Northern ToSIA

Assessing sustainability of forest based activities in rural areas of the Northern Periphery

Marcus Lindner

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, 20th May 2010

Northern Periphery Programme 2007–2013
Innovatively investing in Europe's Northern Periphery for a sustainable and prosperous future
European Union
European Regional Development Fund
Northern ToSIA
EFI

Northern ToSIA

Assessing sustainability of forest based activities in rural areas of the Northern Periphery

Outline

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

Northern Periphery Programme 2007–2013

Innovatively investing in Europe's Northern Periphery for a sustainable and prosperous future

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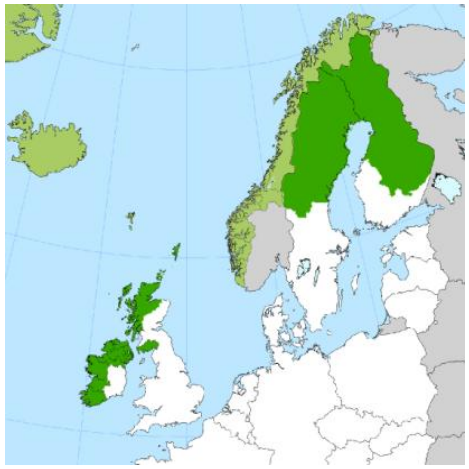
Northern ToSIA

EFI

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

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

HELSINGIN SANOMAT

close window

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

Photo:
JAAKKO HEIKKILÄ

Paper mill closure costs 250 jobs

Value added:

