

Mapping of educational material about reuse of construction materials in the Nordic Countries

Nordic Sustainable
Construction



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The purpose of the mapping

This mapping is part of the first phase of a Nordic project about educational material about reuse of construction materials for vocational education and training in the Nordic countries.

Another part of this phase is the mapping of relevant legislation across the five Nordic countries.

The project will result in the development of new educational materials for vocational educations in the Nordic countries about reuse of construction materials.

The mapping will be an ongoing process, and the overview will be updated continuously if more material should be identified.





Methodical approach

The screening and the framework

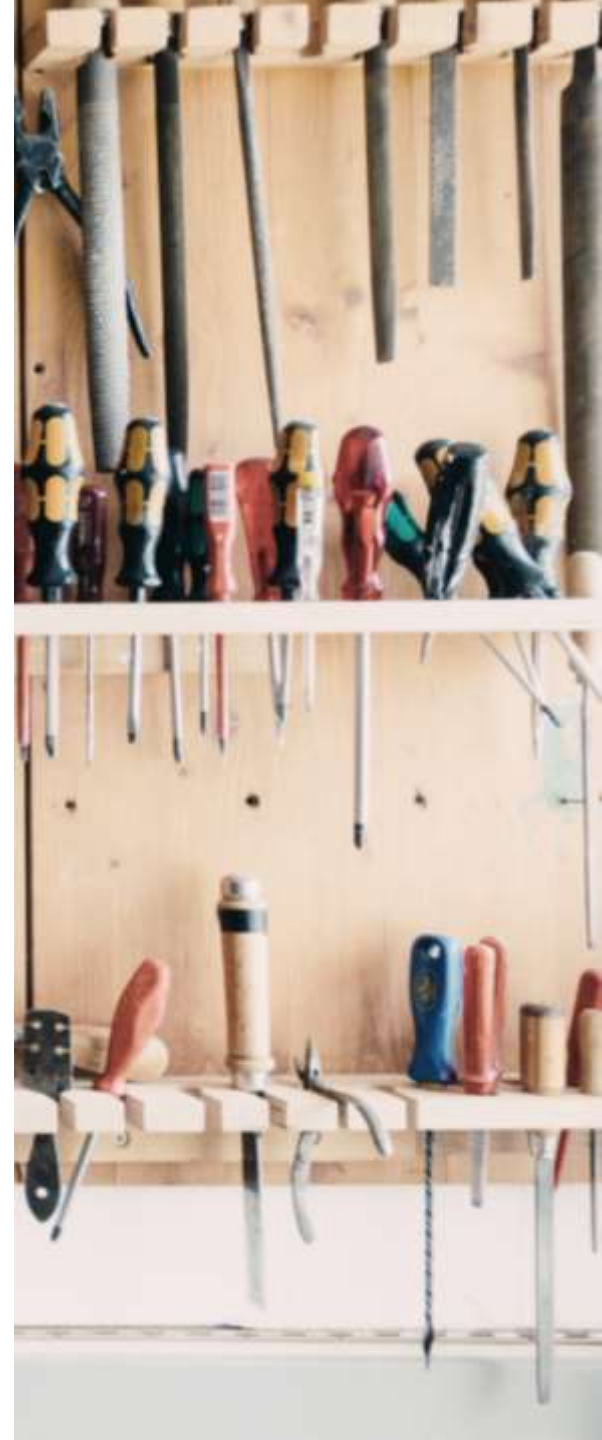
Method – the online screening for materials

The desk-study

- A broader screening than the specific subject of 'reuse of construction materials' for vocational education and training.
 - On topic - Including: circular economy, sustainability, SDG's
 - On target group - Including In-service training, adult education, high school

Outreach to relevant actors within the field in the Nordic Countries

- Teachers within vocational education
- Vocational education institutions
- Organisations concerning sustainable construction and/or vocational education
- Ministries



