Aalto University
School of Arts, Design
and Architecture

Eco-Auditing:
Assessing sustainability impacts in design

Spring 2023 / Teaching Period III
Thursdays 12.1., 19.1. & 26.1. (13:15–16:30)

Teacher: Tatu Marttila

26.1.2022

Course schedule

First contact day: Thursday 12.1. (13:15–16:30):

- Basics of lifecycle design and material selection
- Familiarizing with Edupack material selection tools
- Introducing project ideas

Second day: Thursday 19.1. (13:15–16:30):

- Basics of eco-auditing and lifecycle impact assessment
- Familiarizing with Edupack eco-auditing tool
- Project work status (& tutoring for project work)

Third day: Thursday 26.1. (13:15–16:30):

- Project report guidelines & examples
- Project work status

26.1.
Eco-Auditing with CES Edupack:

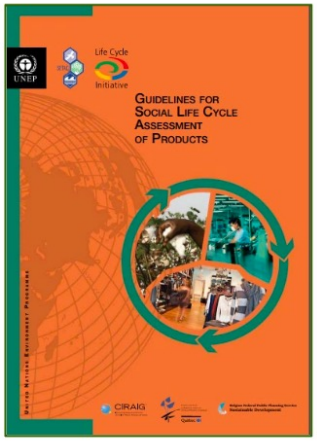
Eco-Audit Examples, Social LCA, Project Work & Report

Eco-Audit Examples

(see external files in MyCourses…)

Social LCA with Edupack (tool in development…)

The UNEP/SETAC Guidelines



S-LCA adapts LCA methods

- **Five Stakeholder groups**
  - S1 Workers
  - S2 Consumers
  - S3 Local community
  - S4 Society
  - S5 Value-chain actors

- **31 Impact categories - *examples***
  - Human rights, equity
  - Health and safety
  - Social support / Benefits
  - *(more)*

- **Data inventory**
  - At National level – national statistics
  - At Enterprise level – requires on-site data-gathering

- **Impact assessment**
  - Identify "social hot-spots"
  - Options for actions

Where can we do something?

Stakeholders, Impact categories and Mapping

Stakeholder group	Impact category	Mapping onto UN, World Bank, WHO etc statistics for each Nation
S1 Workers	Freedom of association	ITUC Freedom of association
	Child labor	Child labor
	Forced labor	Forced labor and slavery
	Fair salary	Minimum wage
	Working hours	Hours worked per year
	Equal opportunity/Discrimination	Women's' share of work force
S2 Consumers	Health and safety	Fatal accidents at work
	Social security/Benefits	Social protection expenditure
S3 Local community		
S4 Society	Commitment to sustainability	Ecological footprint
	Economic development	UN human development index
	Technology development	GDP per capita
	Mitigation of armed conflict	Political stability/no violence
	Corruption	Control of corruption
S5 Value-chain actors		

Each stakeholder group has associated UNEP-defined Impact categories

29/31 Impact categories mapped in this way

Using the tool

1

- Identify the Nations involved in product life

2

- Open ***Sources*** page of the tool
- Highlight the Nations by clicking on tick-box

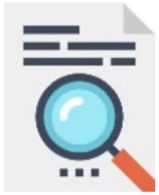
3

- Select ***Threshold Good Practice*** between 1 and 100
- (Tool automatically flags Hotspots)

