



Marcus Lindner

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## Northern ToSIA – Sustainable forest resource management in the Northern Periphery

Assessing the Sustainability Impacts of Forest Management  
in Northern Europe – a Scottish Perspective  
Seminar, Aviemore, 20<sup>th</sup> May 2010



## Outline

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- ❑ Northern ToSIA project objectives
- ❑ Sustainability challenges in the Northern Periphery
- ❑ Assessing sustainability impacts with ToSIA

## Northern ToSIA objective

Long-term goal:  
Improving sustainable forest resource  
use in the Northern Periphery



Project objectives:

- To test and develop the ToSIA tool in regional and company case applications
- To develop the tool applicability and necessary instructions for use in the Northern Periphery
- To disseminate the tool and user experiences for the whole Northern Periphery area

# Sustainability Challenges in the Northern Periphery

Environmentally friendly resource management

Securing social wellbeing in the region



Economically viable resource utilization

Gällö in Jämtland, Sweden

Environmentally friendly resource use



Fotos: Anne & Horst Helwig  
[www.helwig-naturfoto.de](http://www.helwig-naturfoto.de)





## People: the social dimension

- Recreational use increases in importance
- Forest sector offers employment
- Cultural values, ...

**Stora Enso to shut down two factories in Finland and one in Sweden - 1,400 jobs to go**

## Paper mill closure costs 250 jobs



**HELSINGIN SANOMAT**

[close window](#)

Residents of Kemijärvi staged their protest at the Stora Enso pulp mill on Thursday afternoon.

Photo:  
JAAKKO HEIKKILÄ



## Value added:

- Forest-based sector is important for the regional economy



Foto: FVA Baden-Württemberg,  
Department of Forest Utilisation



Gällö in Jämtland, Sweden



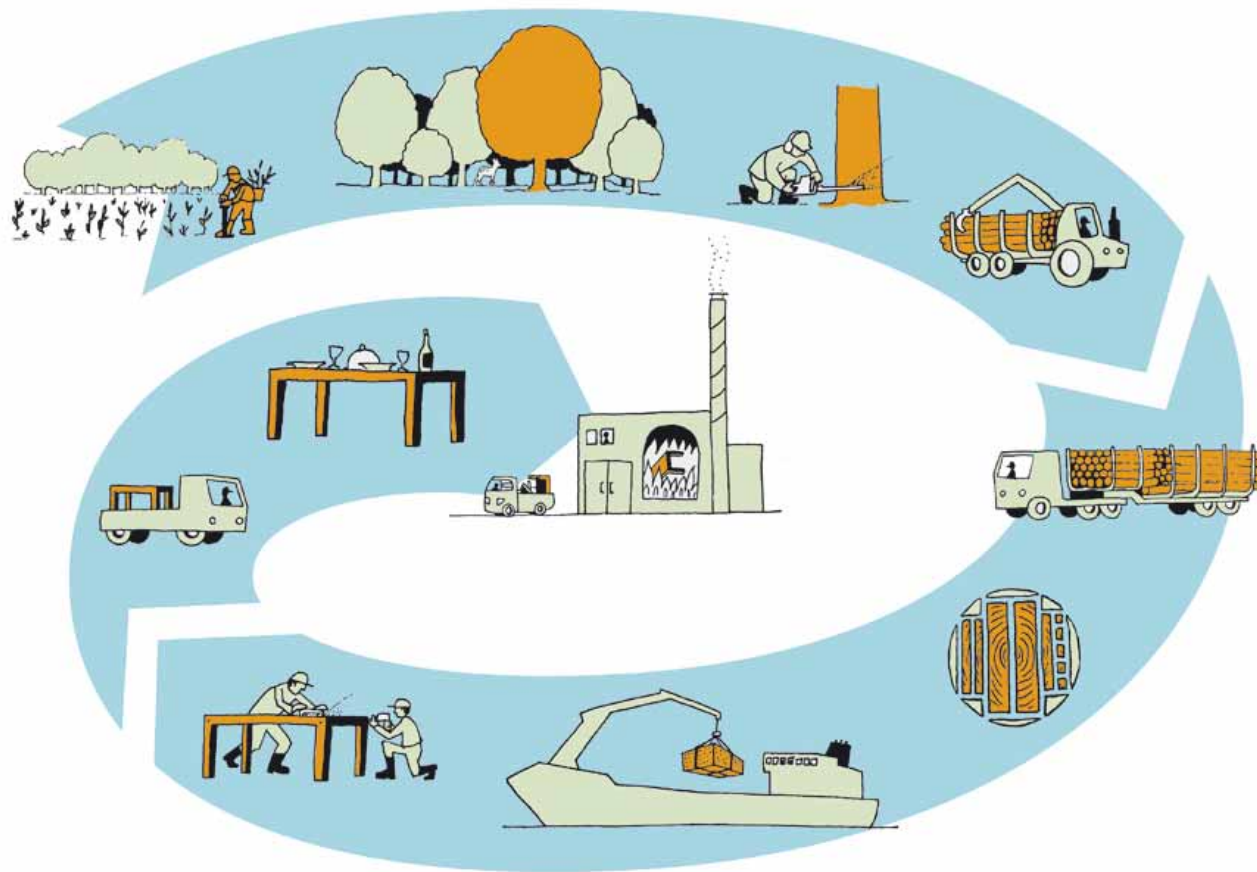
# The EFORWOOD Sustainability Impact Assessment Approach