- Forest-based sector is important for the regional economy

Foto: FVA Baden-Württemberg, Department of Forest Utilisation

Gällö in Jämtland, Sweden

EFORWOOD

Sustainability Impact Assessment of the Forestry-Wood Chain

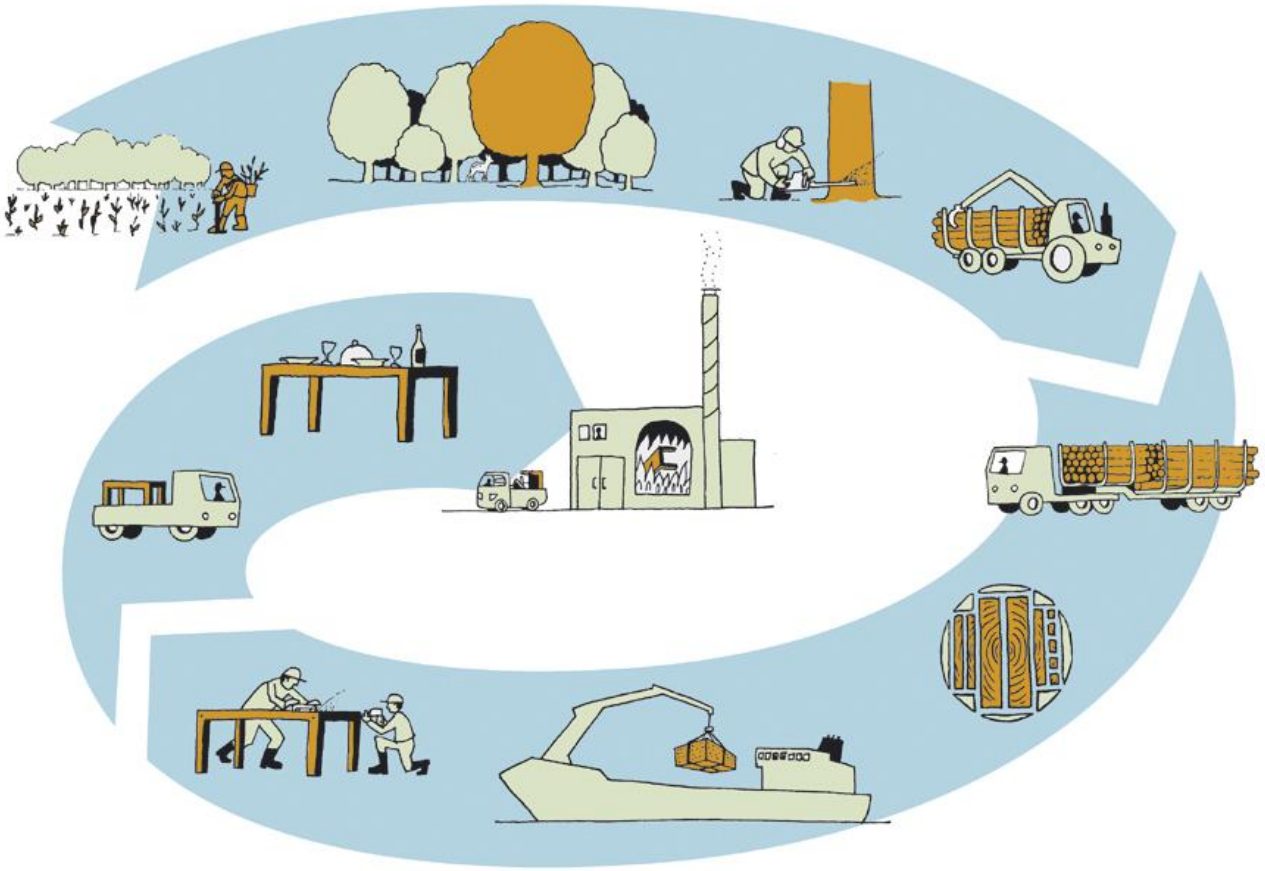
EFI

The EFORWOOD Sustainability Impact Assessment Approach

Marcus Lindner
European Forest Institute (EFI)

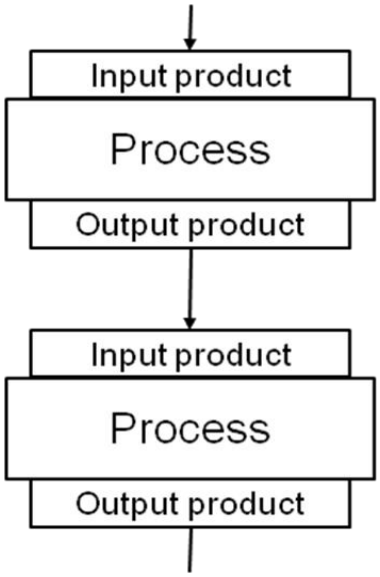
EFORWOOD (518128) review meeting, 17 March 2010, Brussels

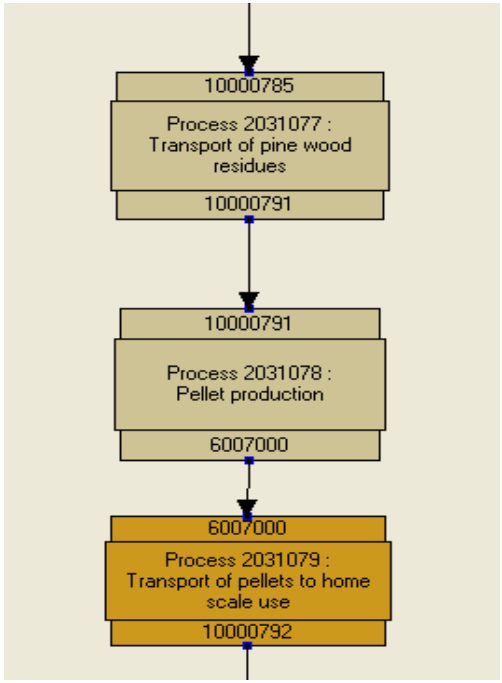
www.eforwood.org



Forest-Wood Chains (FWC):

