



MIKADO

Kartlegging og dokumentasjon av miljøegenskaper for tre og trebaserte produkter



MIKADO in a nutshell

- Documenting environmental properties of wood and wood based products
- Environmental Assessment
- Environmental Product Declarations EPDs
- Environmental aspects as competitive factor
- Environmental aspects in product development
- Information

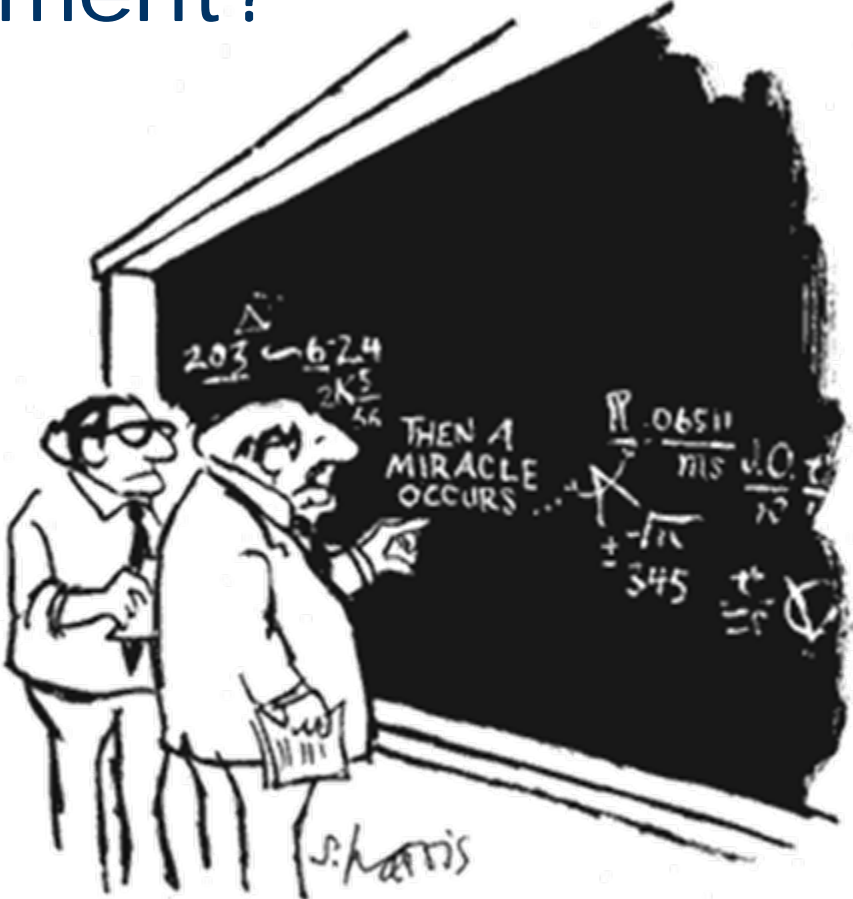
- SP 1 – Collection of data
- SP 2 – Environmental Assessment
- SP 3 – Environmental product development

Budget

2007: €250 000
2008: €340 000
2009: €320 000



Why documenting the environment?

