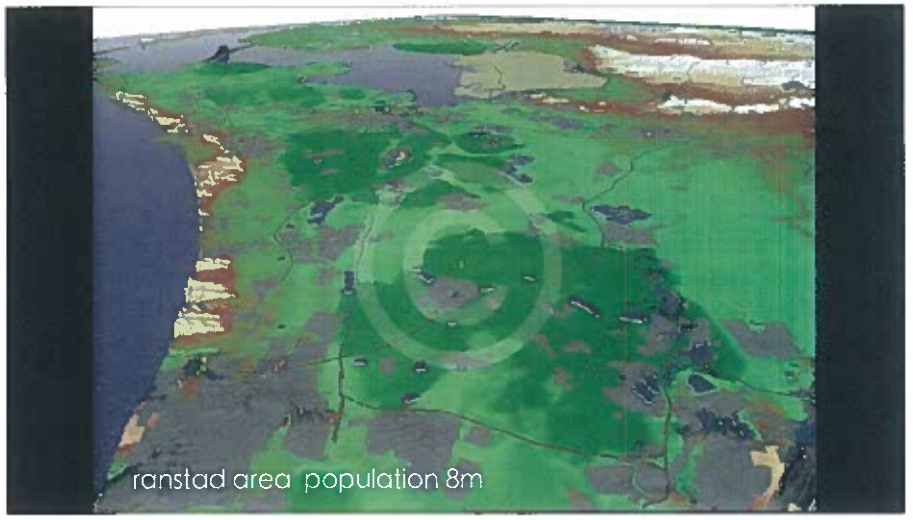
Realising the Bio-economy in the Baltic Sea Region
Workshop III, Warsaw, Poland

4-5 March 2015

David Goehring Architect
Facilitator Physical Environment

CHORA
CONNECTION

norden



produces oxygen
creates habitat
stores carbon
fixes nitrogen
distills water
builds healthy soil
uses the suns energy to make food
creates cooling through evaporation
changes with the seasons
self replicates

cradle to cradle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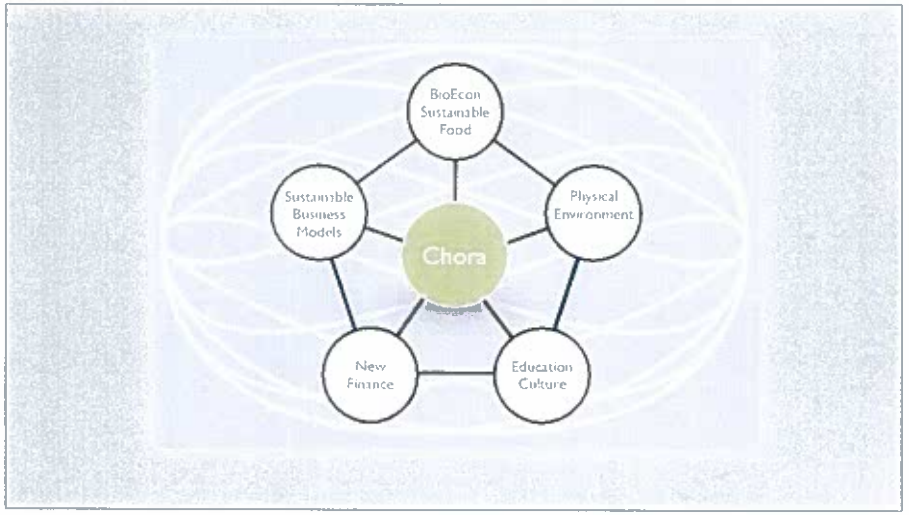
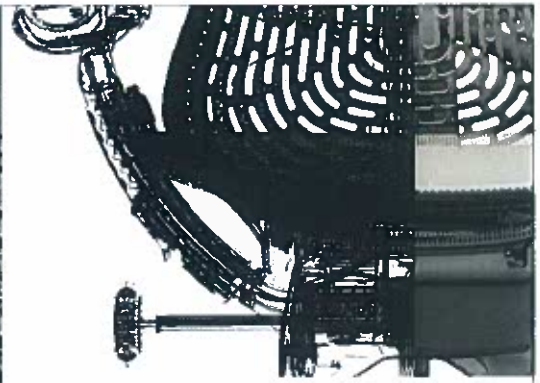
who are we?
CHORA
CONNECTION
creating resilient &
sustainable societies