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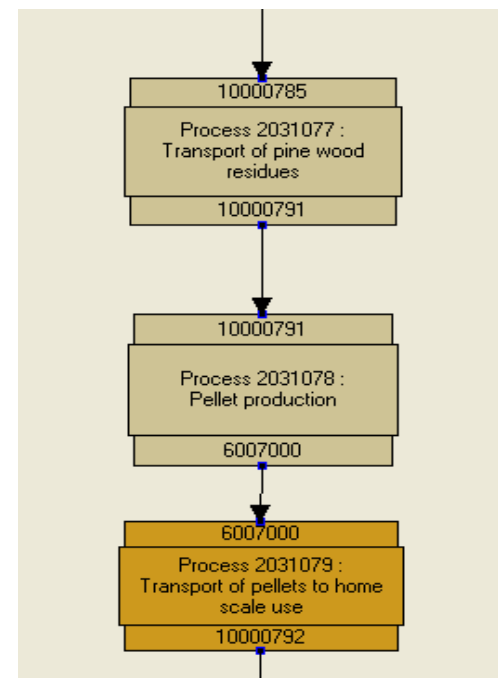
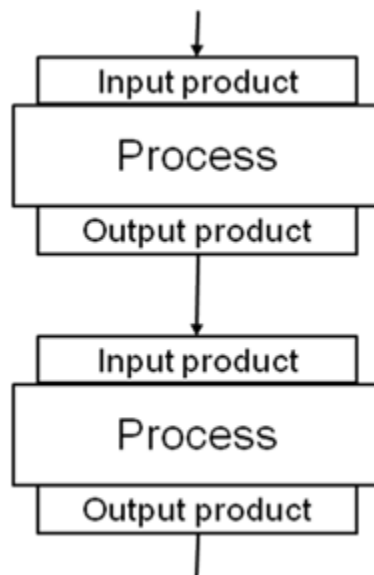
*EFORWOOD (518128) review meeting, 17 March 2010, Brussels*

[www.eforwood.org](http://www.eforwood.org)





