

Zoom practices



- **Use your full name and do not change it during the course**
- **Keep your microphone muted, but video on when interacting**
- **Questions:**
 - **Via chat field**
 - **Or raise your hand (chat field) and ask (video)**
- **Presentations are not recorded**



Aalto University
School of Arts, Design
and Architecture

Design Approaches to Sustainable Consumption

**Session 1 (9:15-12:00):
Introduction to Design for Sustainability**

Tatu Marttila, Shreya Sood, Mikko Jalas

11.1.2022

Agenda today

9:15–9:45

Course introduction

- *Short round of introductions*
- *Course practicalities*
- *Sessions and schedule*
- *Case work and themes*

9:45–10:30

Introduction to Design for Sustainability (lecture part)

10:45–11:15

Discussion in breakout rooms (session readings: chapters 2-5)

11:15–11:40

Present results of group discussions

11:40–12:00

Next session & case work theme selection

(after session voting on case topic preferences...)



Teacher:



Dr. Tatu Marttila

- Post-doctoral researcher and lecturer
- Aalto University School of Arts, Design and Architecture
- Alumni of UIAH, MA in industrial design
- Doc studies 2010–2018
- https://people.aalto.fi/index.html#tatu_marttila
- tatu.marttila@aalto.fi

My research interests...



My general area of interest has been in **strategic codesign for sustainability transitions**:
How design can be of help in transforming our socio-technical systems to achieve sustainability.

Course intro

Course introduction

Design Approaches to Sustainable Consumption -course introduces students to the topic areas of design for sustainability and frameworks including product-service-systems, service design and material circulation.

Teachers: Tatu Marttila, Mikko Jalas, Shreya Sood (@aalto.fi)

Schedule: Tuesdays and Thursdays (9-12) in Zoom

Teaching period: III (11.1.-17.2.)

Course practicalities

MyCourses acts as the main platform for materials and information. See section "Materials" for readings and slides, "Assignments" for Learning diary and few other tasks, and "Case work" for teamwork with your case topic

Main communication channel "Announcements" in MyCourses and email

Lectures organized in Zoom, the same static link for all sessions

Main individual assignment: Learning diary with weekly reflections

Case work: Working in 5-6 student teams on food sustainability theme

Learning diary

During the course students write a learning diary, which is also one main component in grading. The learning diary consists of weekly reflection on readings, lecture contents, and also your case work progress. The outcome is a complete and finalized document with ~10 pages.

Weekly topics and more detailed instructions will be listed to MyCourses under "Assignments"

Will be submitted via MyCourses; Deadline at the end of course (20.2.?)

Completing the course and grading

To pass, the students are required to attend the lectures (80%) and perform all the assigned exercises, readings and written tasks given each week.

Assessment methods and criteria:

- Individual writing task: Learning diary = 30%
- Active presence at the course (eg. discussion, chats) = 20%
- Case work, inc. presentations & final report = 40%
- Peer evaluation in groups = 10%

Course schedule

Working days	Tuesdays	Thursdays
Week 1	Introduction to course; DfS introduction (11.1.)	Case introduction: Food system sustainability (13.1.)
Week 2	Design for sufficiency (18.1.)	System design and circular economy (20.1.)
Week 3	Assessing and communicating impacts (25.1.)	Present case ideas (27.1.)
Week 4	Taking it into action (1.2.)	One planet lifestyle (3.2.)
Week 5	Scaling-up sustainability transitions (8.2.)	Case work tutoring (10.2.)
Week 6	Final presentations #1 (15.2.)	Final presentations #2 (17.2.)

Case work

Case work

Besides lectures, there is a case assignment in which the students work in 5-6 person teams

Teams work independently but in contact with client mentors, and produce design concepts that are communicated in presentations and project reports

Teams formed for Thursday, based on your preference of theme/topic, voting later today!

Case presentation days:

- Idea presentations on 27.1. (short pitches)
- Final presentations on 15.2. and 17.2. (5 groups each day)

Case themes/ topics

- 1 Nudging for healthier and more sustainable food choices**
- 2 Visualizing and communicating carbon footprint and sustainability impact**
- 3 Future food system transport and logistics**
- 4 Functions of food, (sustainability, justice,) and how to communicate them**
- 5 Carbon farming and food services**

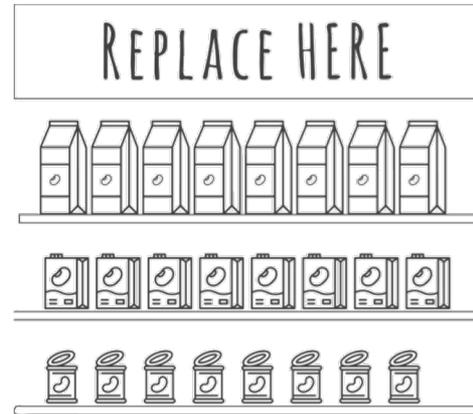
See case topics in MyCourses:

<https://mycourses.aalto.fi/course/view.php?id=33924§ion=3>

1.

Nudging for healthier and more sustainable food choices

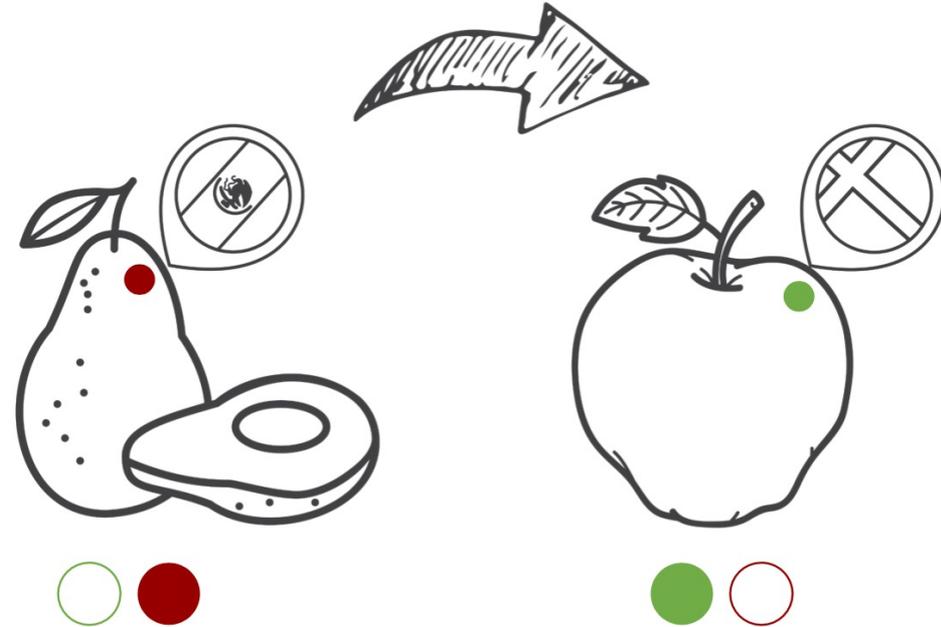
How to steer people to choose sustainable options in retail shop or in internet? Theme focuses on how to take advantage of ‘nudging’ in the context of the food trade. This can help consumers make more sustainable and healthier food choices by making them easy and attractive



2.