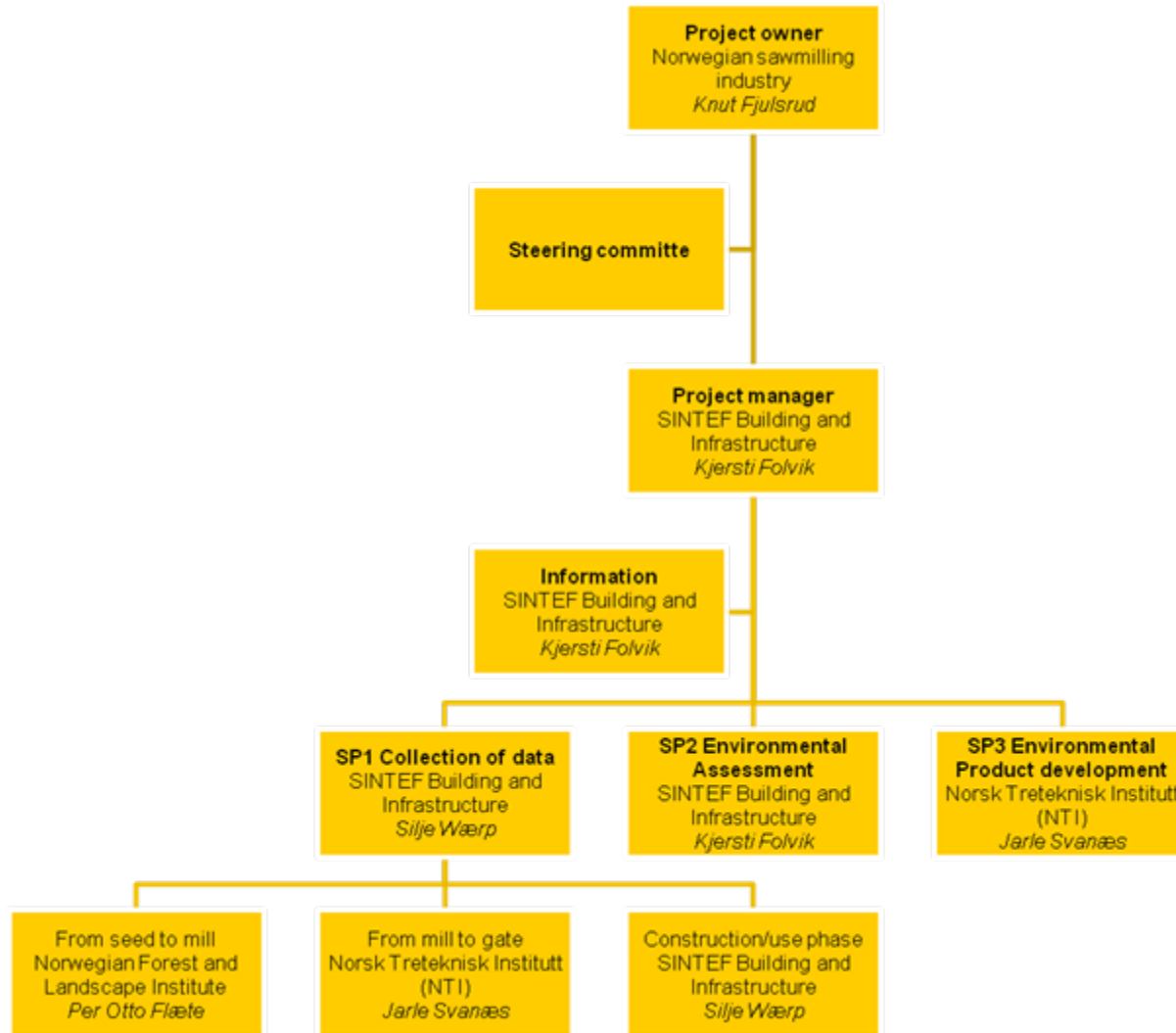


"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

What is environment?



Project organisation

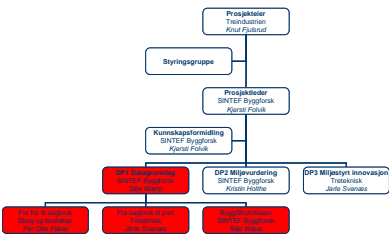


Partners

- Norwegian sawmilling industry
- SINTEF Building and Infrastructure
- Treteknisk (NTI)
- Forest and Landscape Institute
- Moelven Wood
- Moelven Timber
- Norske limtreprodusenter
- Solør Gjenvinning
- Moelven Massivtre
- Casco Adhesives
- Gausdal Bruvoll
- Haslestad Bruk
- Inntre
- Jotun
- TBF
- Romerike trelast
- Forestia
- Viken Skog
- Kjeldstad Sagbruk og Høvleri



Sub-project 1 (SP 1)



Data collection

- **Literature study** **Done**
 - Mapping of existing and future requirements and guidelines
 - Reviewing literature
- **Collection of data** **Started**
 - Resources, including energy
 - Lifetime and maintenance
 - Waste
 - Indoor climate
 - Environment, health and safety

Method: questionnaire, interviews, workshops

Literature study

- **Standards, legal framework and regulation**
- **Forestry**
- **CO₂ -mitigation**
- **LCA for wood and wood based products and construction**
- **Lifespan, wood protection and natural durability**
- **Waste and recycling options**