BioEcon
Sustainable
Food
Physical
Environment
Education
Culture
New
Finance
Sustainable
Business
Models
Chora


circular economy

biological



technical nutrient

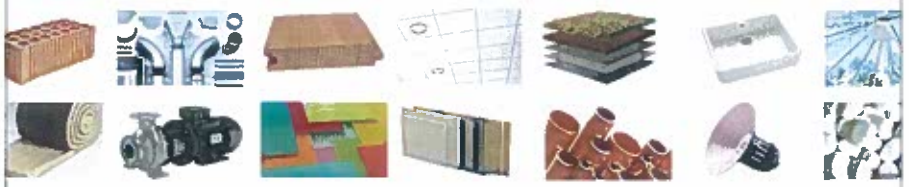
design for disassembly

flexible building methods

circularity in buildings

Consider the goods of today,
as the resources of tomorrow,
with the resource prices of yesterday.

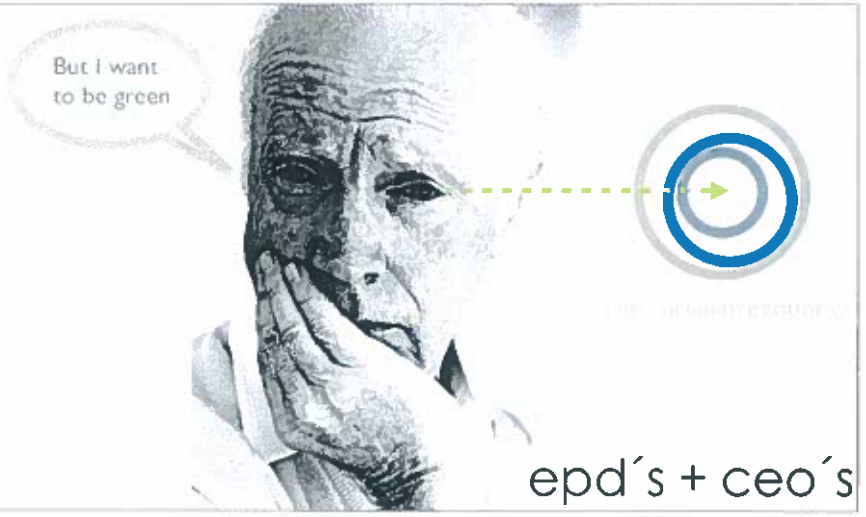
-Walter Stahel 1982



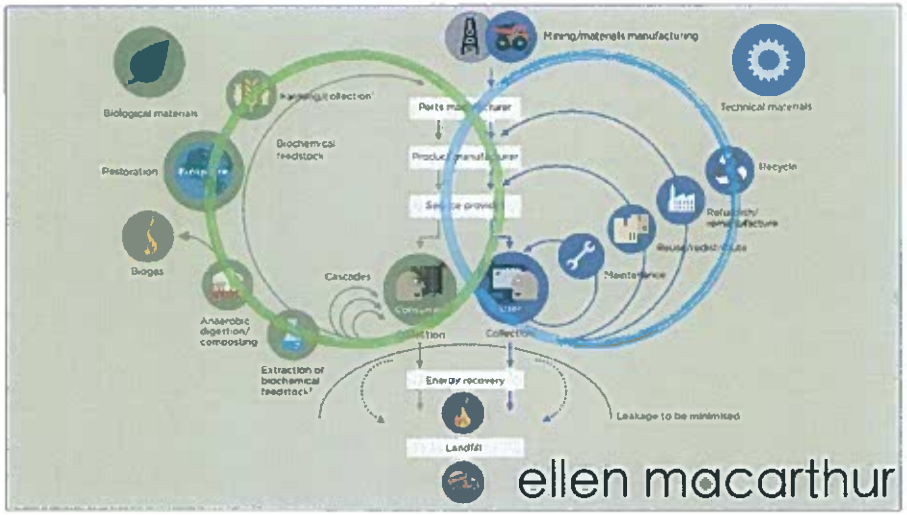
value chain changes

DGNB Green Building Challenge LEED ISO- 14000 Cradle to Cradle The Circular Economy