Visualizing and communicating carbon footprint and sustainability impact

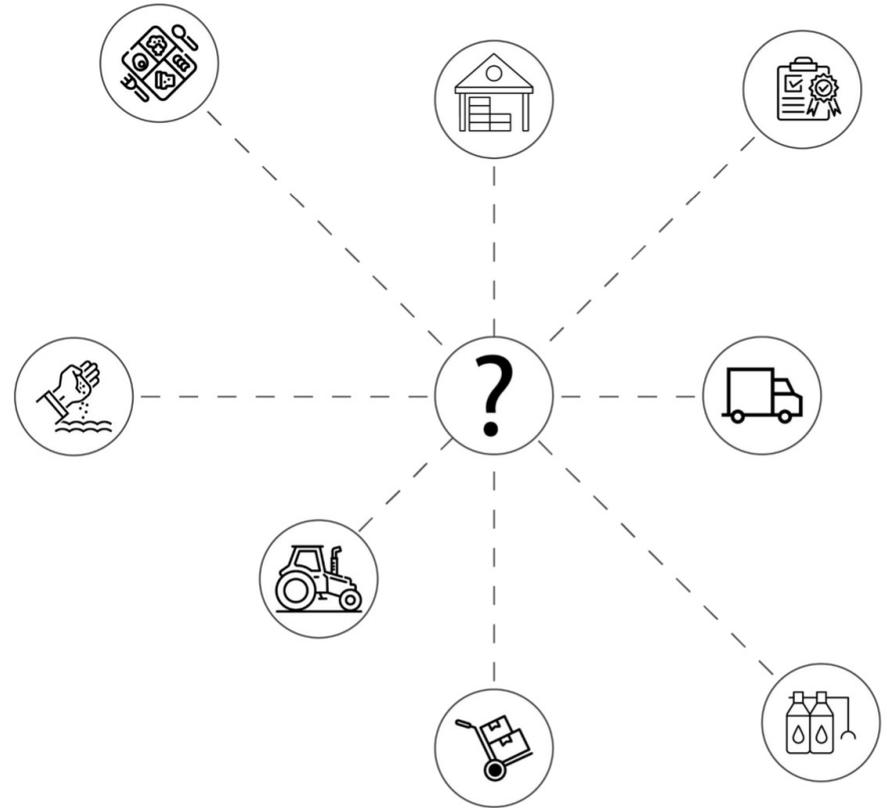
What services are needed for consumer-specific carbon footprint assessment, visualization, and low-carbon purchasing planning? Theme focuses on how to create visualise consumption and create new incentives to mitigate it.



3.

Future food system transport and logistics

*What could be the sustainable logistics solutions for future food services?
Theme focuses on future food logistics, distribution, and transport systems.*



4.

Functions of food, (sustainability, justice,) and how to communicate them

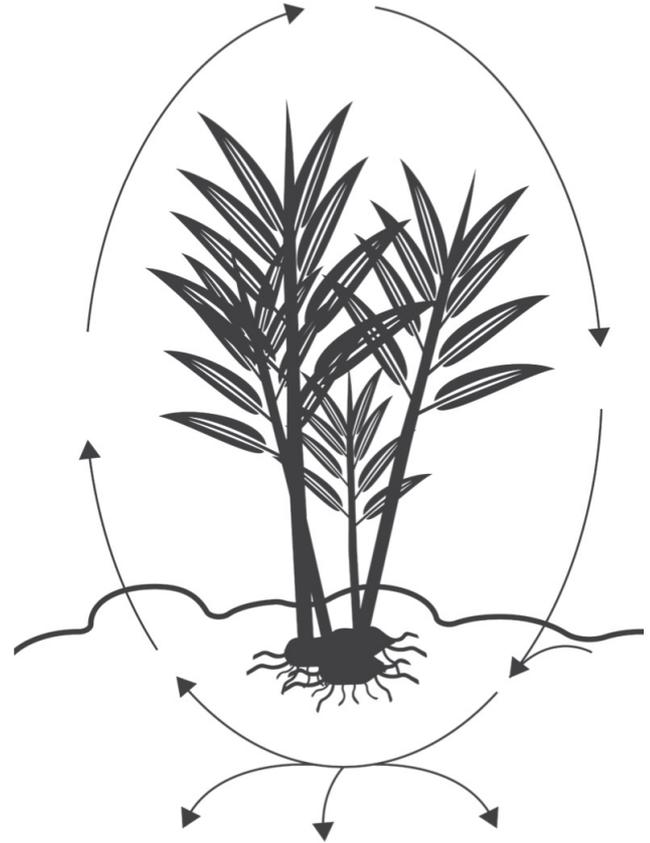
What are the functions of food in the future? How are they communicated to the consumer? Focus on the health, well-being, etc. functions and sustainability of food, and communicating about it at the product level or through campaigns.



5.

Carbon farming and food services

How farmer-trade cooperation can promote carbon cycling and carbon sequestration? The focus on opportunities is to promote the carbon cycle and carbon sequestration in agriculture, ie the storage of carbon in the soil.

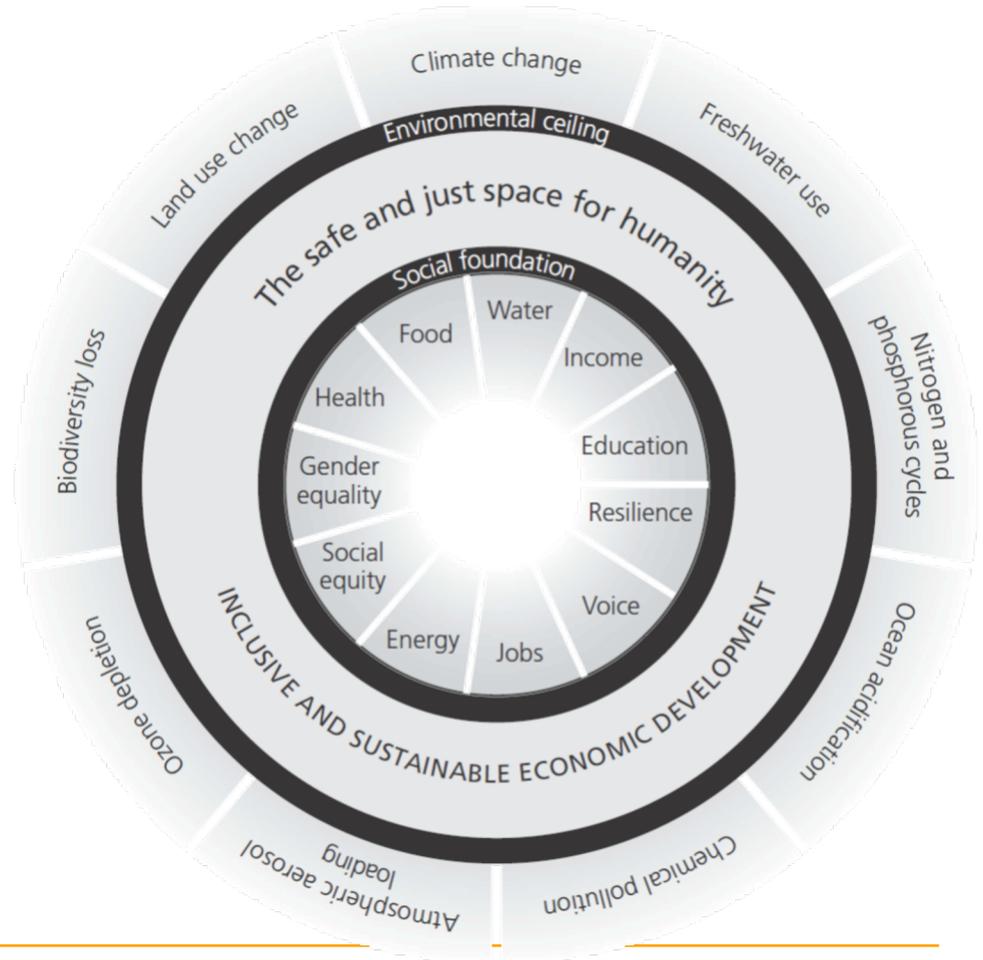
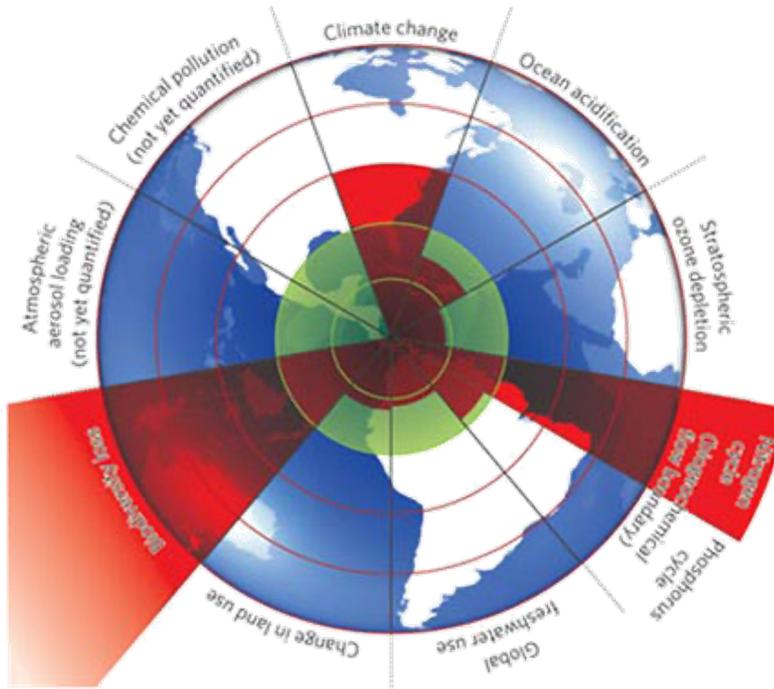