SINTEF Byggforsk



SILJE WÆRP, PER OTTO FLÆTE OG JARLE SVANÆS

MIKADO – Miljøegenskaper for tre- og trebaserte produkter over livsløpet

Et litteraturstudium

Prosjektrapport 14

2008



SINTEF

Literature study – a summary

Standards, legal framework and regulations

- **New international standards coming in building and construction handling**
 - **Lifetime expectancy**
 - **Sustainability**
 - **Environmental assessment**
 - **Assessment of dangerous compounds**
- **Forest certification: In Norway, "Levende skog" based on PEFC**

Forestry

- **In forestry, 90 % of the energy use comes from transport, logging and hauling (seed to mill).**
- **Alternative fuel or transport solutions would reduce the load.**

Literature study – a summary

CO₂-mitigation

- Many available studies on CO₂-mitigation and optimal carbon storage in forests and forestry products
- Wood products substitutes more energy intensive products
- Bi-products utilized for bio energy
- Net reduction of CO₂ emissions with intensive forestry
- Sustainable forestry can conflict on intensive forestry
- Most important for the Carbon-balance:
 - Utilization for bi-products in energy production
 - Substituting energy intensive products

Literature study – a summary

LCA for wood and wood-based products

- Limited number of declarations available
- Wood based products – low emissions
- For processed products, the biggest environmental loads appears outside mill (glue etc.)
- Limited access on comparative studies regarding surface treatment and glue

LCA for buildings

- Several studies available
 - Full LCAs
 - Limited to phases in building lifetime
 - Only energy included
 - Using different system borders and methods for assessment
- Comparative studies
 - Wood based constructions better in production phase
 - No considerable difference in the use phase

Literature study – a summary

Lifetime expectancy, wood protection and natural durability

- **Lifetime data vital as a basis for compilation of environmental product declarations**
- **A challenge to find satisfactory lifetime data for wood**

Waste and recycling

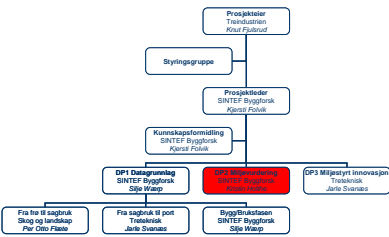
- **Utilization of waste wood involve a resource for material recycling or energy recovery.**
- **The future house should be designed for recycling, meaning it should be prepared for the recycling of wood based products**

Literature study – conclusions

Research needs in MIKADO

- **Environmental loads from Norwegian forestry**
- **Utilization of bi-products and waste wood**
- **Environmental loads from surface treatment, glue and other additives**
- **Lifetime expectancy and life cycle scenarios for wood and wood based products**

Sub-project 2 (SP 2)



Environmental assessment

- **Life Cycle Assessment (LCA)**
- **Product Category Rules (PCR) Started**
- **EPDs for a selection of products Started**
 - General, representative for industry
 - Custom products
 - Case studies for a selection of scenarios
- **Collected in a database available to all interested parties**



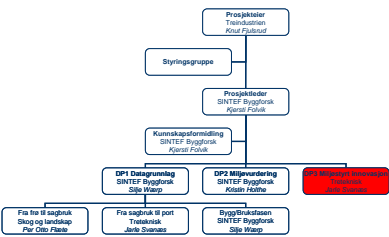
PCR – Product Category Rules

- **PCR will give guidelines for carrying out EPDs and to pinpoint the underlying requirements of the LCA.**
 - **Functional and declared unit**
 - **System boundaries**
 - **Cut-off and allocation rules**
 - **Data quality requirements**
 - **Describe scenarios**

PCR solid wood products – problems to be addressed

- **Defining the product group – Solid Wood Products**
 1. Sawn wood
 2. Structural timber
 3. Interior
 4. Exterior
 5. Structural glulam
- **Defining system borders**
 - From production of seeds or felling of timber?
 - Using bi-products for energy generation?
- **Moisture content**
- **Carbon-accounting**
- **Also considering biodiversity**

Sub-project 3 (SP 3)



Environmental aspects in product development

- Surveying experiences of implementing environmental aspects into product design and development national and internationally
- Uncover the potential of improvement and possible environmental measures
- Cost/benefit assessment and environmental measures
 - Profitability
 - Technical and economical gains
 - Competitive advantages
- Information

- www.sintef.no/mikado



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