## Forest-Wood Chains (FWC): from tree regeneration to end-of life of wood products



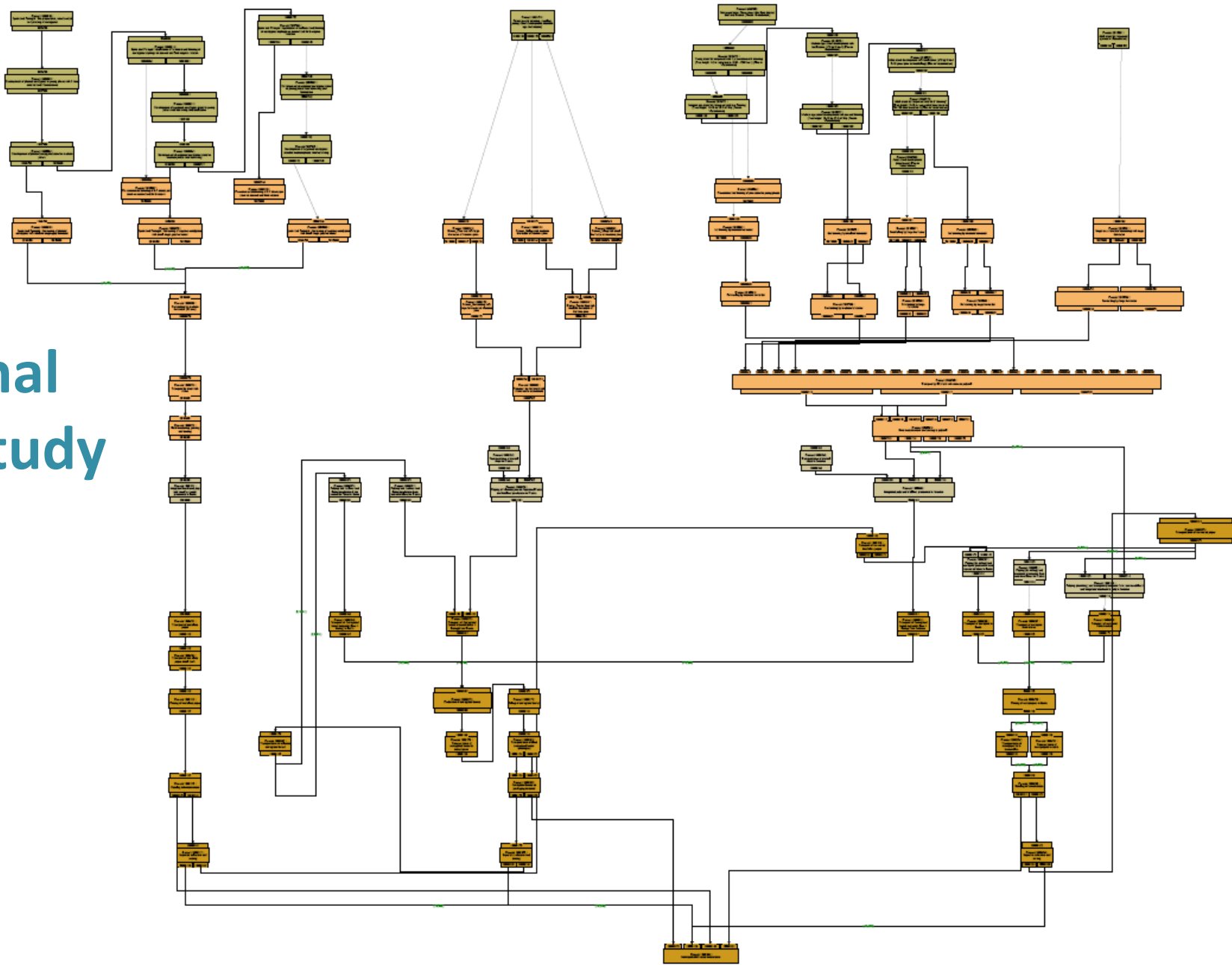
## Real world







## Regional case study

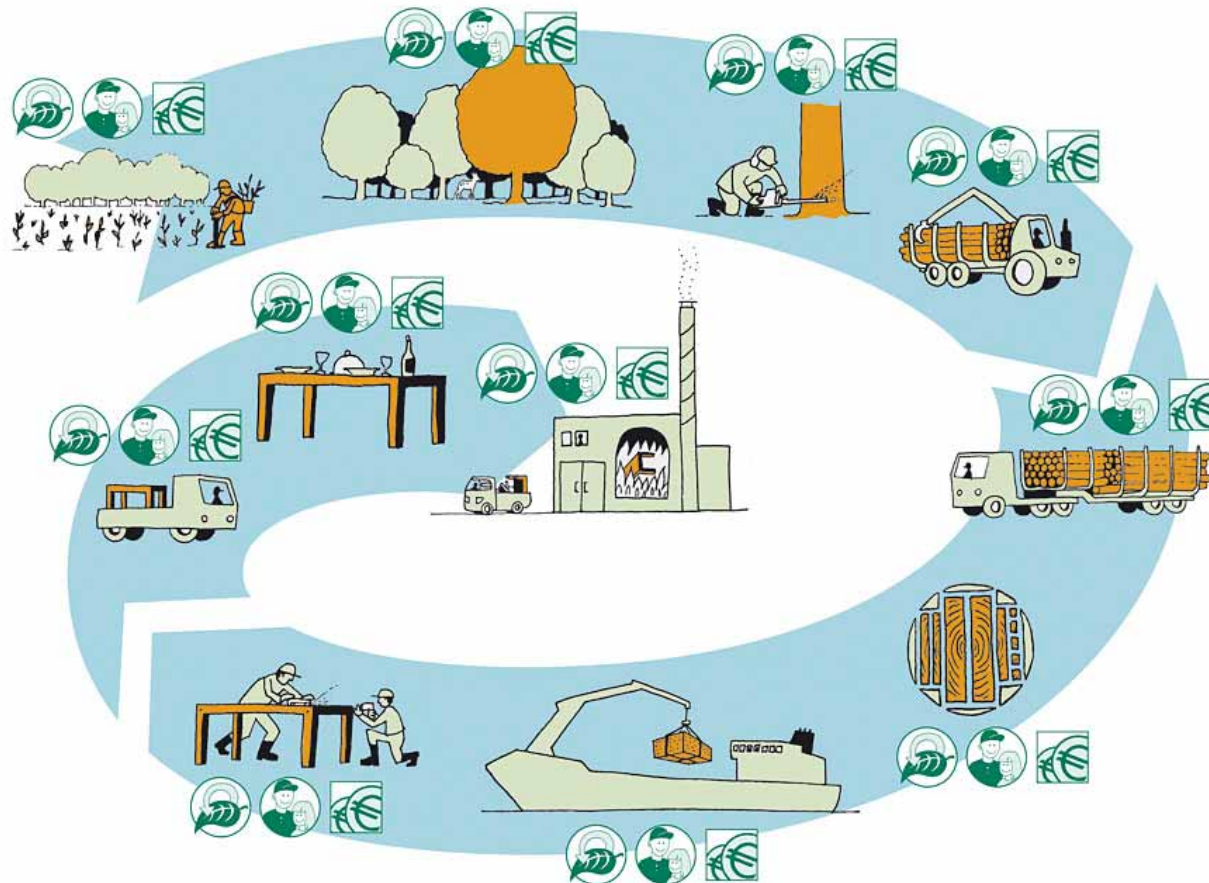




Every FWC process affects sustainability



# ToSIA links sustainability indicators to FWC processes



## Indicators

-  Environmental
-  Social
-  Economic

# Sustainability Indicators



## Economic



## Environmental



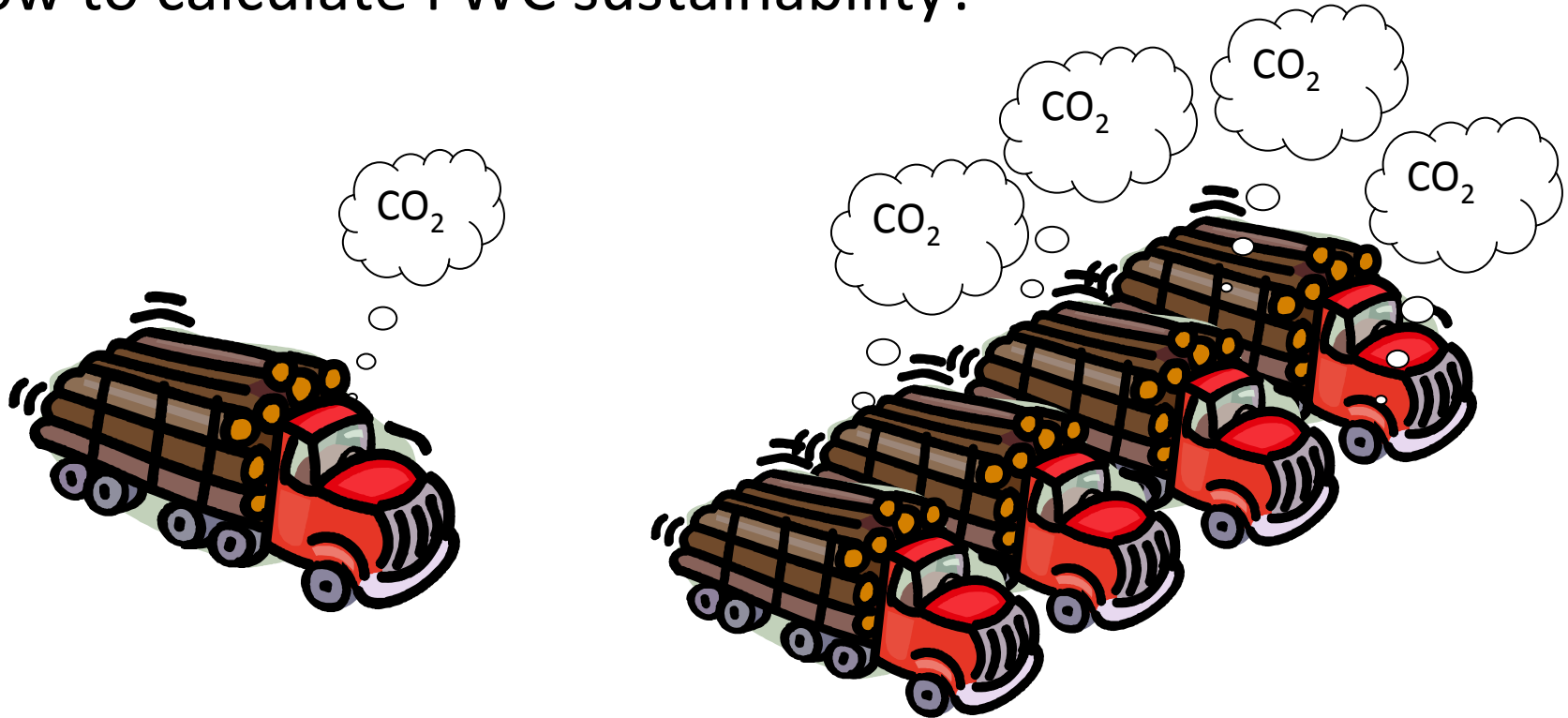
## Social

Gross value added  