Introduction to Design for Sustainability

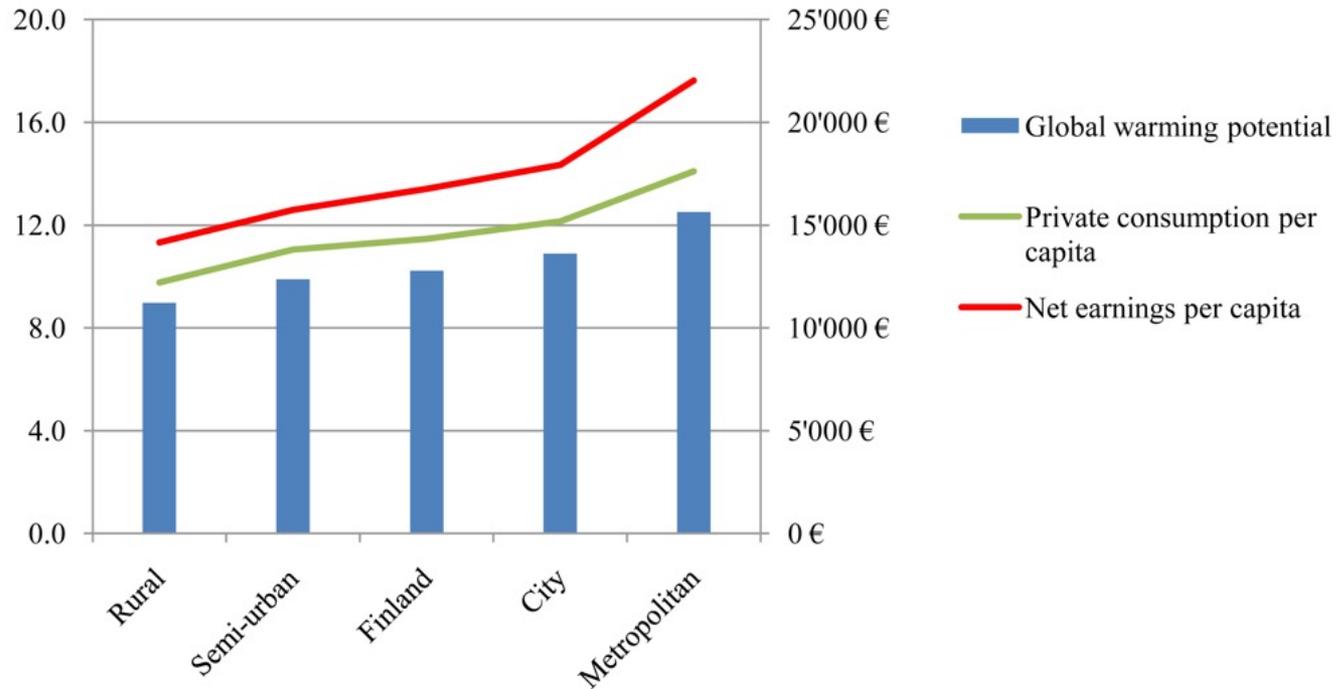


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Facing limits to growth...



Wealth = More GHG emissions?



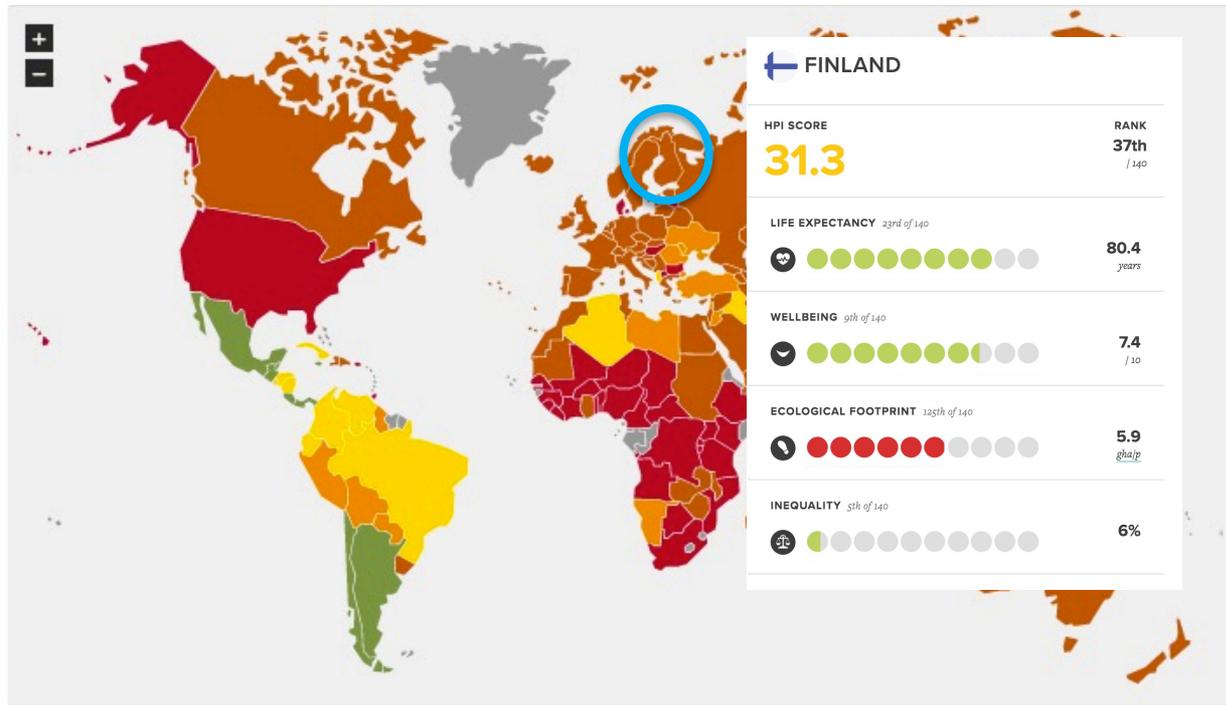
A Carbon Consumption Comparison of Rural and Urban Lifestyles
Jukka Heinonen and Seppo Junnila (2011)

un THE HAPPY PLANET INDEX 2.0

- Home
- Learn
- Explore
- Engage
- News

Search

- GLOBAL HPI
- LIFE EXPECTANCY
- LIFE SATISFACTION
- ECOLOGICAL FOOTPRINT
- HPI DATA OVER TIME
- EUROPEAN HPI



Source: <http://www.happyplanetindex.org/>

The traditional role of design: 'Lock-in' of environmental impacts

The environmental (and social) performance is largely established early in the product development cycle, when critical decisions are made on key product attributes

Design for the whole life-cycle!

From product redesign to system innovation...