4

- Copy rows to ***Report***
- Transcribe Hotspots to Action Report

5



- ***Impact assessment*** (print if desired
- Consider possible ***Actions***

Example: a cotton T-shirt

Cotton T-shirt

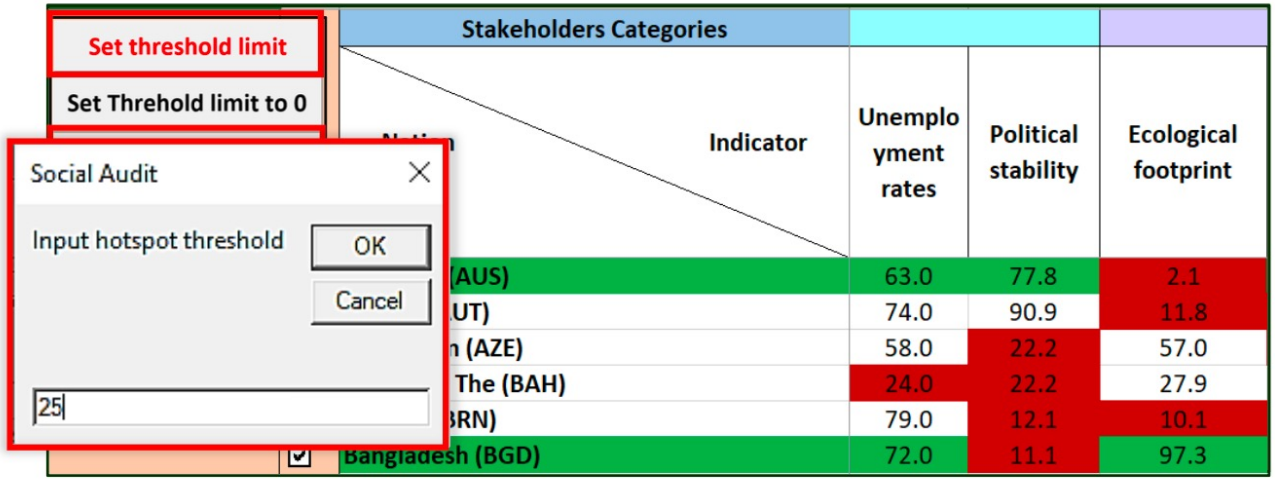
Material:	**Australia**
Manufacture:	**Bangladesh**
Transport: Sea	**Panama**
Use:	**UK**
Disposal:	**Kenya**

Are there reasons for social concern here?

1. Highlight Nations in Source page of spreadsheet

2. Set Hotspot threshold

3. Copy selected rows to Report



Stakeholders Categories			
Indicator	Unemployment rates	Political stability	Ecological footprint
(AUS)	63.0	77.8	2.1
UT)	74.0	90.9	11.8
n (AZE)	58.0	22.2	57.0
The (BAH)	24.0	22.2	27.9
BRN)	79.0	12.1	10.1
Bangladesh (BGD)	72.0	11.1	97.3

Stakeholders			S4 Society				S5 Valu	
Nation Indicator	Unemployment rates	Political stability	Ecological footprint	UN Human Development Index	R&D spend	Control of corruption	Regulatory quality	Press freedom
Australia (AUS)	63	77.77551	2.076087	95.05	83.5	95.05	97.5	90.20879
Bangladesh (BGD)	72	11.10204	97.30978	28.865		18.82	23.5	19.49451
Kenya (KEN)	3	9.081633	88.70109	25.703		13.87	44	46.14835
Panama (PAN)	75	60.60204	49.42391	65.755		47.53	69	45.6044
United Kingdom (GBR)	78	62.62245	21.44565	93.159	73.6	94.06	95.5	75.52198

Analysing the Hotspots

4. Transcribe Hotspots to Hotspot table

High stakeholder hotspot density

Trace back to source from which data came

Life phase	NATION	S1 Workers	S2 Consumers	S3 Local community	S4 Society	S5 Supply chain (others)
Material 1	AUS				X	
Material 2						
Manufacture	BGD	XXXXX	XX	XXXX	X	X
Transport	**PAN**	X	XX	XXXX		
Use	**SUI**				X	
End of life	KEN	XXXX			XX	X

High National hotspot density

5. Examine by column and by row.

Assess risk to product and brand image

6. Consider actions

Actions to improve social-economics across supply chain

- Joint action with stakeholders to improve education, health care and housing
- Partnership agreements to share management and ownership

Actions involving adjustment to supply chain

- Change of provider because of irredeemable corruption, conflict or political instability
- Damage limitation: action to offset negative publicity.

Course Assignment: Project Work & Report

Course assignment:
Project work step-by-step

1. Describe the prime objective in your project idea, eg. product assessment/comparison/redesign; Define (system) boundaries for the assessment
2. Review stakeholders and both production system and product components
3. Perform fact-finding on stakeholders and components (e.g., on Materials & Manufacturing; Environment; Society; Economics; Regulation; Design)
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 deliverable:
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 5-10 pages 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 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.