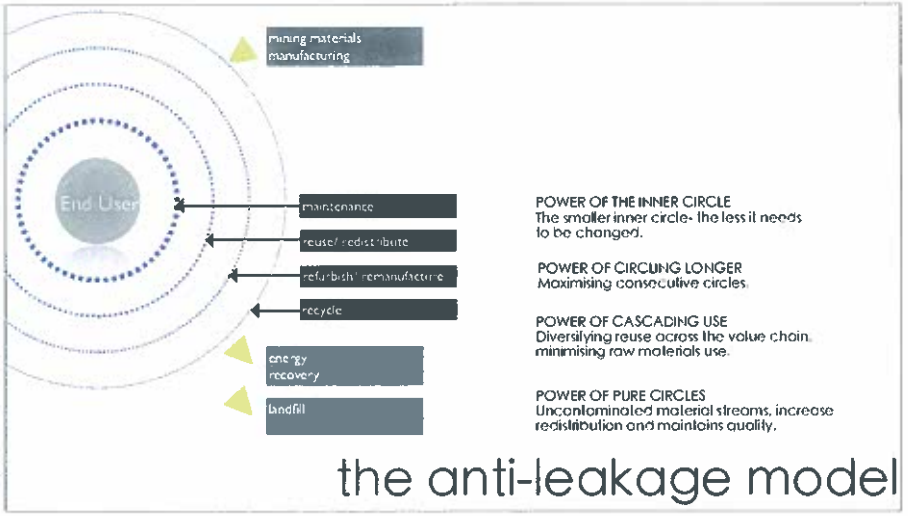
material ratings systems



epd´s + ceo´s



ellen macarthur



the anti-leakage model

Create products and services that are TRULY CIRCULAR.

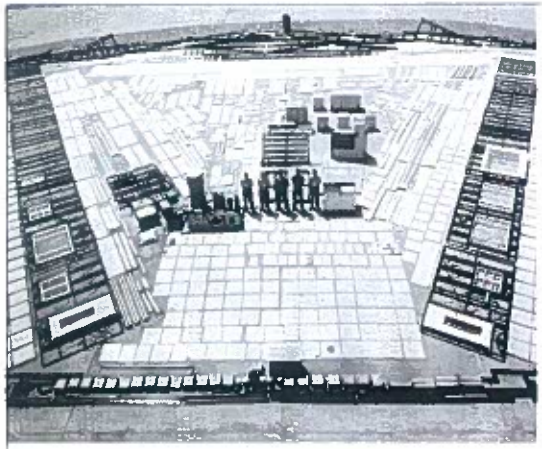
- Maximises re-use at minimum cost
- Reduces resource and energy expenditures
- Reduces exposure to volatile materials prices
- Minimises waste
- Creates local jobs

manufacturers

Establish a new data base of END USERS that are no longer interested in ownership- only PERFORMANCE.

- With the END USER of the product, establish a menu of performance based solutions to meet a specific set of needs.
- END USER receives a PSS- product service system solution that fully meets his performance requirements along with the best possible financial terms and conditions.
- Monitor the performance and make timely recommendations to the MANUFACTURER when adjustments to the product service are required.

end users

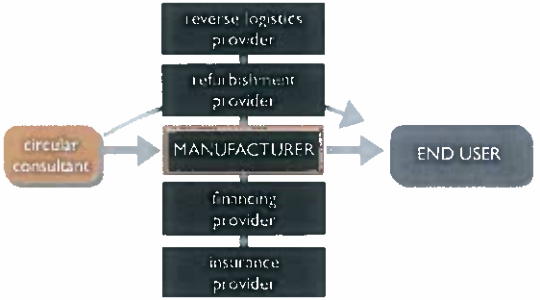


Everything is a NUTRIENT for something else

Material reverse logistics

A building is a materials bank

materials passport



- Identify the circular economy potential
- Design the best possible solution
- Identify and recruit the required partners
- Build an independent and credible reuse materials database
- Provide credibility to the solution

performance- based design

MANUFACTURER

Phase 1.0 Inventory product line

Phase 2.0 Feasibility- CIRCULAR v BASE case
- Product readiness
- Supply chain complexity
- Materials value
- Business case
- Industry readiness