Production costs  
Resource use  
Total production  
Labour productivity  
Investment, Research & Development  
Trade Balance  
Enterprise structure

Energy generation and use  
GHG emissions & carbon stocks  
Transport distance and freight  
Forest biodiversity  
Forest resources  
Water and Air Pollution  
Generation of waste  
Forest Damage  
Soil condition  
Transport  
Water use

Employment  
Wages and salaries  
Occupational safety and health  
Education and Training  
Innovation  
Consumer behaviour & attitude  
Corporate social responsibility  
Provision of public forest services  
Wages and salaries  
Quality of employment

## How to calculate FWC sustainability?



**Overall sustainability is quantified by multiplying relative sustainability impacts**

## ToSIA is a tool to answer **WHAT IF?** - questions.

What if:

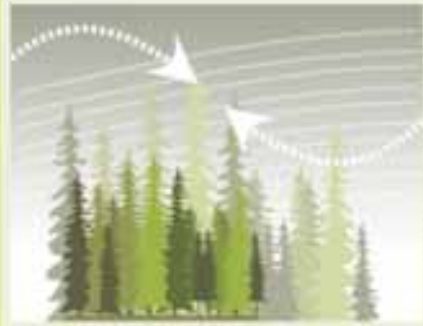
- ❖ Bioenergy use triples?
- ❖ Natura 2000 policy strengthens?
- ❖ Paper industry shifts production away from Europe?