-> 5-10 pages long PDF document (+ possible appendices)

-> Final report on project work is due 20.2. (not a strict deadline…)

-> Upload to MyCourses (…if late then email to: tatu.marttila@aalto.fi)

Course deliverable:
Project work report

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

- Description of your objective in your assessment project
- Description of system boundaries, stakeholders (primary, secondary), product components or compared products/materials
- Reflection on all life phases of the product-service system under study (with tools like Ecodesign strategy wheel; META matrix; CES fact-finding; or can be simply text)
- Description of the actual assessment and eco-auditing process
- (Short) description on overall process and findings
- Reflection on the initial problem context and progress of your work

Project work: Status reports

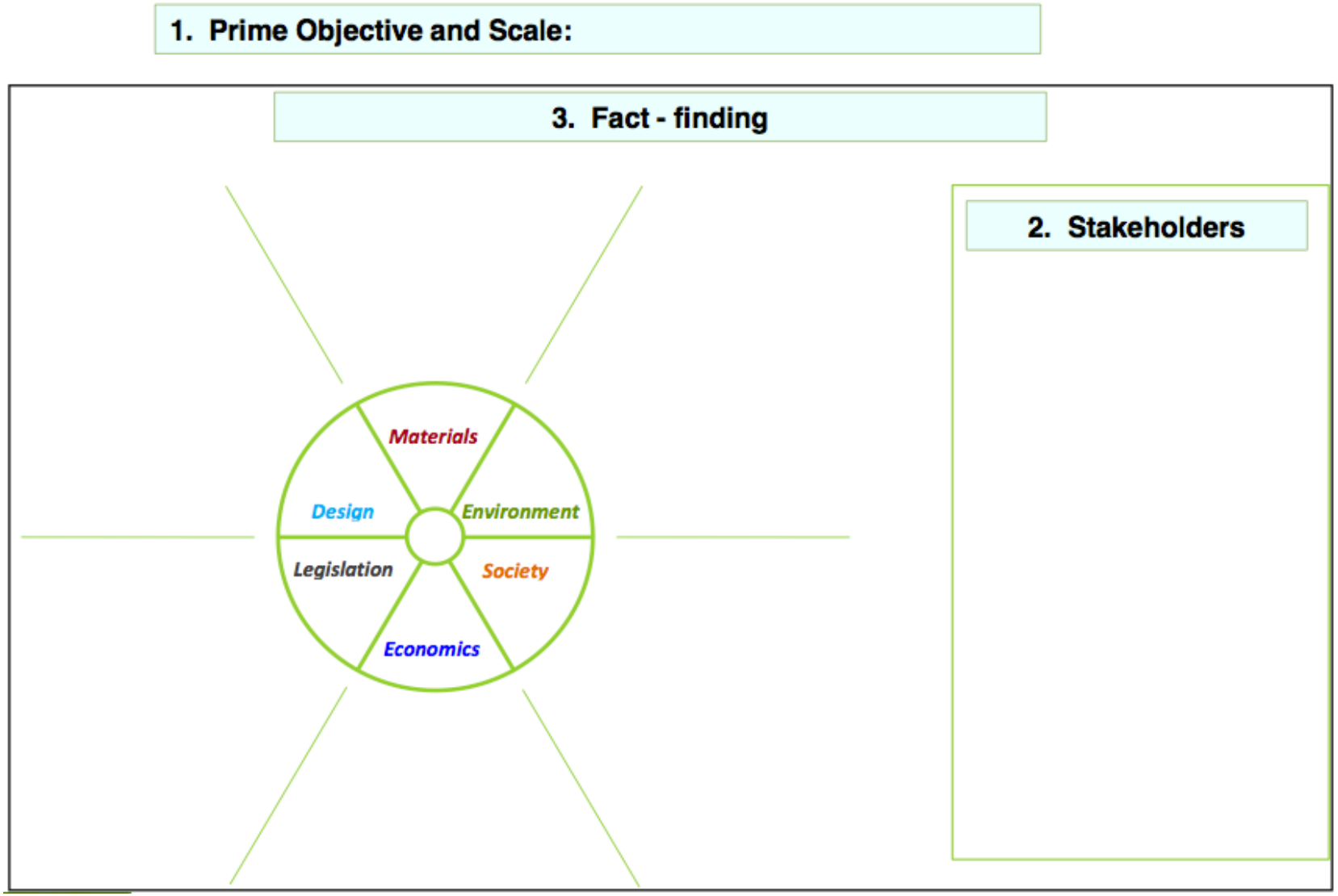
Describe your project work so far:

- How has your project work progressed? Describe your assessment, and your initial findings…
- What problems have you encountered? How to solve them?
- What will be the outcome of your work? What is its impact on sustainability?