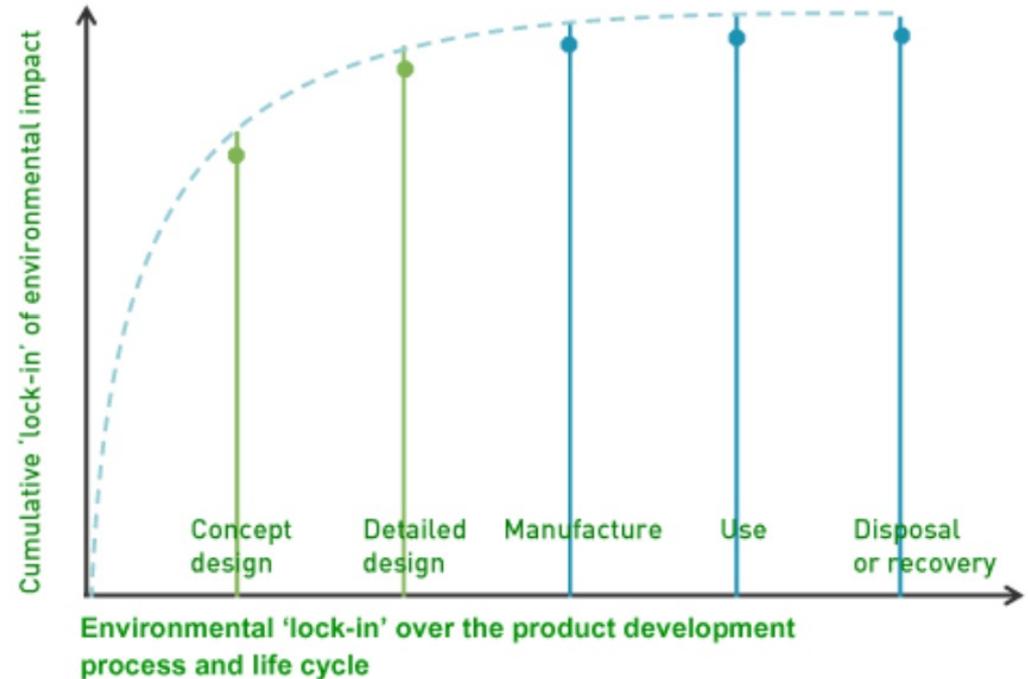


Figure 3 - Early design stages define key attributes that ultimately determine the environmental performance of a product throughout its life cycle. Adapted from "Design + Environment – a Global Guide to Designing Greener Goods", Lewis, H., Gertsakis, J., Grant, T., Morelli, N. & Sweatman, A., New York: Greenleaf Publishing 2001.

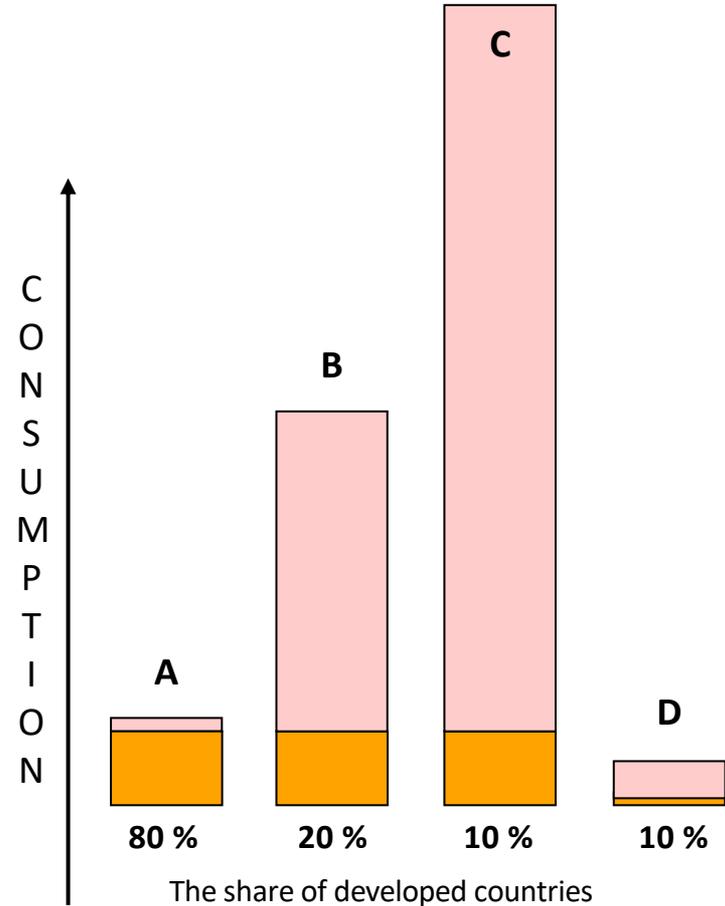
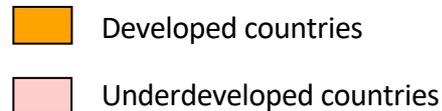
Factor thinking: Increasing efficiency by 'factor 10'

A = current level of consumption

B = raising undeveloped countries to the level of developed countries -> 4 x present

C = in addition to B population will grow to 10 billion -> 8 x present

D = sustainable consumption ~half of the present -> consumption in developed countries must be cut into 1/10 (**factor 10**), if targeting to globally equal setting



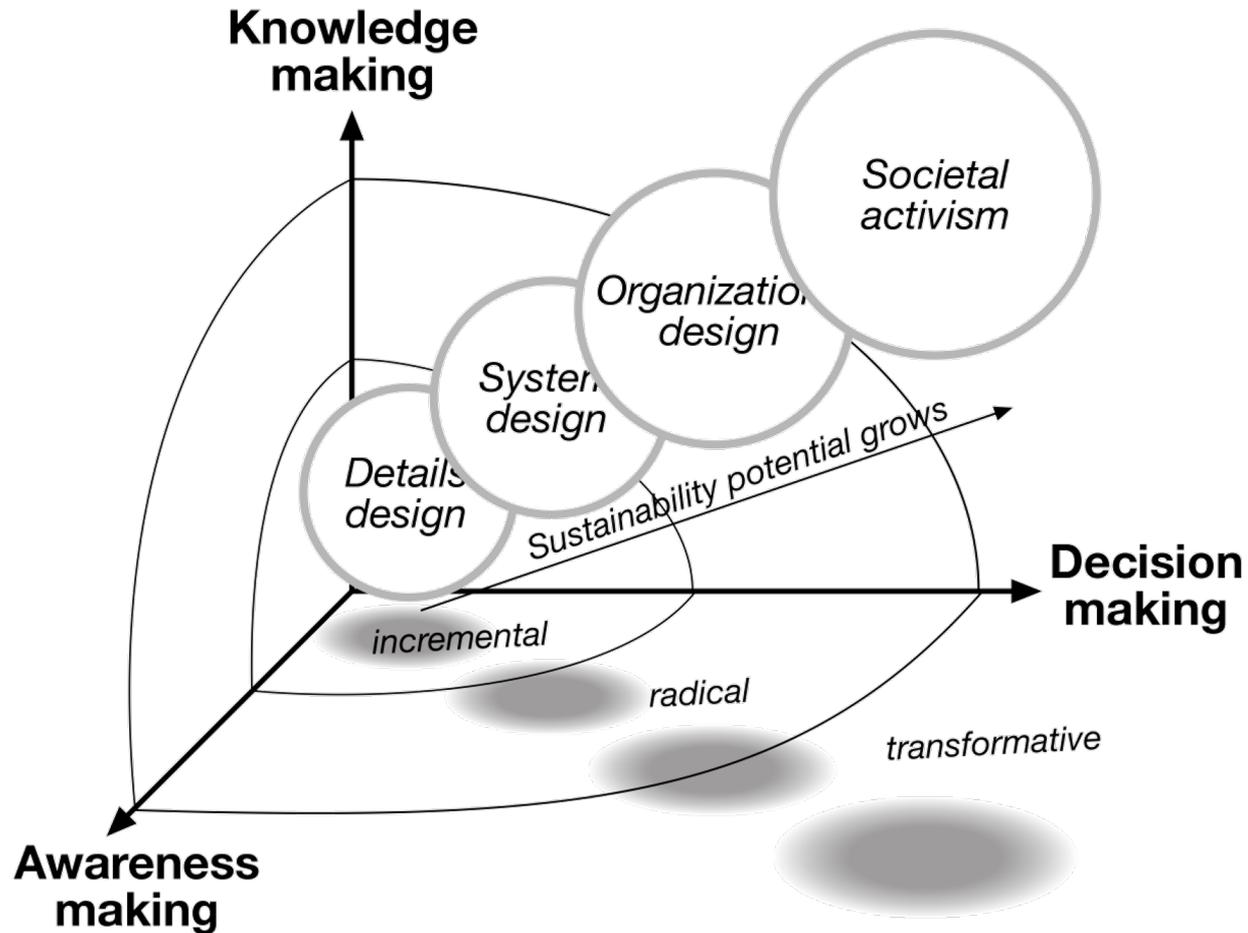
Contemporary design action: Extending focus from products to transitions