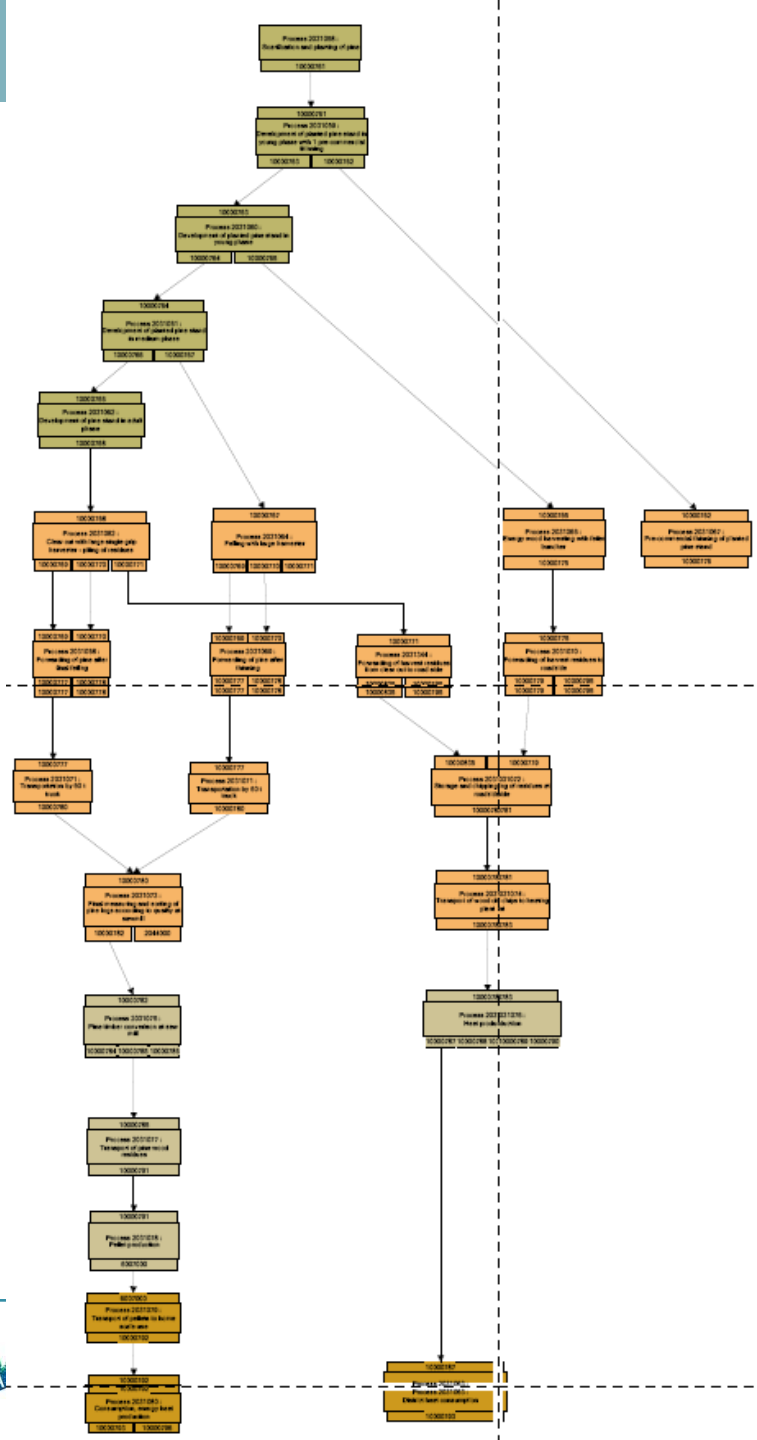
from tree regeneration to end-of life of wood products