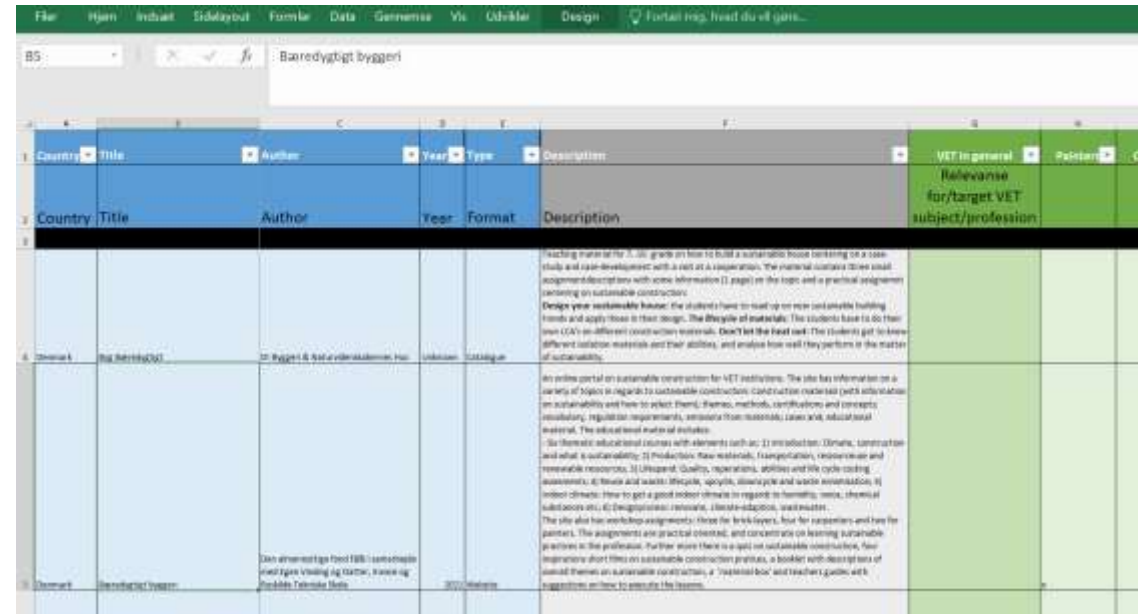
Method – the mapping process

The framework

The mapping process has been structured based on a framework of relevant criteria in order to map the material systematically, to form an overview and to establish a sorting mechanism.

Some of the most significant sorting criteria in the framework are:

Country, profession, theme and didactic approach.



Country	Title	Author	Year	Type	Description	VET in general	Relevance for target VET subject/profession
					Project material for 11th grade on how to build a sustainable house centring on a case study and user-development with a visit at a cooperation. The material contains three small assignments/discriptions with some information (1 page) on the topic and a practical assignment concerning an sustainable construction. Design your sustainable house: the students have to read up on how sustainable building trends and apply those in their design. The lifecycle of materials: The students have to do their own LCA on different construction materials. Don't let the heat out: The students get to know different isolation materials and their abilities, and analyse how well they perform in the matter of sustainability.		
					an online portal on sustainable construction for VET institutions. The site has information on a variety of topics in regards to sustainable construction: construction material (with subcategories on sustainability and how to select them); thermo, methods, construction and energetic (evaluating, regulation requirements, simulation from materials, laws, etc), educational material. The educational material includes: - (a) thematic educational courses with elements such as: 1) introduction: Climate, construction and what is sustainability; 2) Production: Raw materials, transportation, energy use and renewable resources; 3) Research: Quality, operations, pollution and life cycle analysis; 4) Materials and waste: lifecycle, upcycle, alternative and waste management; 5) Indoor climate: How to get a good indoor climate in regards to humidity, noise, thermal conditions etc.; 6) Design/operation: materials, climate-conditions, waste water. The site also has workshop assignments: three for brick-layers, four for carpenters and two for painters. The assignments are practical oriented, and concentrate on learning sustainable activities in the profession. Further more there is a part on sustainable construction, four inspiration short films on sustainable construction projects, a booklet with descriptions of several themes on sustainable construction, a "material box" and teachers guide with suggestions on how to operate the lessons.		

Method – the mapping process (professions)

Themes

- Reuse of construction materials
- Recycling of construction materials
- Sustainable construction
- Circular economy
- General sustainable education (ESD)

Didactics

Knowledge

- Regulation/policies
- Sustainable construction practices and materials
- Life cycle analysis

Ability

- Construction practices within reused materials

Opinions

- Circular economy
- Climate and climate changes
- SDG's
- ESD in general

Professions

Professions within vocational education and training:

Vocational education in general / no more specific target group within vocational education than construction professions.

