# Sustainable Product and Service Design, Eco-Auditing

Spring 2019 / Teaching Period III

Tuesdays 8.1., 15.1. & 22.1. (13:15-17:00)

Teachers: Tatu Marttila

22.1.

**Eco-Auditing with CES Edupack:** 

# Eco-Audit Examples Project Work & Report

# Course Assignment: Project Work & Report

## Working with the project ideas so far...

The steps that have been done:

- 1. Identify prime objective in your design project idea
- 2. Define system boundaries and review stakeholders; both production system and product components (e.g. META matrix; System maps)
- 3. Perform research on Materials & Manufacturing; Environment; Society; Economics; Regulation; Design (e.g. CES Edupack "fact-finding" sheet)
- Refine focus and boundaries...
- 5. Assess selected material(s) & process(es), with eco autdit tool
- Reflect and document

## **Project work: Status reports**

Describe your project work so far:

- How has your project work progressed?
- Describe your context for assessment...
- What problems have you encountered? How to solve them?
- What will be the outcome of your work?
- What is its impact on sustainability?

## **Course Assignment:**

## Project work progress so far...

- 1. Identify prime objective in your design project idea
- 2. Define system boundaries and review stakeholders; both production system and product components (e.g. META matrix; System maps)
- 3. Perform research on Materials & Manufacturing; Environment; Society; Economics; Regulation; Design (e.g. CES Edupack "fact-finding" sheet)
- 4. Refine focus and boundaries...
- 5. Assess selected material(s) & process(es), with eco autdit tool
- 6. Reflect back on context and progress; Document your work
- 7. Compile into a project report...

## **Course Assignment:**

## **Project work report**

As a final course assignment you will produce a project report of your work with the project idea during and after the workshop days.

The project report should be <u>5-7 pages long (or more) PDF document</u> with 1) description of the project idea, 2) project context research (inventory, system boundaries, life phases), supported with selected tools (e.g. EcoDesign strategy wheel, META, CES fact-finding sheet), and 3) the eco-auditing process and its 4) results.

Include some desk research, findings from eco-auditing process, and reflection on background research and context. Include some images/screenshots of your assessment.

- -> 5-7 pages long PDF document (+ possible appendices)
- -> Final report on project work is due 28.2. (not a strict deadline...)
- -> Upload to MyCourses (...if late then email to: tatu.marttila@aalto.fi)

## **Course Assignment:**

## **Project work report**

Structure of a project report is rather open, but should include:

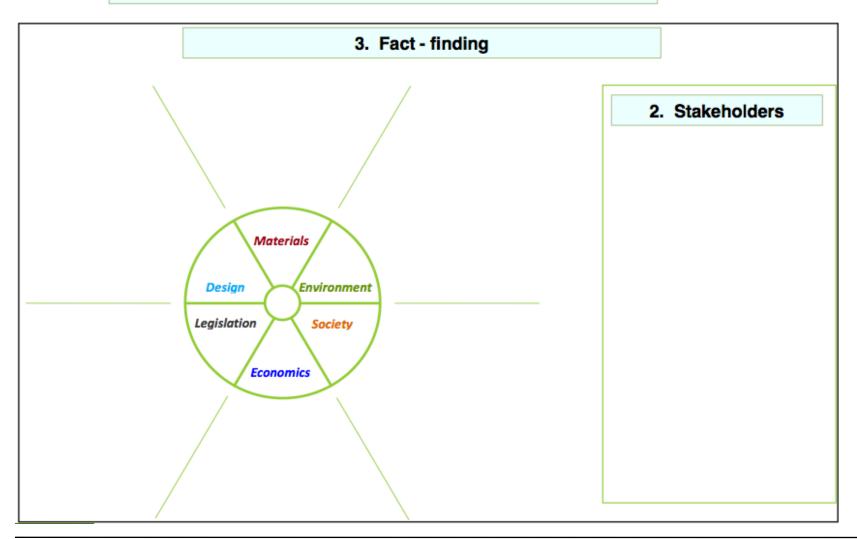
- 1. Description of your objective in your assessment project
- 2. Description of system boundaries, stakeholders (primary, secondary), product components
- 3. Reflection on all life phases of the product-service system under study (e.g. Ecodesign strategy wheel; META matrix; CES fact-finding; can be simply text)
- 4. Description of the actual assessment and eco-auditing process
- 5. (Short) description on overall process and findings
- 6. Reflection on the initial problem context and progress of your work

### Initial ideation, stakeholder & system analysis and reserch:

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

### Initial ideation, stakeholder & system analysis and reserch:

#### 1. Prime Objective and Scale:



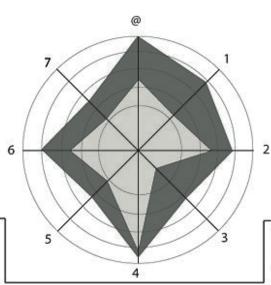
### Initial ideation, stakeholder & system analysis and reserch:

#### Product System Level

- 7. Optimization of end-of-life system
- · Reuse of product
- · Remanufacturing/ refurbishing
- Recycling of materials
- Safer incineration
- 6. Optimization of initial lifetime
- · Reliability and durability
- · Easier maintenance and repair
- · Modular product structure
- Classic design
- Strong product-user relation
  - 5. Reduction of impact during use
  - · Lower energy consumption
  - Cleaner energy source
  - Fewer consumables needed
  - Cleaner consumables
  - No waste of energy/ consumables

#### New concept development:

- Dematerialisation
- Shared use of the produc
- · Integrations of functions
- Functional optimization of product (components)



Product Structure level

- 4. Optimization of distribution system
- · Less/ cleaner/ reusable packaging
- Energy-efficient transport mode
- Energy-efficient logistics

#### **Product Component Level**

- 1. Selection of low-impact materials
- Cleaner materials
- Renewable materials
- · Lower energy content materials
- Recycled materials
- · Recyclable materials
- 2. Reduction of materials usage
- · Reduction in weight
- Reduction in (transport) volume
- 3. Optimization of production techniques
- Alternative production techniques
- Fewer production steps
- · Lower/ cleaner energy consumption
- Less production waste
- Fewer/ cleaner production consumables

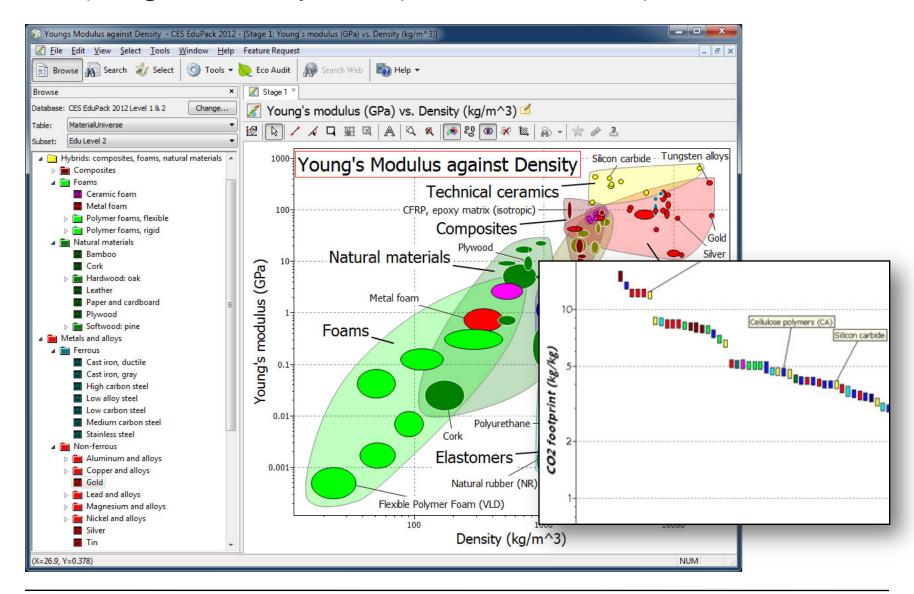


priorities for the new products

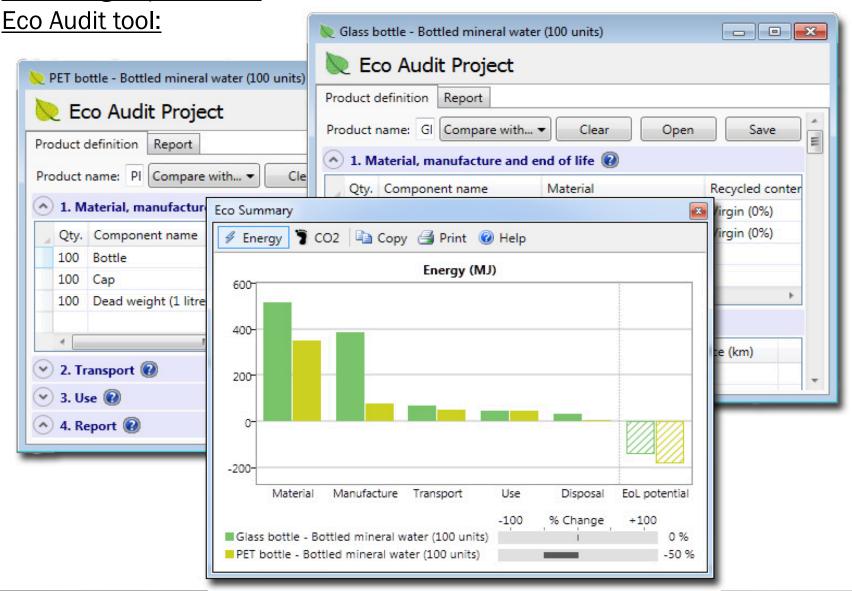


existing product

### Comparing material & systemic qualities with CES Edupack:



Assessing impacts with



## **THANKS!**

# Project reports by 28.2. Upload to MyCourses...

(if you're late that's okay but then email your report to me directly!)