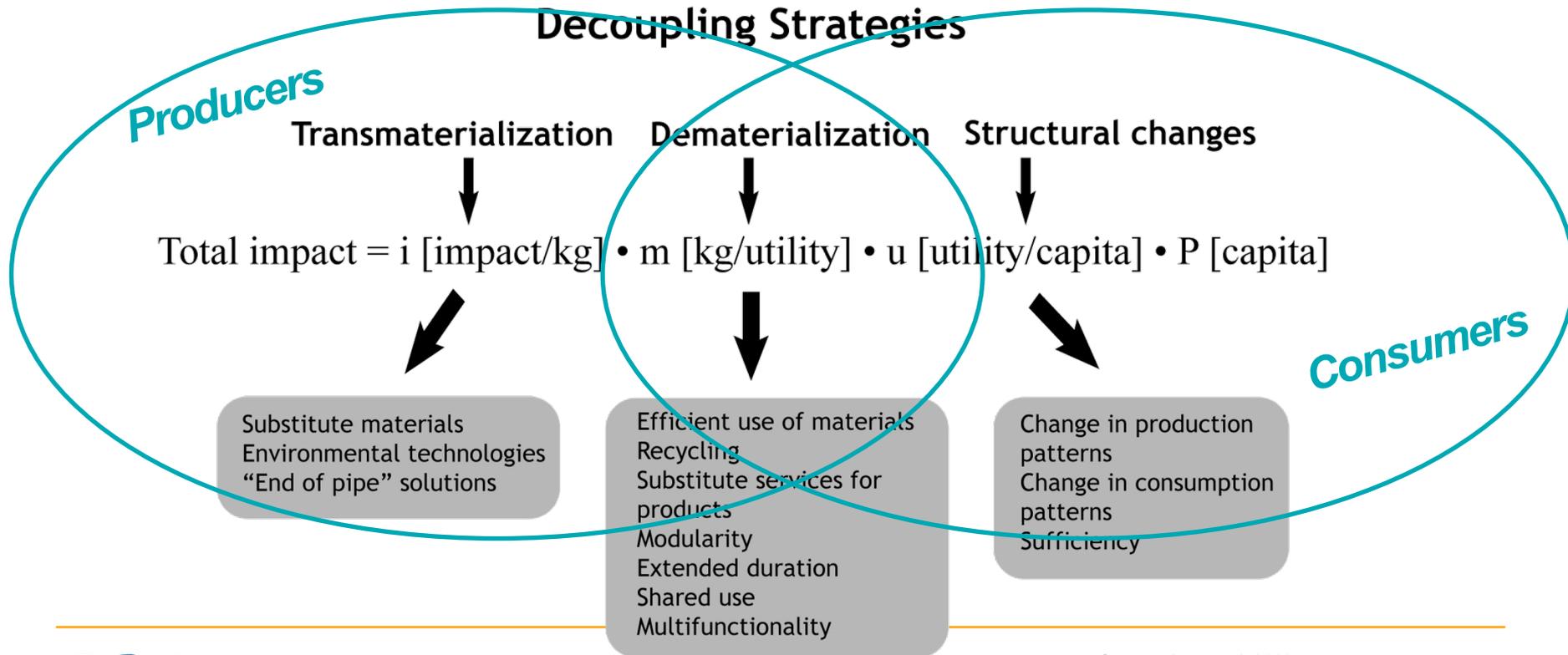
Source: Author

Source: Aminoff, et al. 2011;
GK VanPatter and Elizabeth Pastor, 2005

Expanding design action for transformative innovation:



Strategies for Sustainable Consumption and Production



Sustainable production

Efficient transformation of natural resources into goods and services

Reorganization of supply chains and changing consumption patterns

Policies, regulation; Standards and best practice

'Eco-efficiency', 'Decoupling'



Sustainable consumption

Reducing consumption, the economy and the scale of environmental flows

Countering the capitalist push to consume more

Redistributing consumption opportunities globally

Consumer guidance & policies

'Degrowth', 'Scale', 'Abundance', 'Needs'

Consumer policies & strategies

Examples of consumer-side policies, strategies, and actors:

- Ecolabels and energy labels – Ecolabel Scheme is an EU supported policy
- Retail Forum, European SCP Food Round Table, etc.
- Consumer NGO's

Expanding to research and popular media:

- Research on sustainability of buildings, mobility, food etc.
- Research on consumption patterns and societal practices
- Impact through popular media
- Links to local actors, movements, social innovation?

Producer policies & strategies

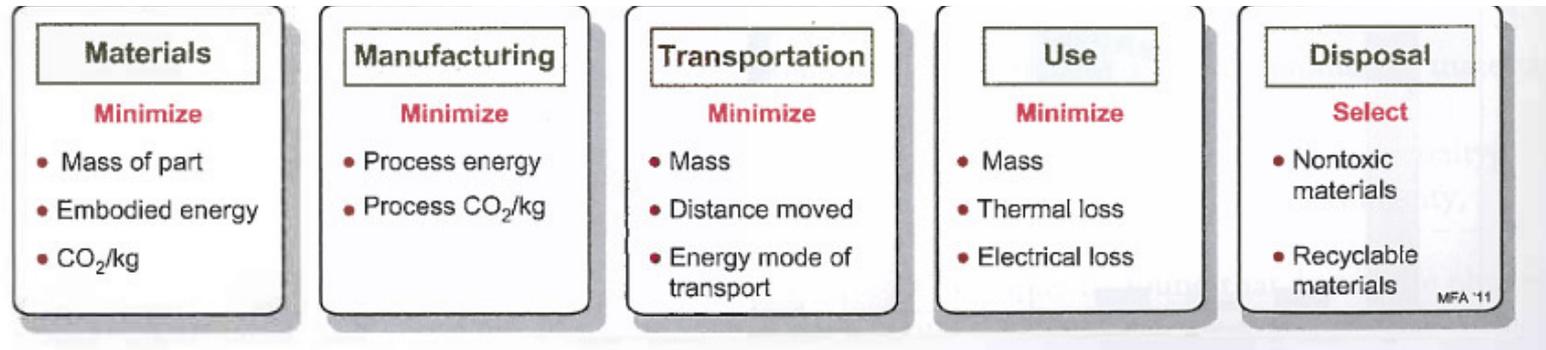
Examples of producer-side policies and strategies that promote sustainability, for example the EU policy scheme and standards:

- Eco-Management and Audit Scheme (EMAS) by EU
- ISO 14000 series
- Other EU policies, including for example Green Public Procurement (GPP), Eco-Innovation Action Plan (EcoAP), Eco-design of Energy-related Products Directive (EuP)
- Extended Producer Responsibility (EPR)
- Eco-efficiency in production
- EU Circular Economy Action Plan (2020)

Ecodesign & life-cycle assessment (LCA)

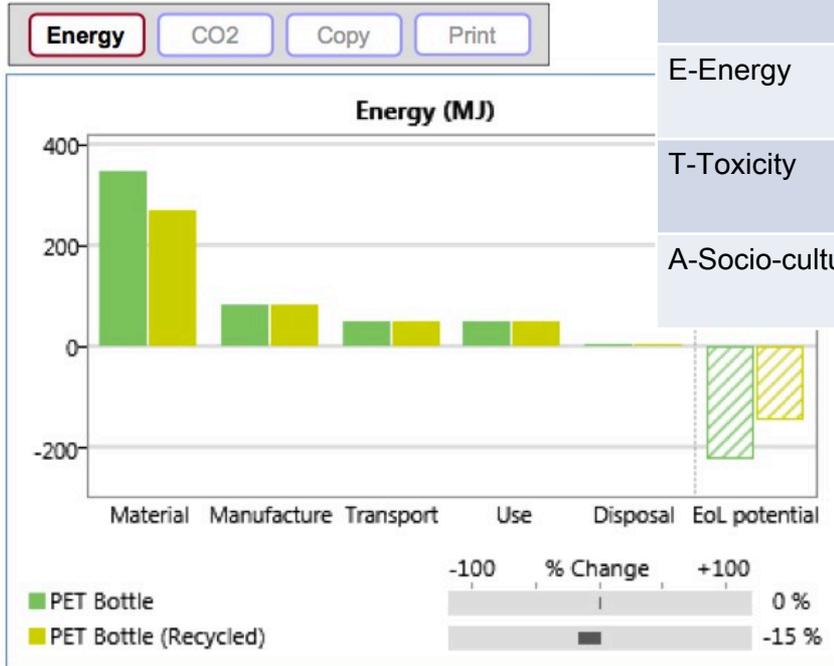
Sustainable design includes assessment of impacts of every phase of product-life, from materials production to use and to disposal