Input product
Process
Output product
Input product
Process
Output product

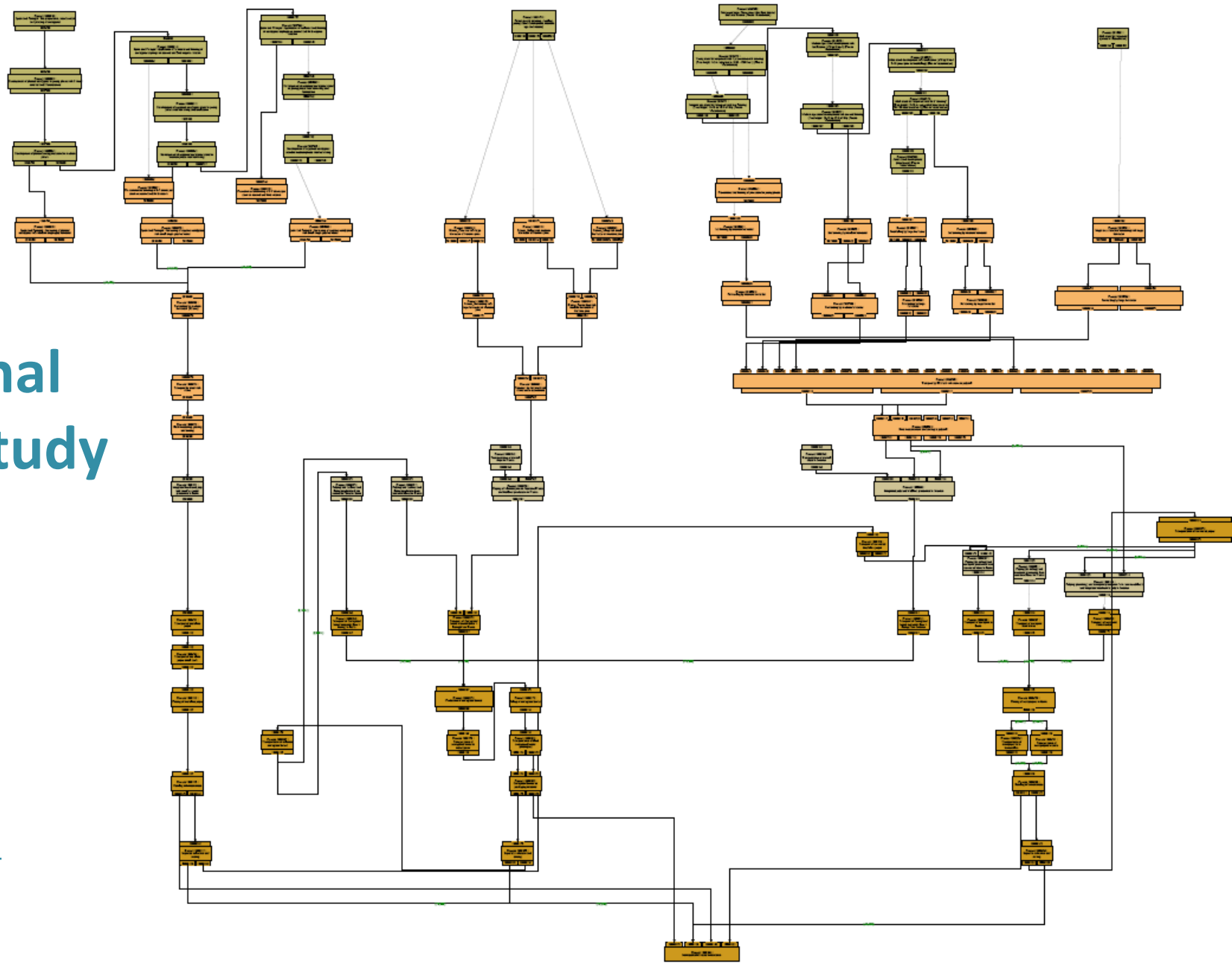

10000785
Process 2031077 : Transport of pine wood residues
10000791
10000791
Process 2031078 : Pellet production
6007000
6007000
Process 2031079 : Transport of pellets to home scale use
10000792