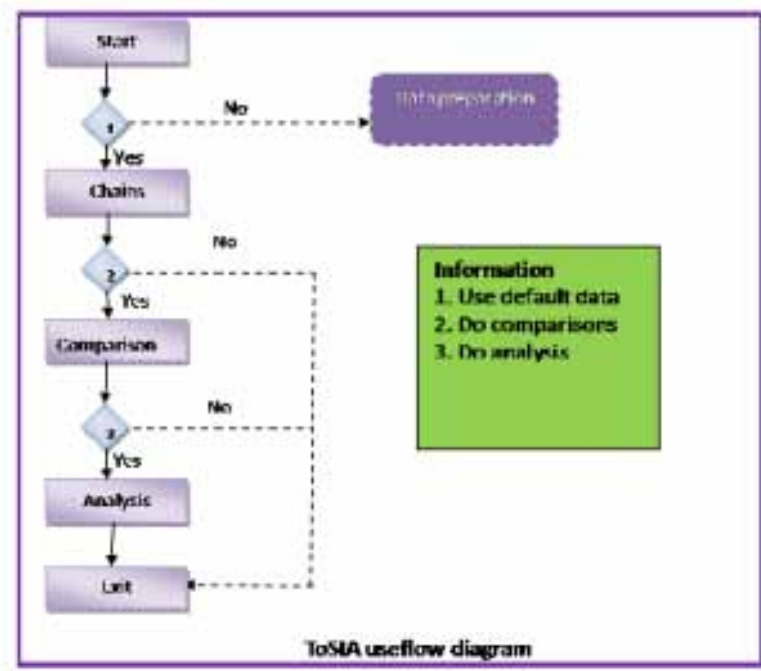
# ToSIA

- Welcome
- Data Preparation
- Chain runs
- Comparison
- Analysis
- About

## Welcome



This is ToSIA (Tool for Sustainability Impact Assessment), the decision support tool for forestry sector. With this tool forest-based industry, national and international policy makers and researchers can analyse the sustainability effects of changes due to deliberate actions (e.g. in policies or business activities) or due to external forces (e.g. climate change, global markets). ToSIA analyses environmental, economic, and social impacts of changes in forestry-wood production chains, using a consistent and harmonised framework from the forest to the end-of-life of final products. It allows user to analyse different kind of sustainability effects in a balanced way. The first versions of ToSIA are the products of the EFORWOOD project financed by the 6th Framework Program of the European Commission.



# ToSIA

- Welcome
- Data Preparation
- Chain runs
- Comparison
- Analysis
- About

- New run
- Baseline2005
  - 2025(A1)
  - 2025(A1, Bioenergy scenario)

Select chain:  
 Baden-Wurttemberg Ge...  
 Select year:  
 2005  
 Select reference future:  
 --  
 Select scenario:  
 --

Skidding (B...	Skidding (B...	Skidding (B...	Skidding (S...	Skidding (S...	Skidding (S...	Skidding (S...	Tran
0,7	0,7	0,7	0,66	0,7	0,66	0,66	22,5
80,0	80,0	80,0	80,0	100,0	80,0	80,0	100,
20,0	20,0	20,0	20,0	0,0	20,0	20,0	0,0
208 778,45	262 945,11	607 932,44	1 508 632,68	2 253 963,83	744 759,25	2 998 099,43	661
207 400,51	261 209,67	603 920,09	1 498 675,71	2 239 087,67	739 843,84	2 998 099,43	514
1 377,94	1 735,44	4 012,35	9 956,98	14 876,16	4 915,41	19 787,46	121
63,02	63,02	54,8	63,02	54,8	63,02	54,8	95,1
17 561,35	21 148,76	20 358,32	24 211,8	17 529,67	23 660,75	21 398,42	15 5
1,25	1,39	2,81	8,81	9,71	2,89	12,22	4,28
1,25	1,39	2,81	8,81	9,71	2,89	12,22	4,24
0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,03

Indicator: 12.1.1 - Occupational accidents (non-fatal) - absolute numbers  
 Process: Skidding (Beech, DBH = 35 cm; Slope 30 - 60 %)  
 Module: M3 - Forest to industry interactions  
 Indicator result: 1,254 [absolute number]  
 Relative value: 0,000011 [absolute number/m3]  
 Flow amount: 118 930,528 [m3]  
 Datasource: Official statistics  
 Datasource note: Ministerium Landlicher Raum Baden-Wurttemberg, 2005  
 Algorithm: not available  
 Note: Ministerium Landlicher Raum Baden-Wurttemberg, 2005  
 Data quality: high

Reverse calculation

Calculate

Select visualisation

Table  Chart  Flow

Save run

Indicator values by:

Process  Module  Chain

Shown Indicators: All

Clear Session

# ToSIA

- Welcome
- Data Preparation
- Chain runs
- Comparison
- Analysis
- About

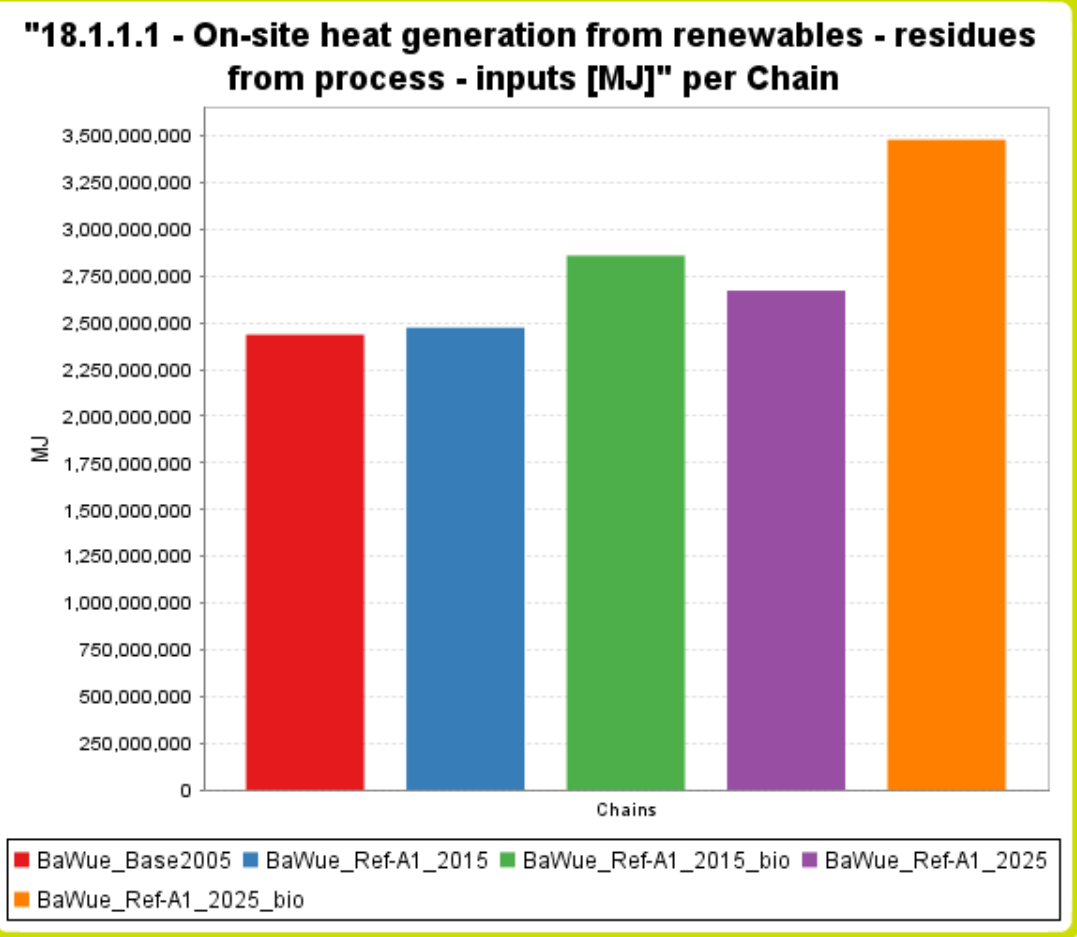
- New run
- X BaWue\_Base2005 >
  - X BaWue\_Ref-A1\_2015 >
  - X BaWue\_Ref-A1\_2015\_bio >
  - X BaWue\_Ref-A1\_2025 >
  - X BaWue\_Ref-A1\_2025\_bio >

- Runs to compare:
- BaWue\_Base2005 X
  - BaWue\_Ref-A1\_2015 X
  - BaWue\_Ref-A1\_2015\_bio X
  - BaWue\_Ref-A1\_2025 X
  - BaWue\_Ref-A1\_2025\_bio X