Phase 3.0 Implementation
- Product re-design
- Reverse logistics re-fined
- Refurbishment options
- Finance strategies
- Insurance implication

END USERS

Phase 1.1 Market target of both MANUFACTURER/ and consultant's sources

Phase 2.1 User feasibility
- Budget
- Redefining values from ownership model to performance based design model

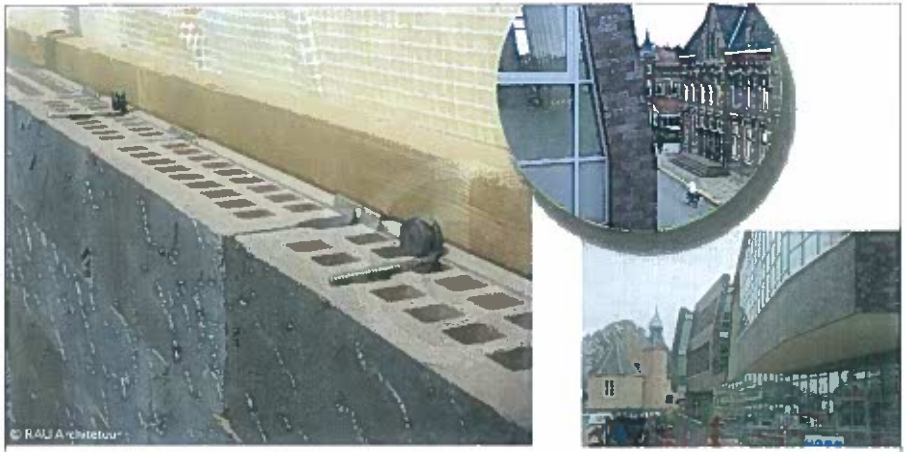
Phase 3.1
- Road map Circular + Linear
- Financial offering(s) with incentives for renewal
- Monitor performance for MANUFACTURER

parallel services

MANUFACTURERS	#	product readiness	supply chain complexity	materials value	business case	industry readiness
construction companies	2					
construction materials	7					
installations	2					
consumer durables	1					
LED lighting	3					
parking facilities	2					
furniture	5					
flooring	2					
interior walls	1					
very positive						
positive						
neutral						
negative						
very negative						

cases

design for dis-assembly

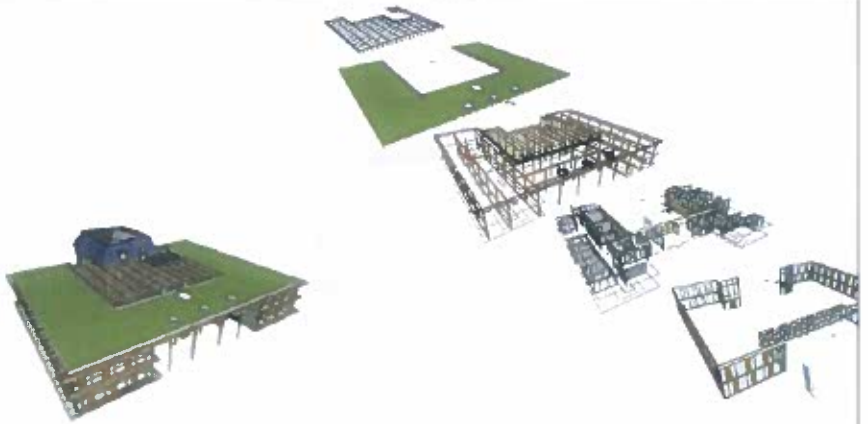


bricks for dis-assembly

greenroof for dis-assembly

upcycle house

100% design for dis-assembly



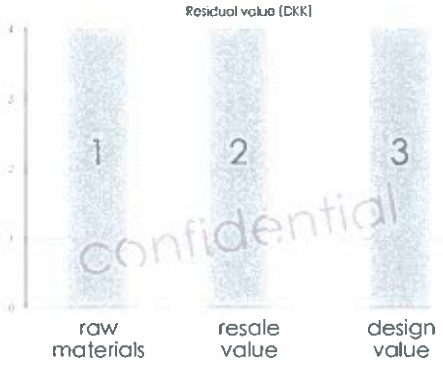
bim technology

phillips pay per lux

Contract duration
Product technical lifecycle
Product second life possibilities
Residual product value
Refurbishment cost

