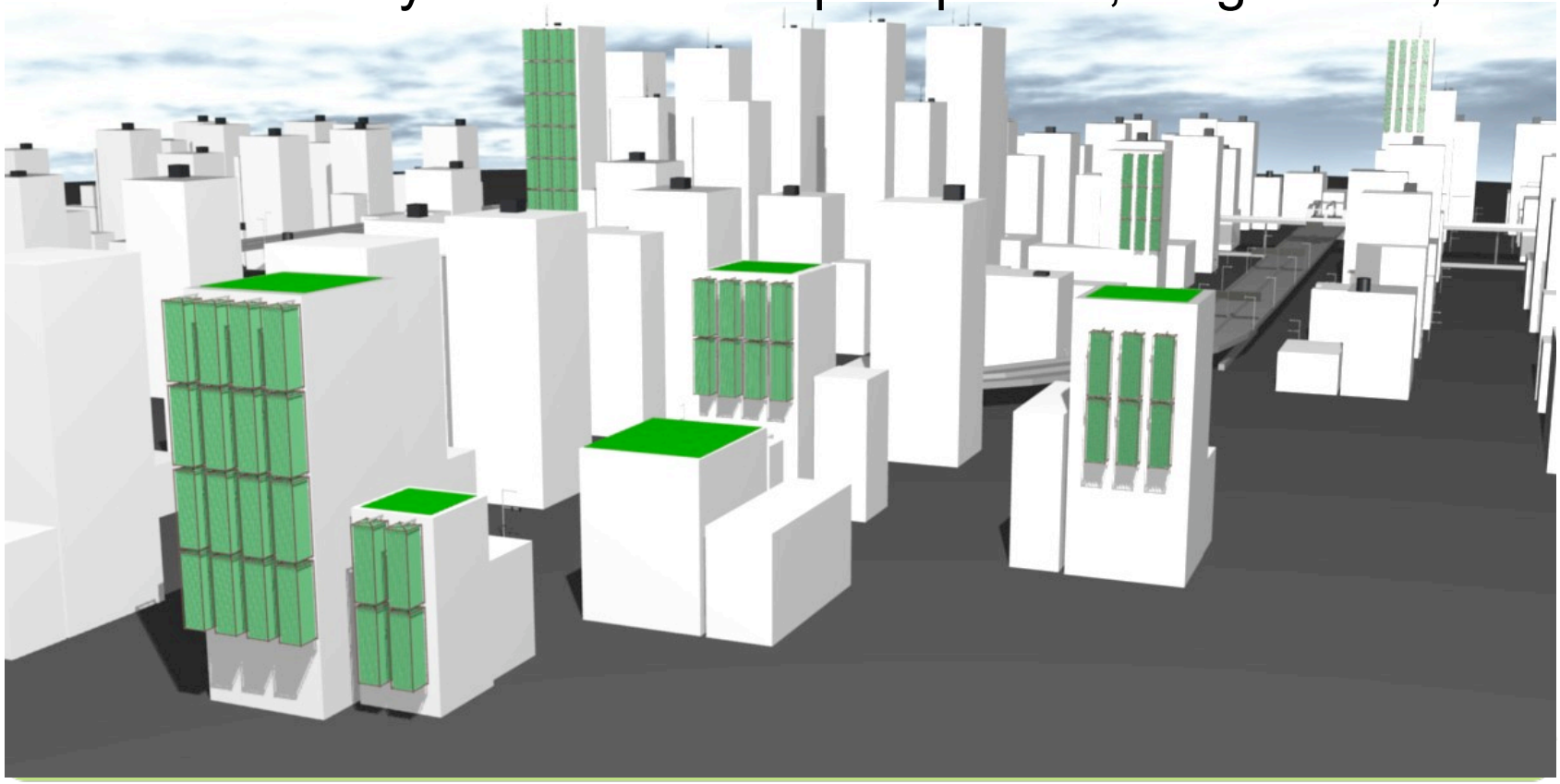
Wastewater, CO2 - alges can be used for making energy via biogas
The rest can be crystallized out as phosphorus, magnesium, nitrate



City alge farms

Concept developed by Ecoduna

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Alges can clean hospital waste water

Concept developed by Ecoduna

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Increase biodiversity, clean water and air

Ford Motor Company

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ORTION OF THE 20 YEAR PLAN IMPLEMENTED BY 2003