1. Painters
2. Construction workers
3. Pavers
4. Bricklayers
5. Roofers
6. Carpenters

- Primary School
- High School
- In-service training / adult education

Findings

The image shows a dense, multi-layered stack of wooden planks. The planks are of various lengths and widths, creating a complex, textured surface. The lighting is dramatic, with the top surfaces of the planks catching the light and appearing in shades of light brown and tan, while the recessed areas and the background are in deep shadow, appearing almost black. The overall effect is one of a vast, organized collection of raw wood material.

Findings – in numbers

A total of 61 different teaching materials from Sweden, Norway, Finland, Iceland or Denmark have been identified.

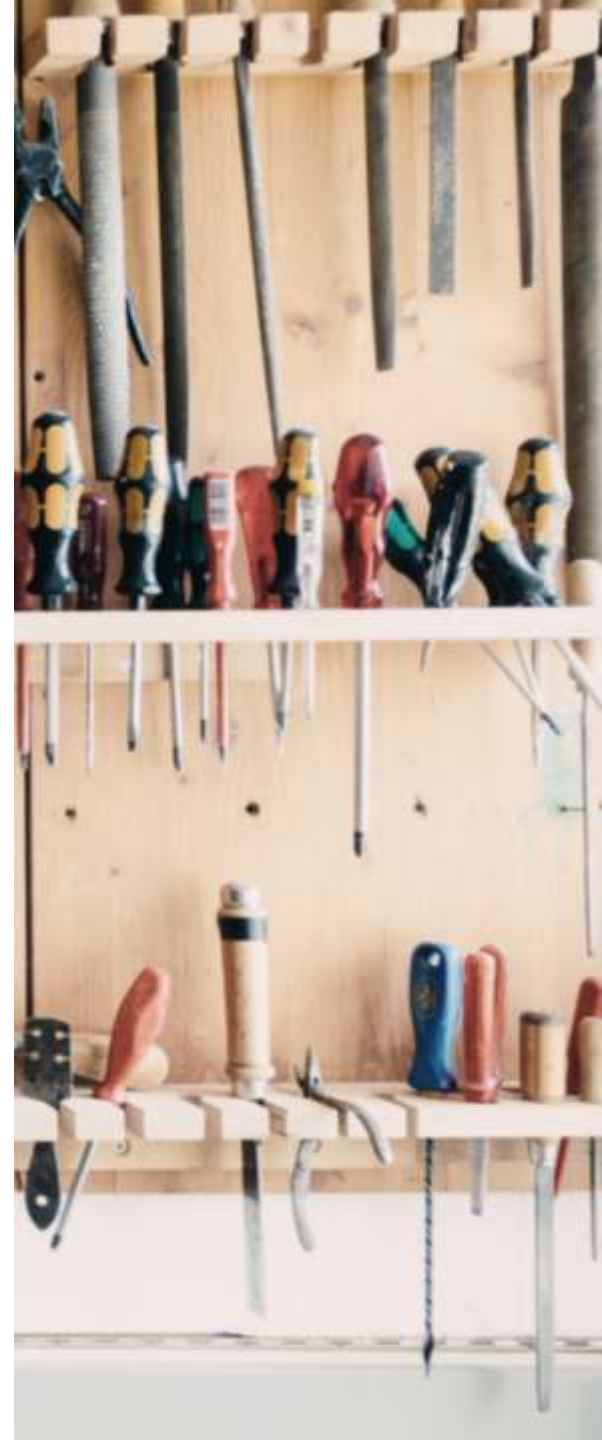
Denmark: 46 materials. 36 of these materials all come from the same source.

Finland: 2 materials

Iceland: 4 materials

Norway: 4 materials

Sweden: 5 materials



Findings – what has been located?

Denmark:

- Most of the material stem from Videnscenter for Håndværk og Bæredygtighed (The Knowledge Center on Crafts and Sustainability). This material is of varying length, depth and thoroughness. Some of the materials reference other materials in the mapping.
- The materials are rarely specifically designed for a profession, but are more generic
- The materials mostly concern broader subjects and do not have 'reuse of construction materials' as their main focus. Instead reuse of construction materials is an underlying chapter of bigger themes
- Most of the material concerns the development of 'knowledge' and 'opinions'. Less of the material concern the development of 'abilities'.