Interest
Installation cost
Reverse logistics cost

key ingredients



levels of residual value



1st life	5 yrs @ customer	5 yrs @ customer	5 yrs @ customer
2nd life	5 yrs @ customer	5 yrs @ customer	Scrap materials
3rd life	5 yrs @ customer	Components / scrap	
4th life	Components		
5th life	Scrap materials		

second life determines value



	High value chair	Medium value chair	Low Value chair
Technical lifecycle	20 years	10 years	5 years
Second life possibilities	High	Medium	Low
Residual value	High	Medium	None
Refurbishment cost	Low	Medium	N/a


P	1000	1000
W	1	1
R	20%	90%
L	5 yrs	10 yrs
M	160	10

93,75% material savings

$$M = P * W * (1-R) / L$$

P = quantity of end product

W = weight per product

R = reuse / recycle rate

L = lifecycle duration

M = raw materials used

society benefits

Lifecycle 1	Lifecycle 2
Normal profit margin on product	28% profit margin on second life
Financing covered by interest	Financing covered by interest
Risks covered by additional margin	Risks covered by additional margin
Better market penetration (high end)	Access to new market (lower end)

Returning cash-flows instead of one-off
Continued, steady customer relationship
Safeguarded future access to resources
Sustainable image

manufacturer benefits

Lamps become
LIGHT

changing perspectives

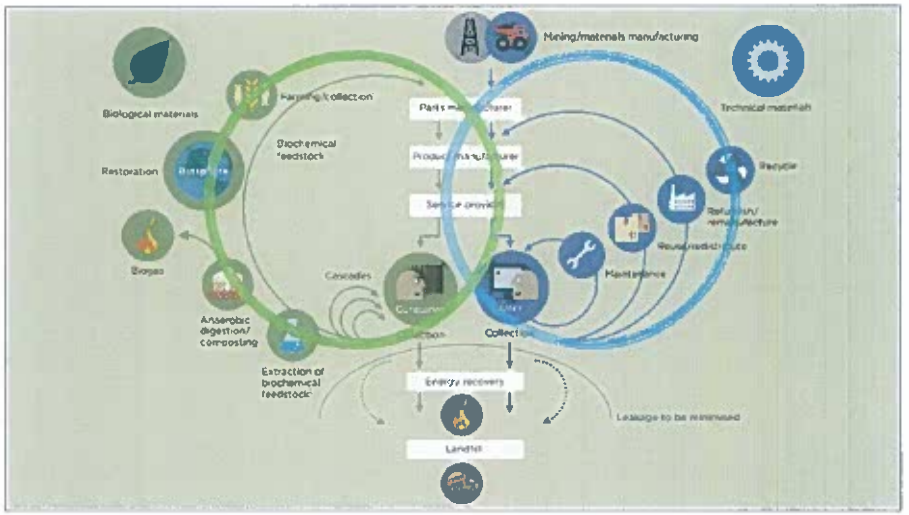
Windows become
VIEW

changing perspectives