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:



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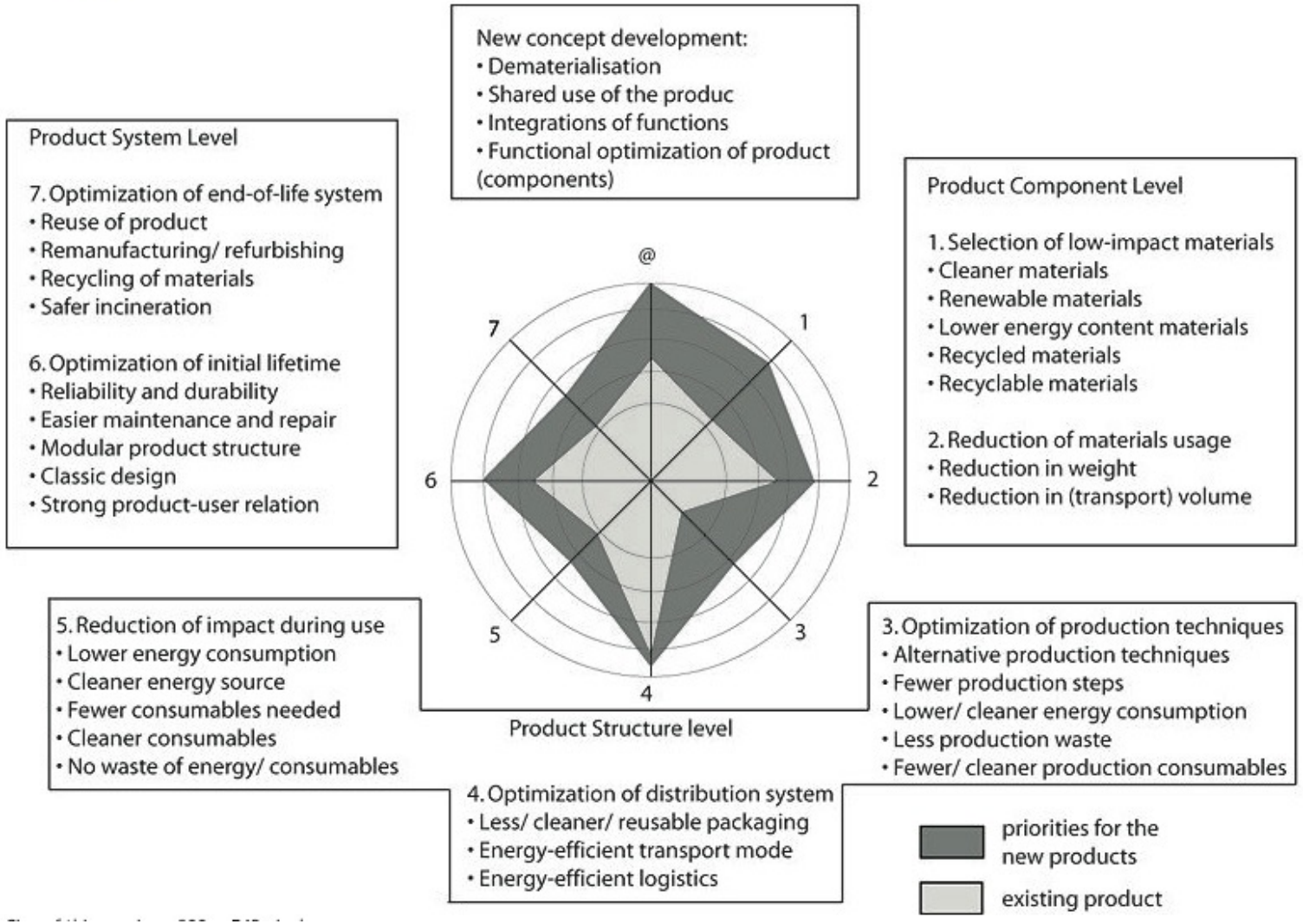