Life-cycle analysis or assessment (LCA) as an overall term of the assessment of life phase impacts of products and systems



Source: Ashby, M. (2012) *Materials and the Environment: Eco-Informed Material Choice*

Studying and improving life-cycle impacts:

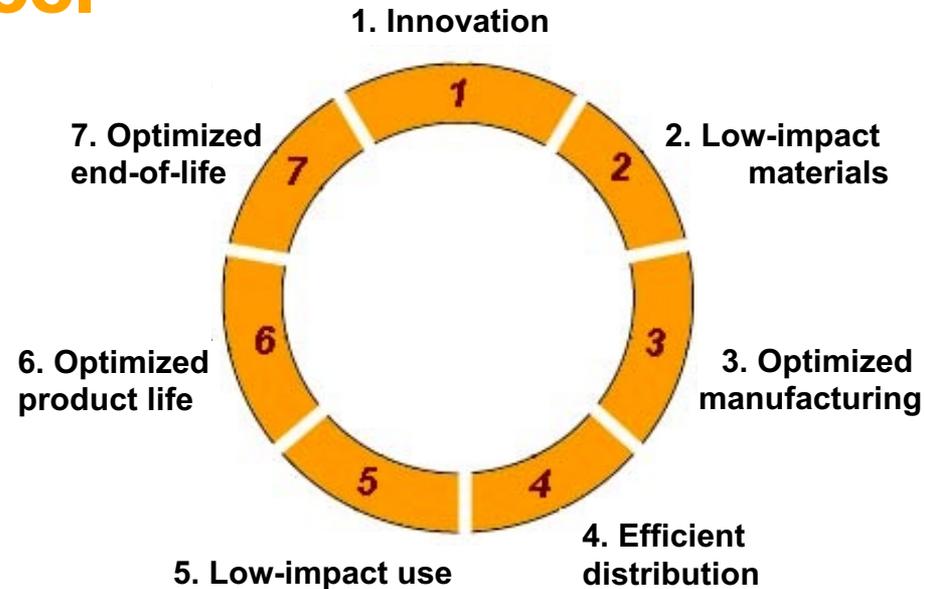


Impact category	Material production	Manufacturing	Use-phase	End-life	Transport
M-Materials					
E-Energy					
T-Toxicity					
A-Socio-cultural					

Ecodesign strategy wheel

Specific focus on each life-cycle phase:

1. Define the product idea, product concept or existing product that will be analyzed. Evaluate existing system or your concept.
2. Systematically score the product on each dimension of the strategy wheel, linked to life phases of the product.
3. Consider the optimization options for each of the dimensions, paying special attention to those where the current design scores badly.



Ecodesign strategy wheel by TU Delft

Product-Service system (PSS) design

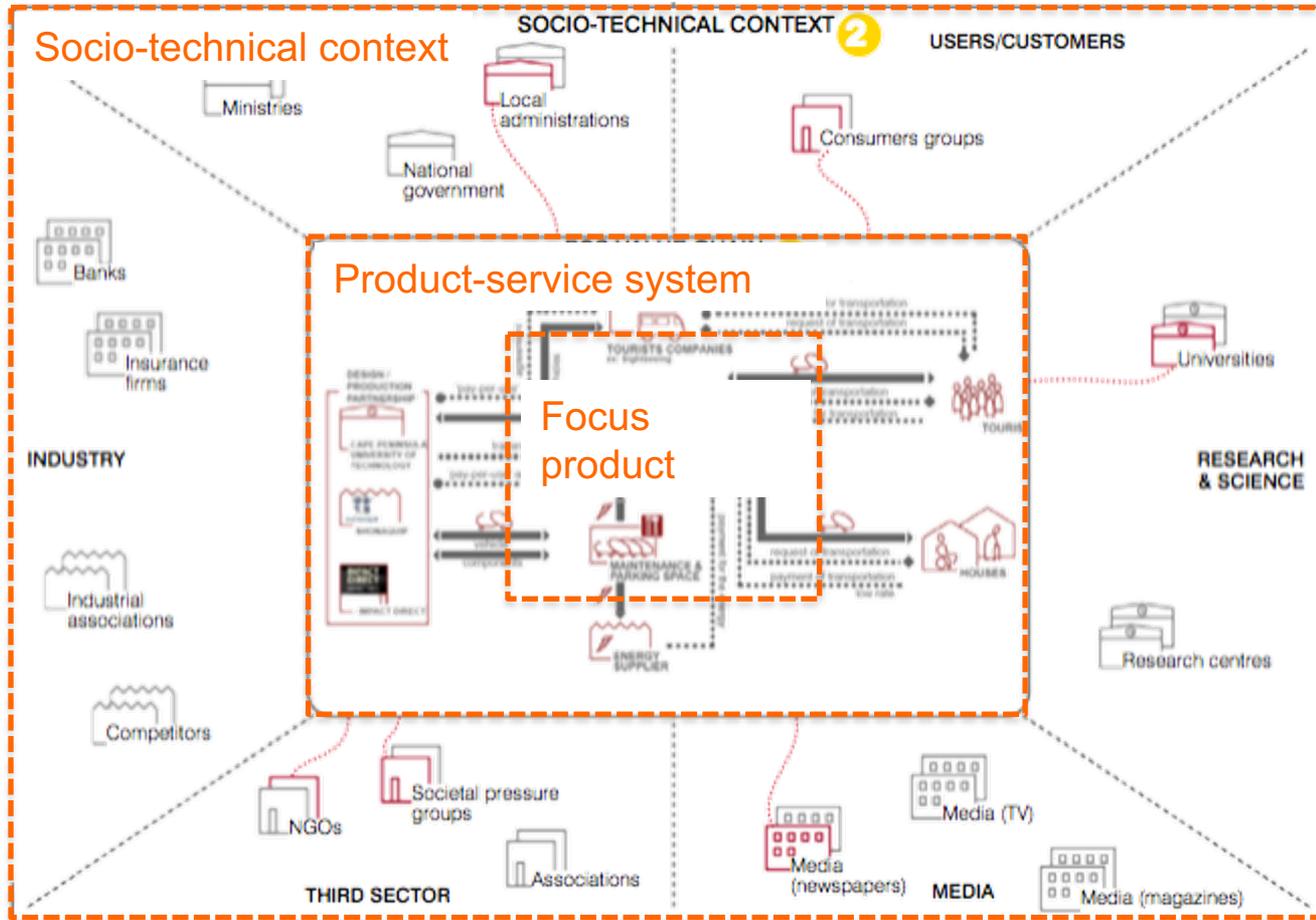
Product-Service System (PSS) design moves the focus of design action towards the whole system of service provision, and systemic efficiency and/or value addition within it.

- Assessing impacts per service-unit rather than product
- Assessing sustainability on a 'system' level