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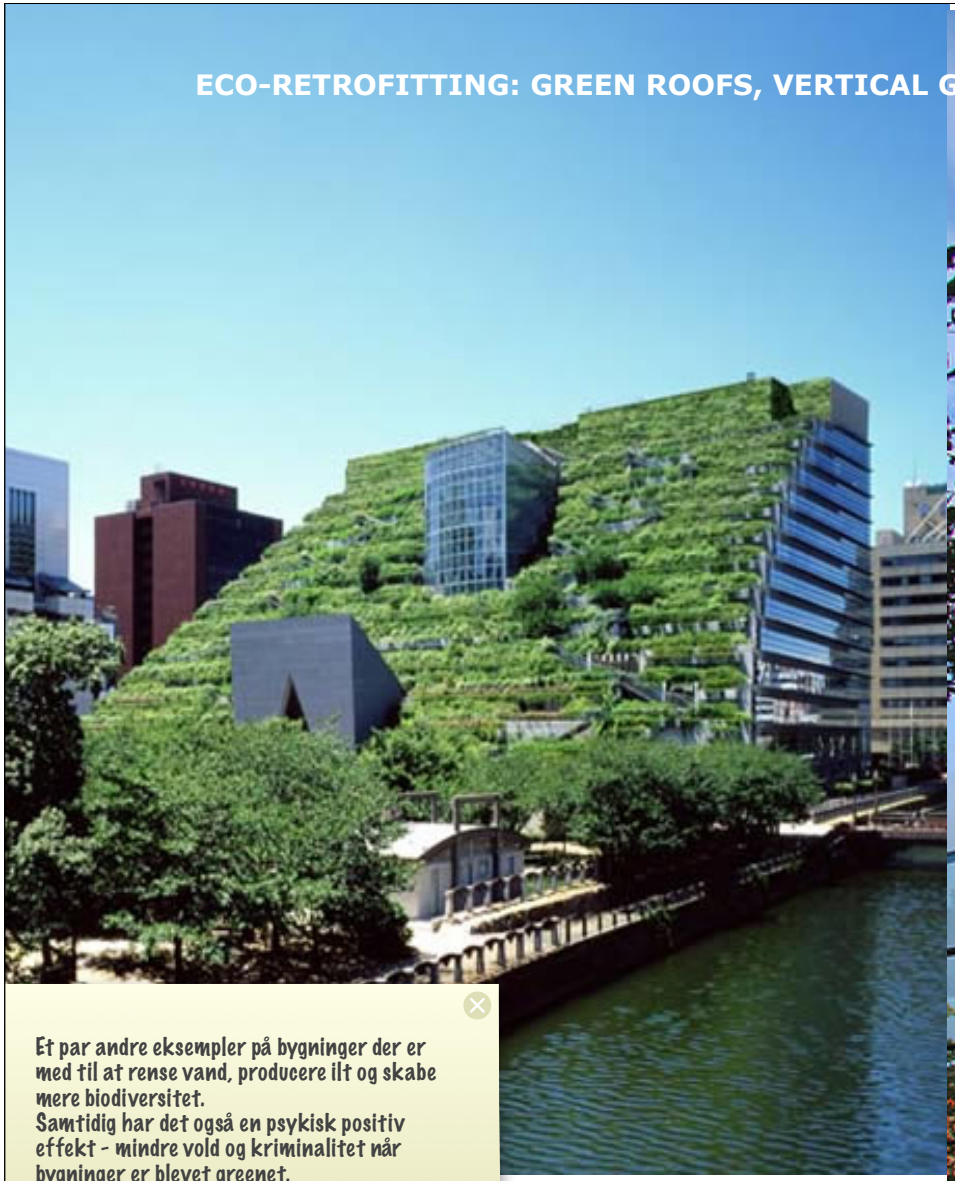
ECO-RETROFITTING: GREEN ROOFS, VERTICAL GARDENS ...



Et par andre eksempler på bygninger der er med til at rense vand, producere ilt og skabe mere biodiversitet.
Samtidig har det også en psykisk positiv effekt - mindre vold og kriminalitet når bygninger er blevet greenet.

, Japan. http://www.metaefficient.com/images/

Musée du quai Branly, Paris http://www.thegrowspot.com/know/f5/vertical-gardens-living-walls-53838.html

Anvendelse

Vertikale plantevægge

GrowTek – vejen til en grønnere verden

ENKA®-MOSS:

Moss that absorbs fine particulate matter and converts it into phytomass without residues. Can also be used on buildings.

omsætter skadelige SOX og NOX partikler

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BB Lightconcepts

- LED lighting made fully recyclable and you can lease it, because they want the materials back.

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How can a building be good?

Realdania funded project on developing Cradle to Cradle building manual exemplified through Green Solution House and COWI pavillon

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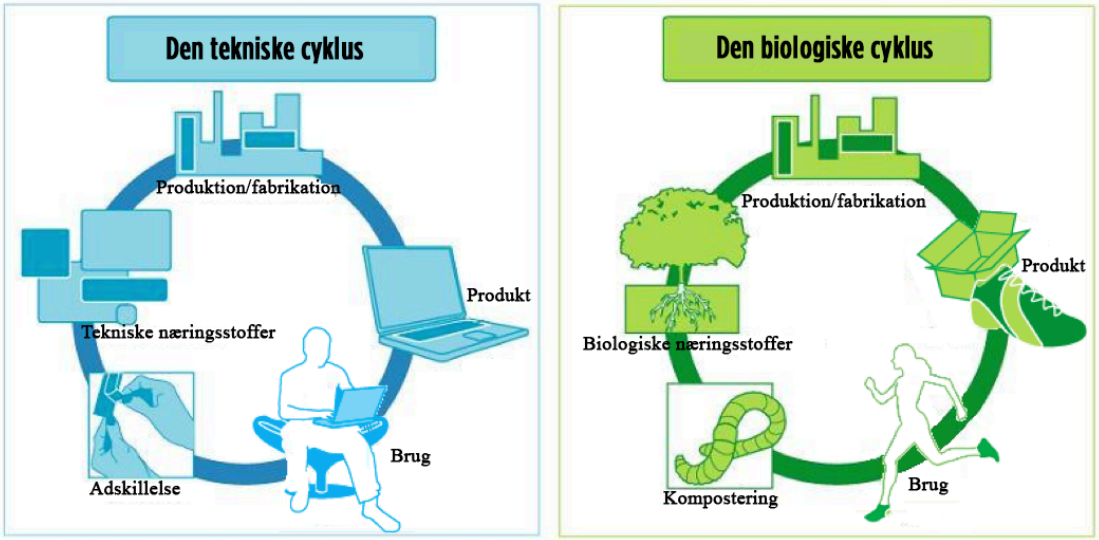
Thank you!



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