Real world

Simple Forest Wood Chain Example

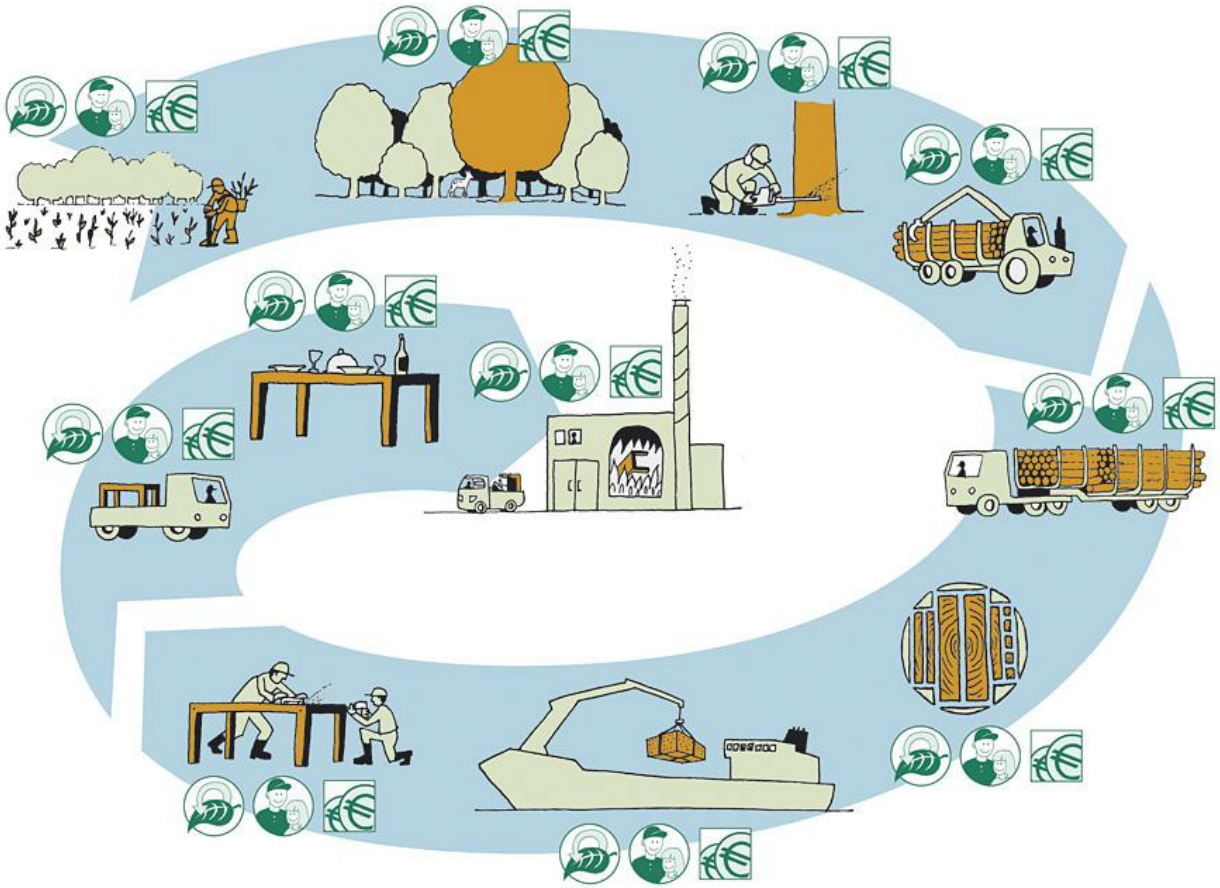


Regional case study



Every FWC process affects sustainability

ToSIA links sustainability indicators to FWC processes



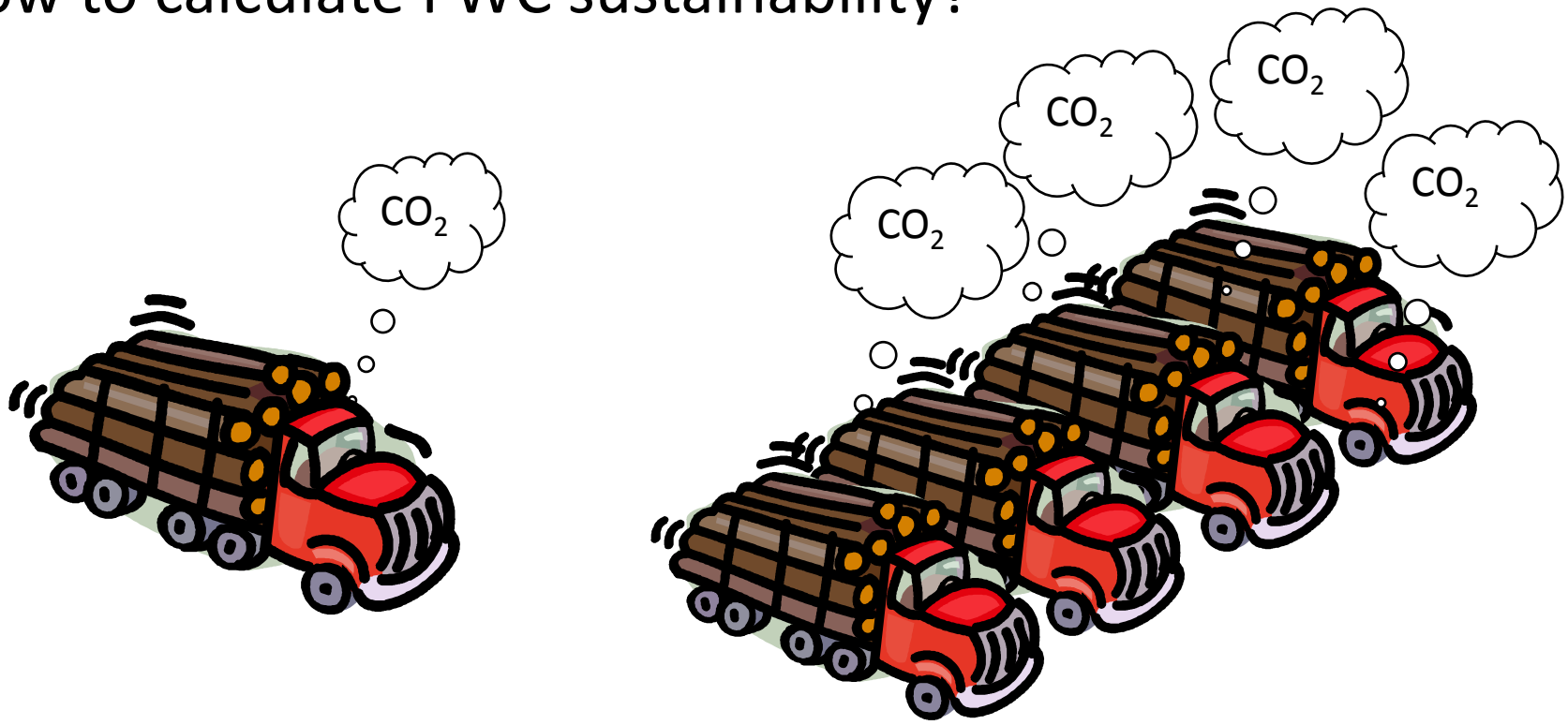
Indicators

- Environmental
- Social
- Economic

Sustainability Indicators

Economic	Environmental	Social
Gross value added	Energy generation and use	Employment
Production costs	GHG emissions & carbon stocks	Wages and salaries
Resource use	Transport distance and freight	Occupational safety and health
Total production	Forest biodiversity	Education and Training
Labour productivity	Forest resources	Innovation