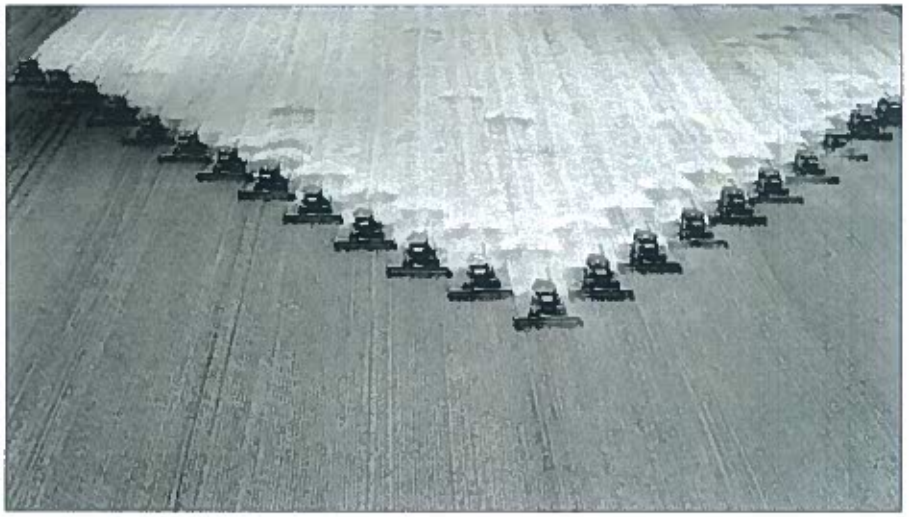
Cars become
MOBILITY

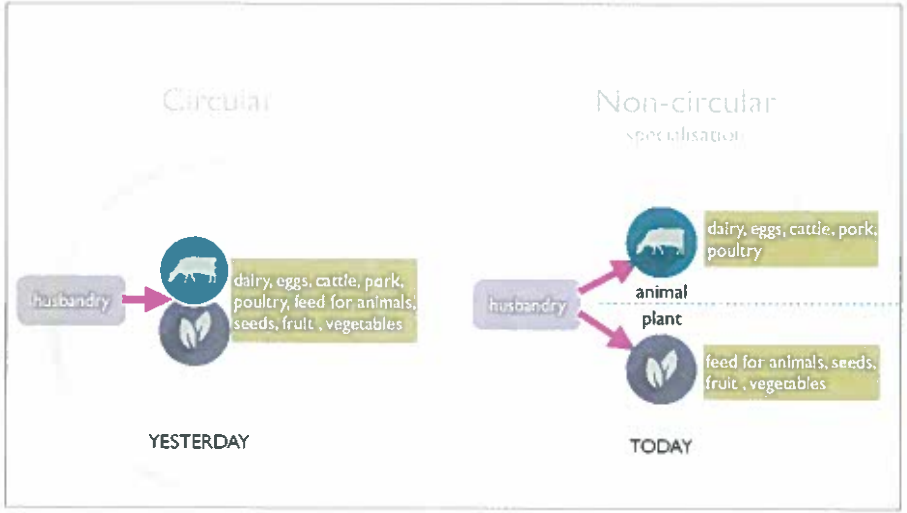
changing perspectives

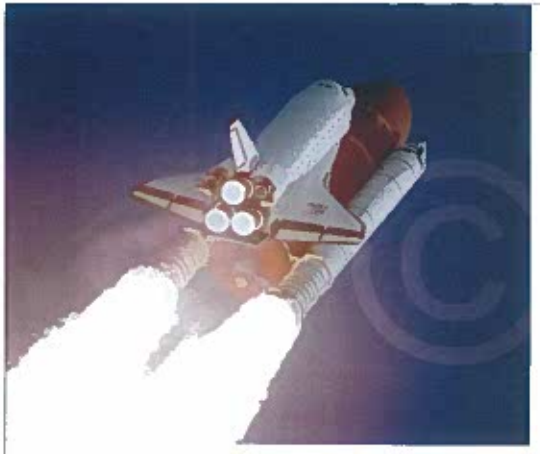
bio-economy


Mining/materials manufacturing
Biological materials
Technical materials
Biochemical feedstock
Restoration
Recycle
Biogas
Cascades
Maintenance
Anaerobic digestion/ composting
Collection
Extraction of biochemical feedstock
Energy recovery
Landfill
Leakage to be minimised


fresh water
marine
human capital
wilderness
forests
farmed land
fisheries
bioenergy
production
nature based tourism
horticu
industries
chnology
production of finished goods
arts and crafts
secondary industries
distribution
support industries
research
distribution
support indus
sector
innovation
sustainable resources
education
innovation
backbone




Circular
Non-circular
husbandry
dairy, eggs, cattle, pork, poultry, feed for animals, seeds, fruit , vegetables
YESTERDAY
husbandry
animal
plant
dairy, eggs, cattle, pork, poultry
feed for animals, seeds, fruit , vegetables
TODAY



Providing the most sustainable solution

Building a continued customer relationship

Realising a continued cash flow

Securing precious raw materials for the future

Accessing new market potential

who benefits?


DZIĘKUJEMY
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CONNECTION
creating resilient &
sustainable societies