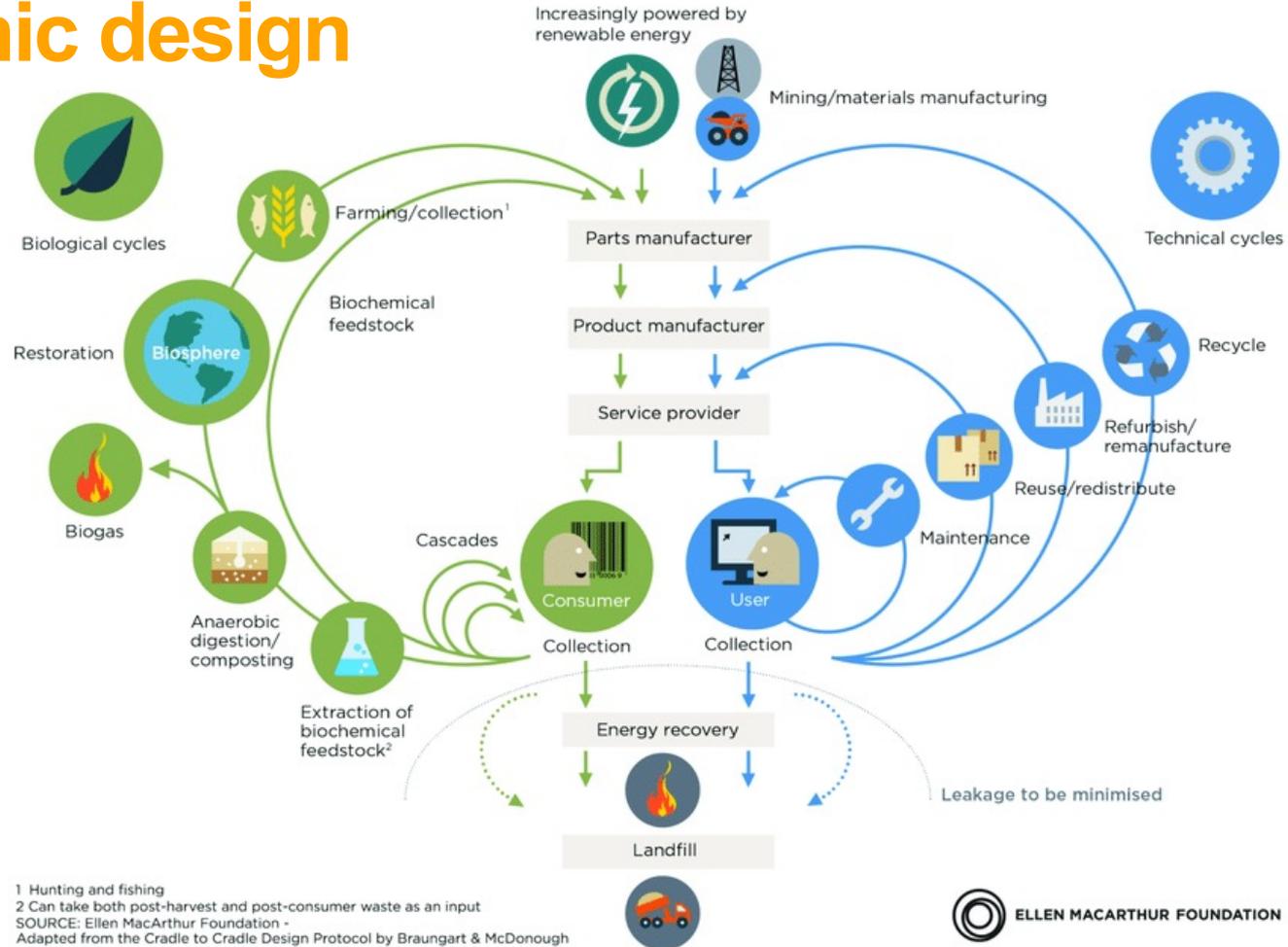
PSS design considers alternative business and service models that could provide improved sustainability by adjusting ownership and revenue models, and by adding more stakeholders to the process.

- Changing product ownership: services instead of products
- Co-governance in design and management

Mapping stakeholder interactions and offerings:



Circular economy & systemic design



¹ Hunting and fishing

² Can take both post-harvest and post-consumer waste as an input

SOURCE: Ellen MacArthur Foundation -

Adapted from the Cradle to Cradle Design Protocol by Braungart & McDonough

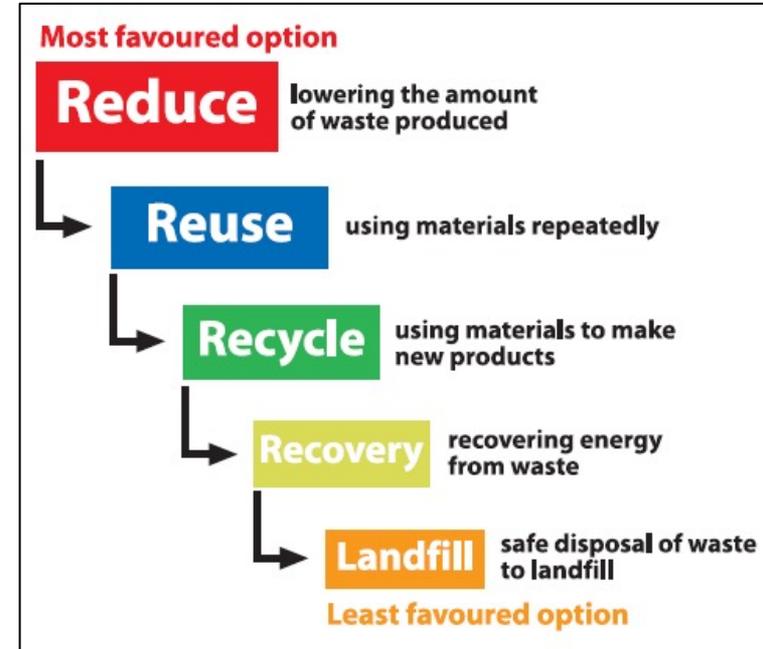


Example: Redesigning plastics by Ellen McCarthy Foundation

Our current economy employs a linear, take-make-dispose, model (resources are **taken** from the ground, **made** into products and then **thrown away**). This model has contributed to both the positive but also negative effects of plastic being everywhere.



But what if we had an economic model that was more 'circular', and kept products and materials cycling within the system for longer? This vision for a 'circular economy' aims to optimise value by increasing the lifecycle of materials and designing out waste, thereby decoupling growth from the consumption of finite resources.



Source: Ellen McCarthy Foundation: Redesigning plastics

Summary:

Strategies for Design for Sustainability

Sustainability as a concept is very broad – there also exists a multitude of DfS strategies, orientations, & methods

A question of context, framing, aim and focus, and so on...

***Design for Sustainability* by Ceschin & Gaziulusoy (2020) lists the following:**

- Green design & product ecodesign
- Emotionally durable design
- Design for sustainable behaviour
- Cradle-to-cradle design
- Biomimicry design
- Product-service system design for sustainability
- Design for the base of the pyramid
- Design for social innovation
- Systemic design

Breakout room activity



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Breakout room activity

Based on the readings for the session:

- While rooms are prepared, have a short break (10 min), then...
- **Select your room based on your reading & enter**
- Discuss together, ideate few examples (~20 mins)
- Present the strategy and examples to others (<5 min)

Breakout rooms:

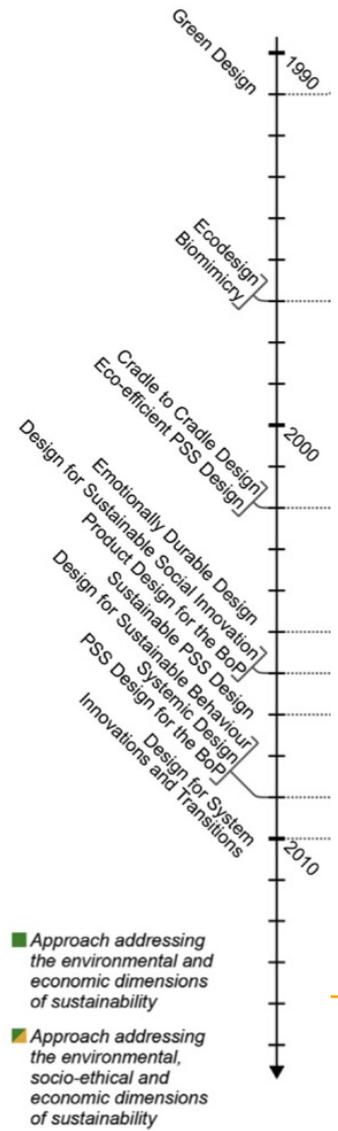
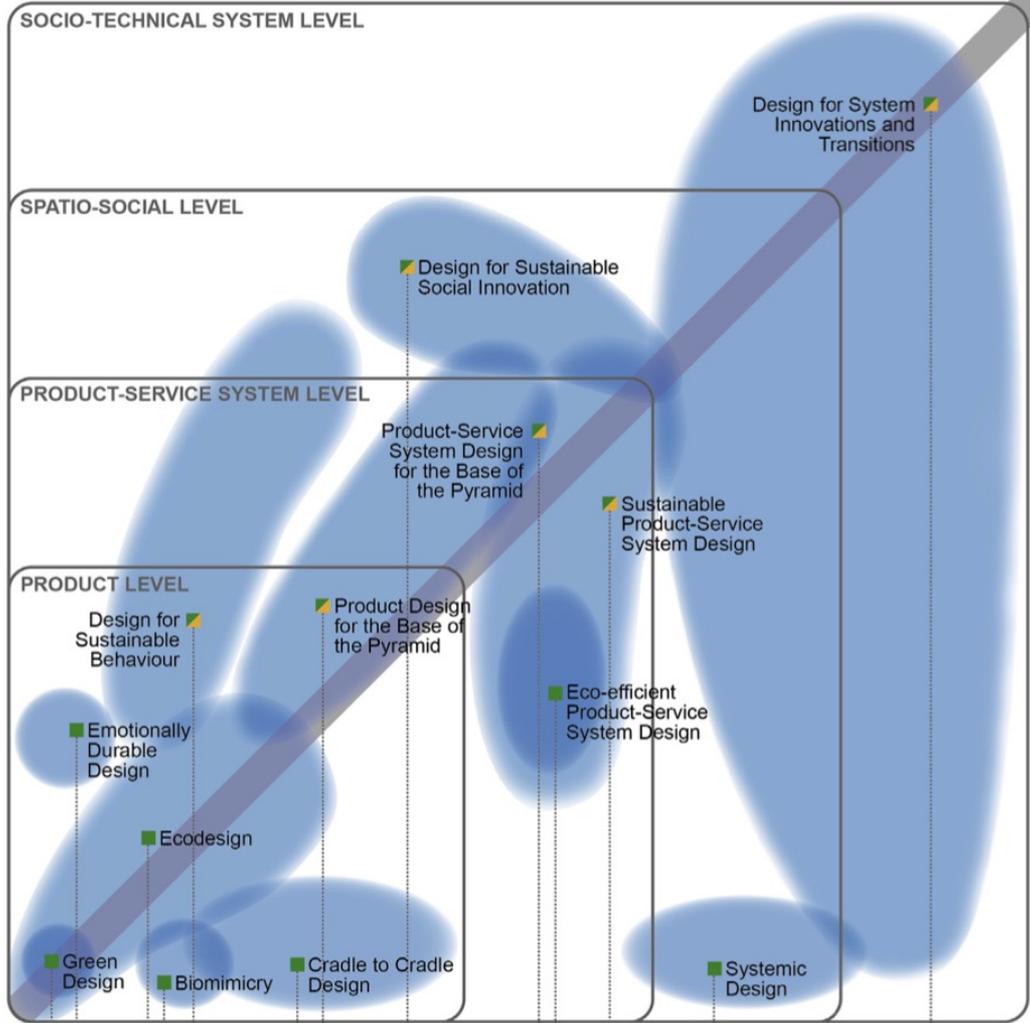
1. Green design & product ecodesign (Chapter 2)
2. Emotionally durable design (Chapter 3)
3. Design for sustainable behaviour (Chapter 4)
4. Cradle-to-cradle design (Chapter 5)

Link to Google slides working canvas: <https://t.ly/zWOs>

INSULAR

SYSTEMIC

Increasingly
potentially
sustainable



A?

A?

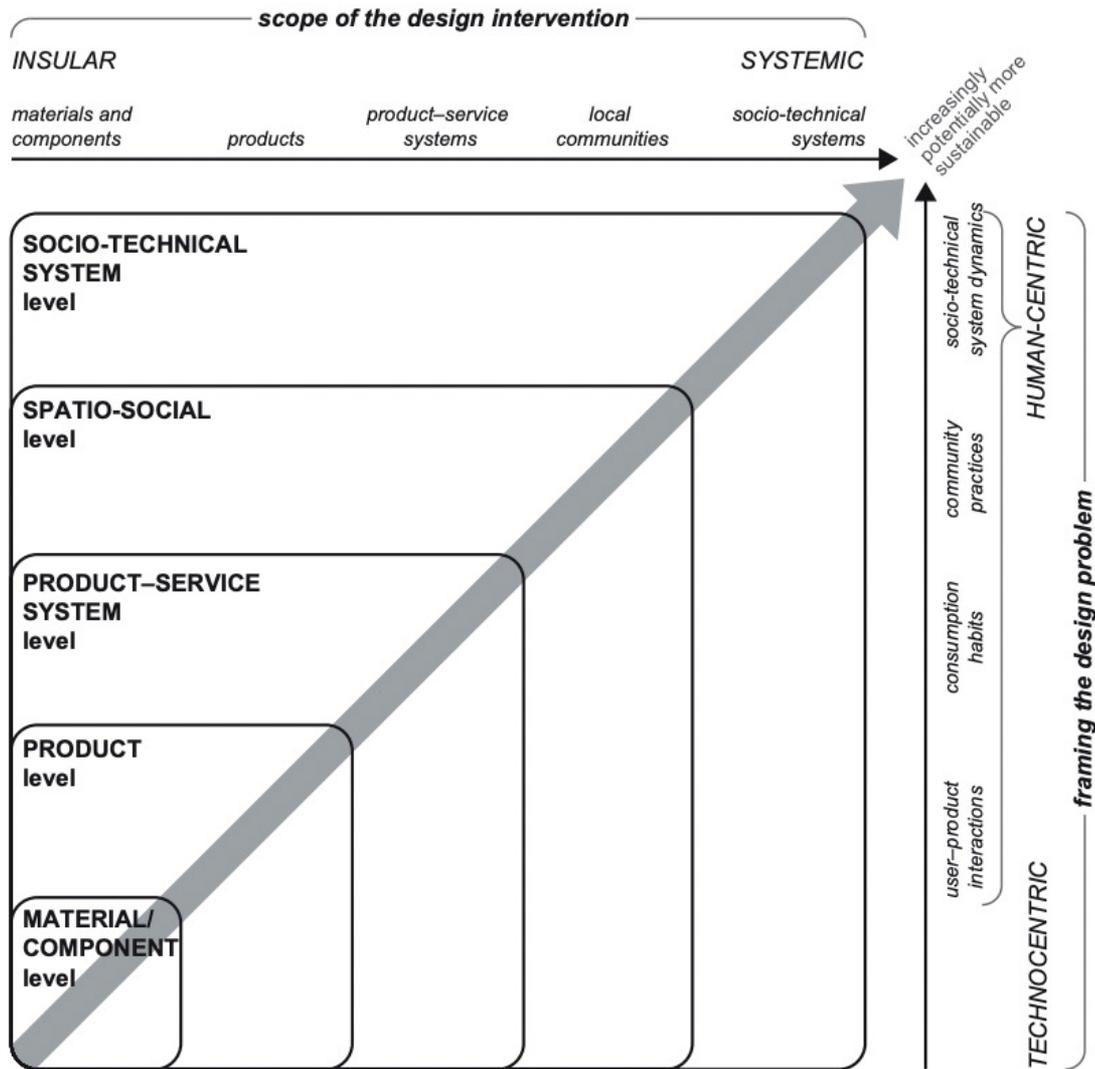


Figure 12.1 The DfS innovation framework

Next session & tasks

Case work theme selection



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Case work

Besides lectures, there is a case assignment in which the students work in 5-6 person teams

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Case presentation days:

- Idea presentations on 27.1. (short pitches)
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Teams formed for Thursday, based on your preference of theme/topic, voting today!

Form to add your theme preferences: <https://forms.gle/RC4jJ3H6yQoKUdKa8>

Fill up after today session!

Case themes/ topics

- 1 Nudging for healthier and more sustainable food choices**
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See case topics in MyCourses:

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Course and case work schedule

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Week 2 (18. & 20.1.)	Design for sufficiency	System design and circular economy
Week 3 (25. & 27.1.)	Assessing and communicating impacts	Present case ideas
Week 4 (1. & 3.2.)	Taking it into action	One planet lifestyle
Week 5 (8. & 10.2.)	Scaling-up sustainability transitions	Case work tutoring
Week 6 (15. & 17.2.)	Final presentations #1	Final presentations #2

For next time...

Voting on case topics & teams today! Here: <https://forms.gle/RC4jJ3H6yQoKUdKa8>

Reflect session topics in your learning diary!

Begin considering the library as a context for your case work...

Thursday (13.1.) agenda:

- 9:15-10:00 Short recap; Teams & themes
- 10:00-10:30 S-group sustainability intro (Nina Elomaa);
- 10:30-11:00 Food sustainability themes
- 11:00-12:00 Teams with tutors in breakout rooms; Agree on next meetings, steps...