Compare

Clear Session

Select visualisation  
 Table  Chart

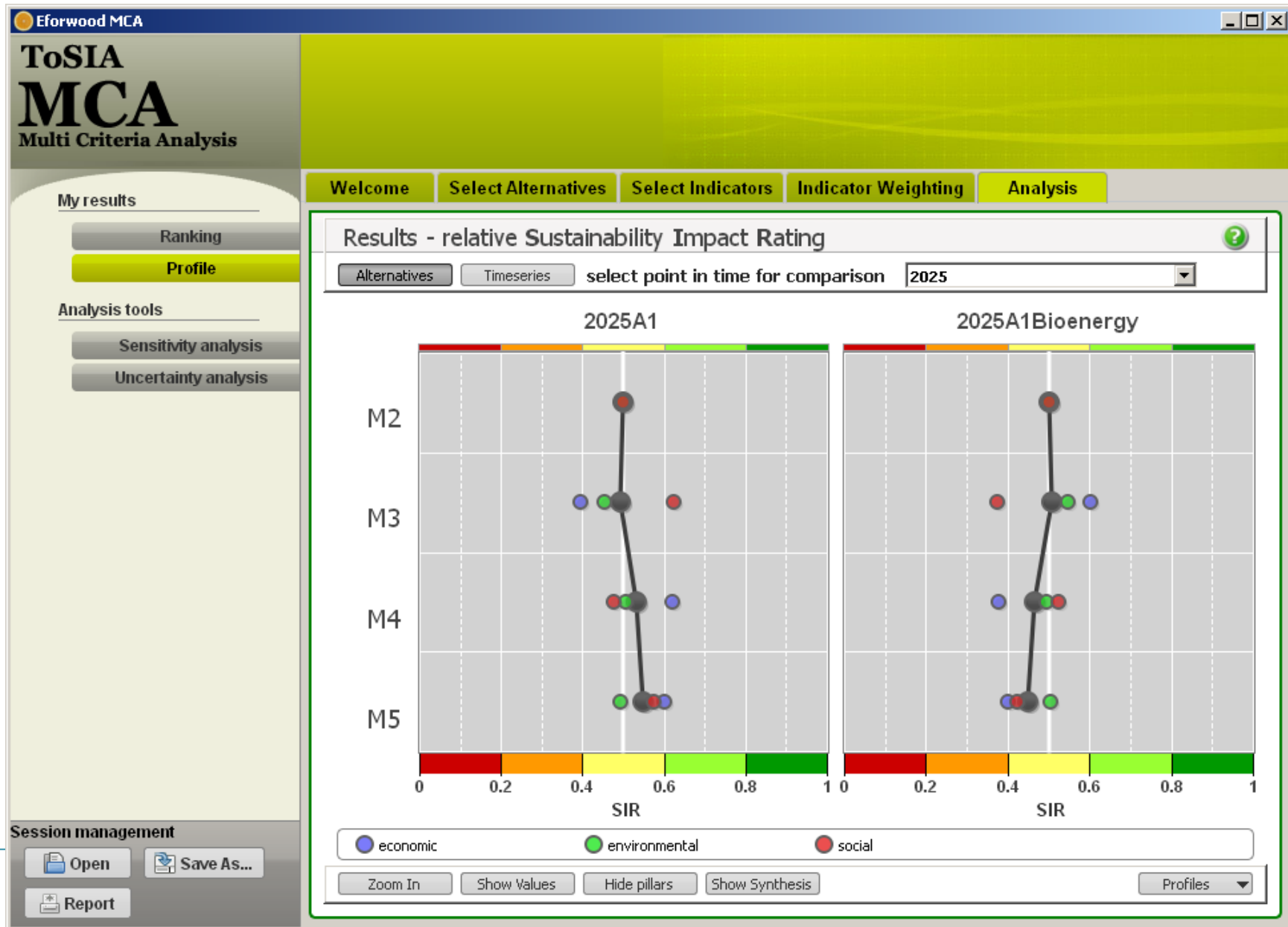


Select indicator:  
 18.1.1.1 - On-site heat generation from rene... ▼

Save Image

The screenshot displays the 'Tool for Sustainability Impact Assessment (ToSIA)' software interface. The main window title is 'Tool for Sustainability Impact Assessment (ToSIA)'. The interface is divided into several sections:

- Navigation Bar:** Contains tabs for 'Welcome', 'Data Preparation', 'Chain runs', 'Comparison', 'Analysis', and 'About'. The 'Analysis' tab is currently selected.
- Left Panel:** Features the 'ToSIA' logo and a list of navigation buttons: 'Overview', 'Results', 'Parameters: ⓘ', 'NPV Components (EE)', 'Customize ⓘ', 'Product prices ⓘ', and 'Sensitivity Analysis'.
- Form Fields:** Located in the center-left, these include:
  - 'Select chain:' with a dropdown menu showing 'Baden-Wuerttemberg Gener...'
  - 'Select year:' with a dropdown menu showing '2005'
  - 'Select reference future:' with a dropdown menu showing '--'
  - 'Select scenario:' with a dropdown menu showing '--'
  - 'Discount rate' set to '2' with a percentage sign and an information icon ⓘ.
- Cost Benefit Analysis (CBA) Module:** A central window titled 'Cost Benefit Analysis (CBA)' is highlighted with a yellow border. It features a balance scale graphic with the following items:
  - Left Side (Costs):** 'Direct costs corrected for distortions', 'Waste disamenity costs', 'Road transport accidents costs', 'Water pollution costs', and 'Air emission costs'.
  - Right Side (Benefits):** 'Direct benefits corrected for distortions', 'Biodiversity benefits', 'Carbon sequestration benefits', and 'Forest recreation benefits'.
- Buttons:** 'OK' and 'Cancel' buttons are located at the bottom right of the CBA module.





# From EFORWOOD to Northern ToSIA





**Thank you for  
your attention!**



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