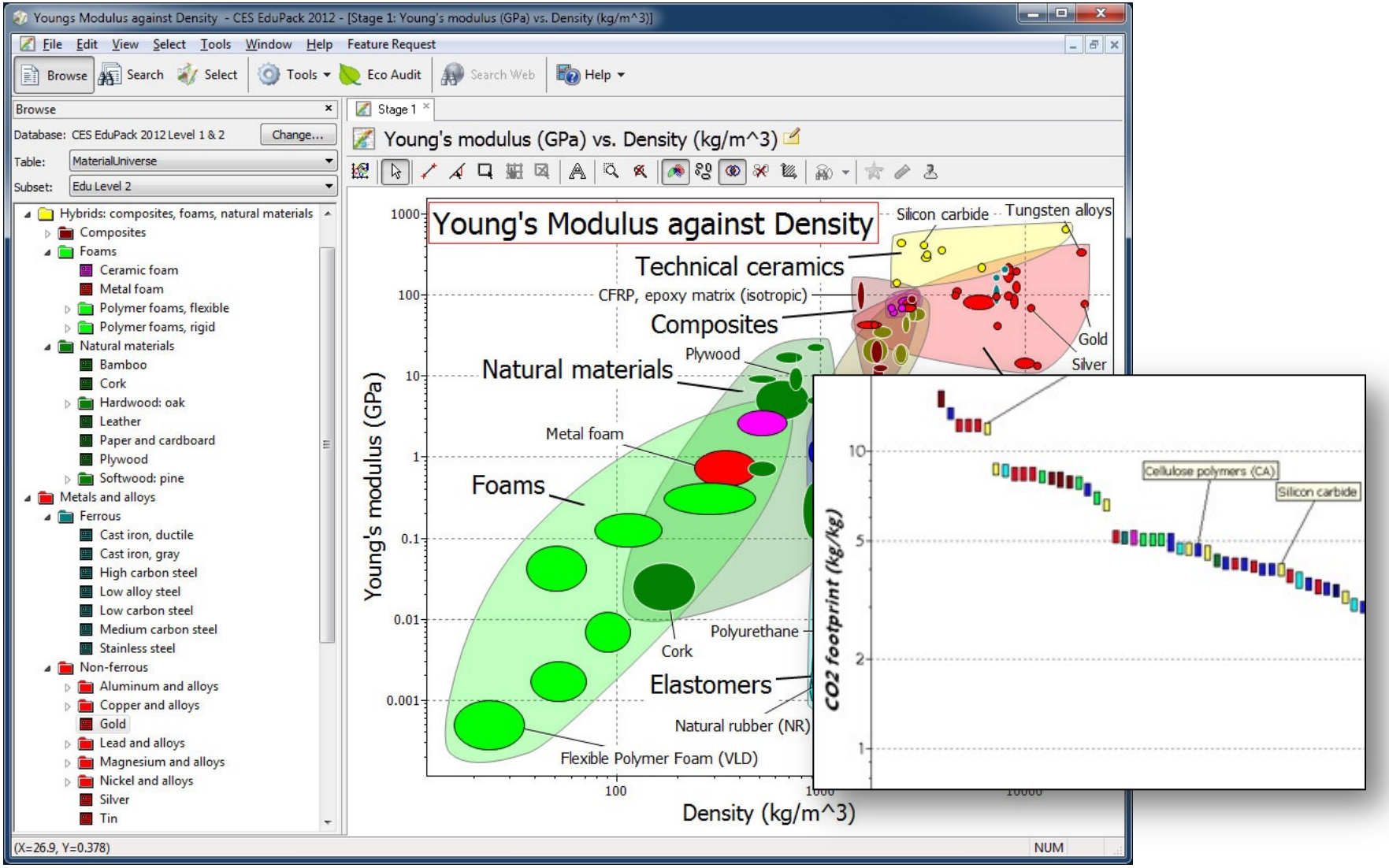
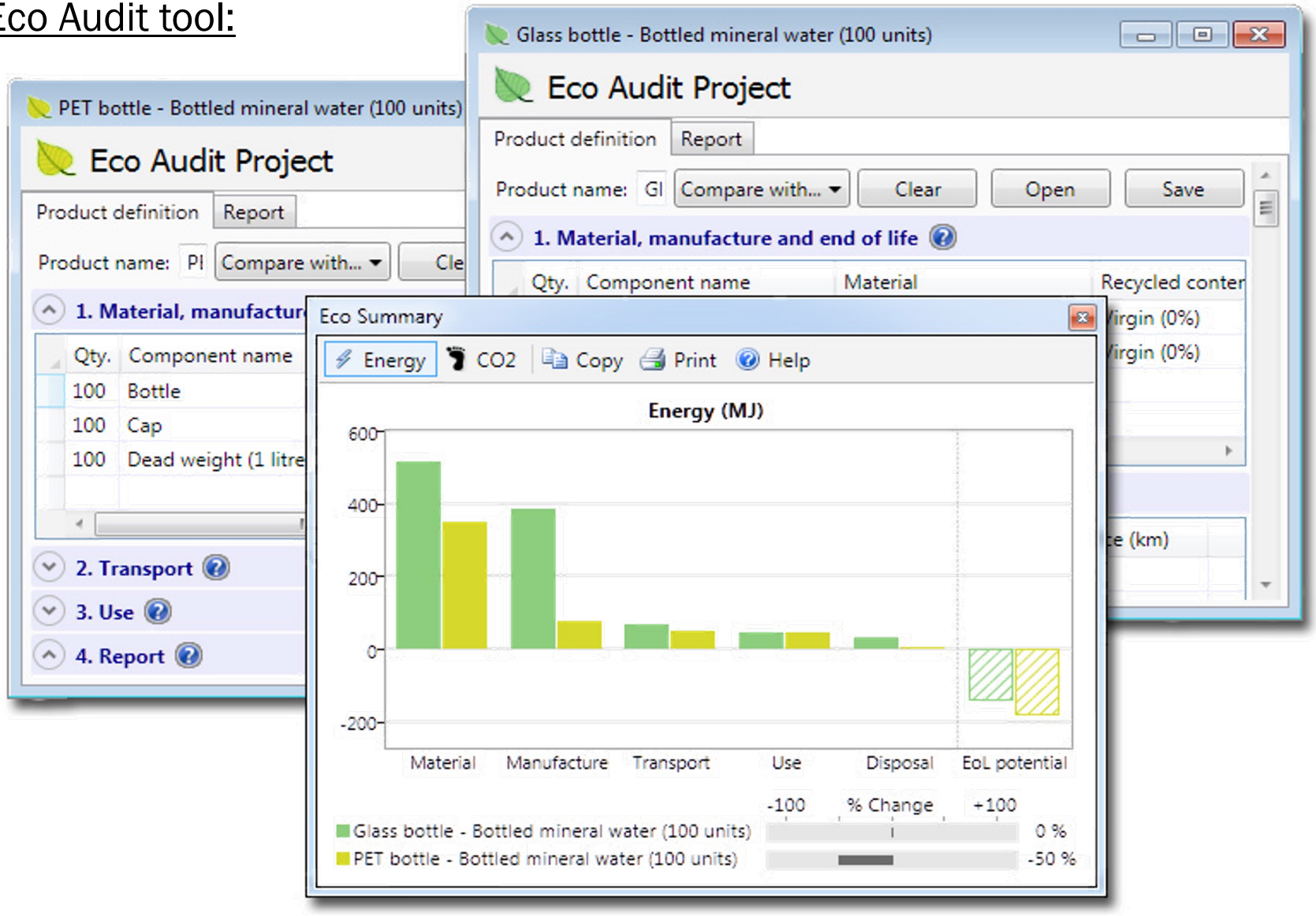


Comparing material & systemic qualities with CES Edupack:



Assessing impacts with Eco Audit tool:



THANKS!

Project reports by 20.2.
Upload to MyCourses…

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