Sweden, Finland, Norway Iceland

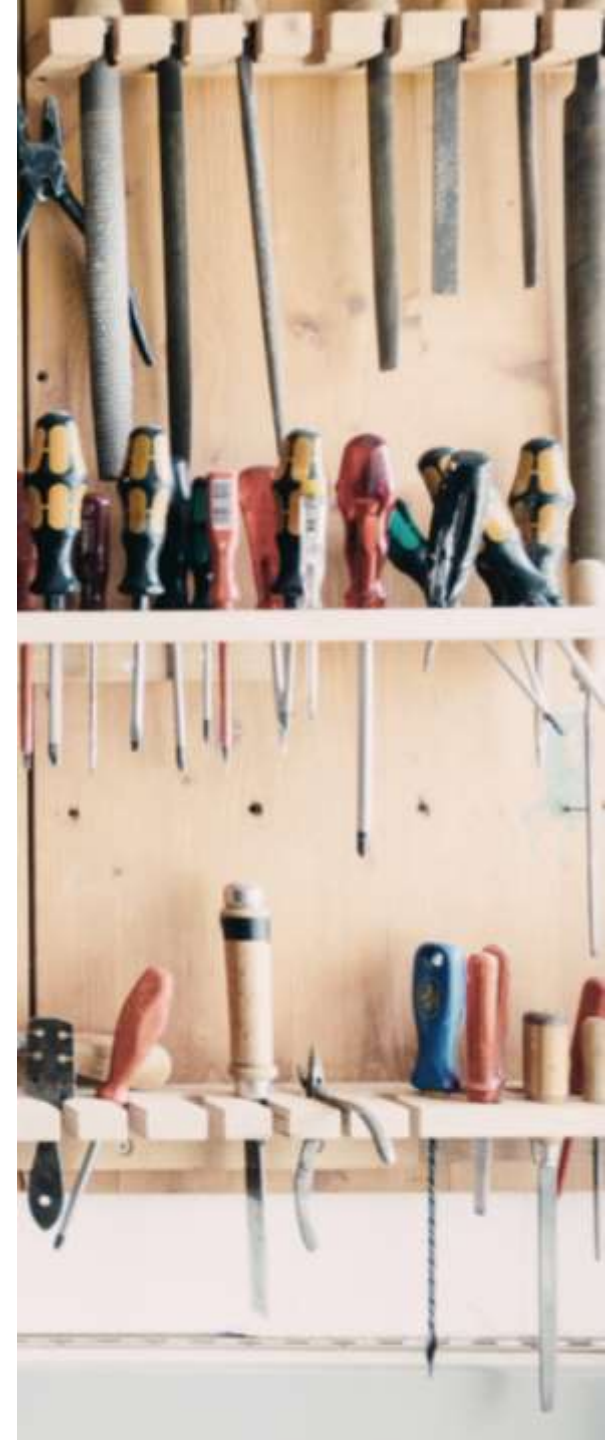
- There is a lack of relevant educational material for the teachers to use in teachings of reuse of construction materials
- There are a couple of interesting didactical approaches and methods, but not either/or developed for the target group or on the specific theme

Conclusions

A large stack of wooden planks, likely lumber, arranged in a dense, somewhat chaotic pile. The wood has a warm, brownish-gold tone. The word "Conclusions" is overlaid in white text on the left side of the image.

Conclusions

- There is a lack of educational material in the Nordic countries with a focus on reuse of construction materials
- There is a substantial amount of educational material in Denmark, but not enough material that specifically concerns reuse of construction materials for the specific professions (with a focus on gaining abilities to exercise reuse in practice)
- The Danish materials should however be held in mind and/or used, when developing new materials
- There are examples of different didactic methods that could be used, when developing new materials



Thank you



Ministry of the
Environment, Finland



Nordic
Innovation

Form
Design
Center



Government of Iceland
Ministry of Infrastructure



Danish Authority of
Social Services and Housing



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