Investment,Research & Development	Water and Air Pollution	Consumer behaviour & attitude
Trade Balance	Generation of waste	Corporate social responsibility
Enterprise structure	Forest Damage	Provision of public forest services
	Soil condition	Wages and salaries
	Transport	Quality of employment
	Water use	

How to calculate FWC sustainability?

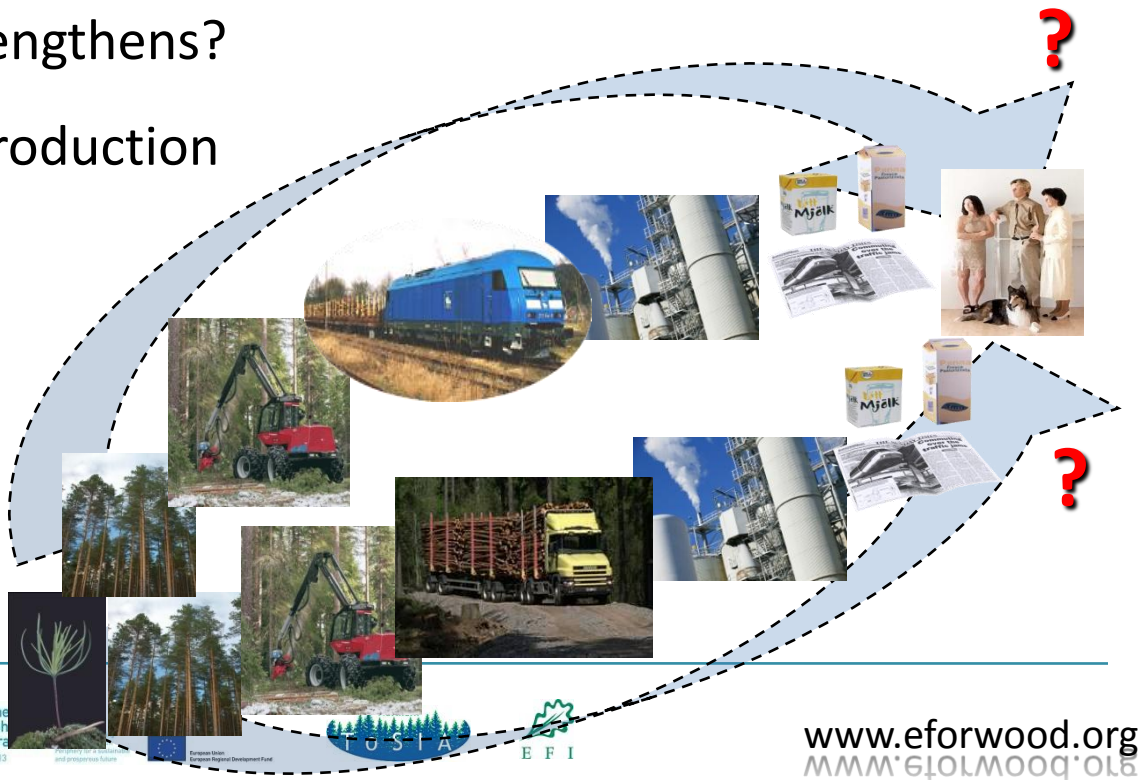


Overall sustainability is quantified by multiplying relative sustainability impacts

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?



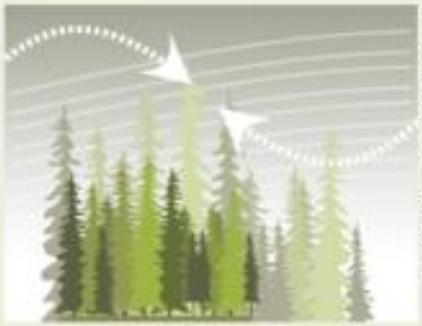
Tool for Sustainability Impact Assessment (ToSIA)

ToSIA

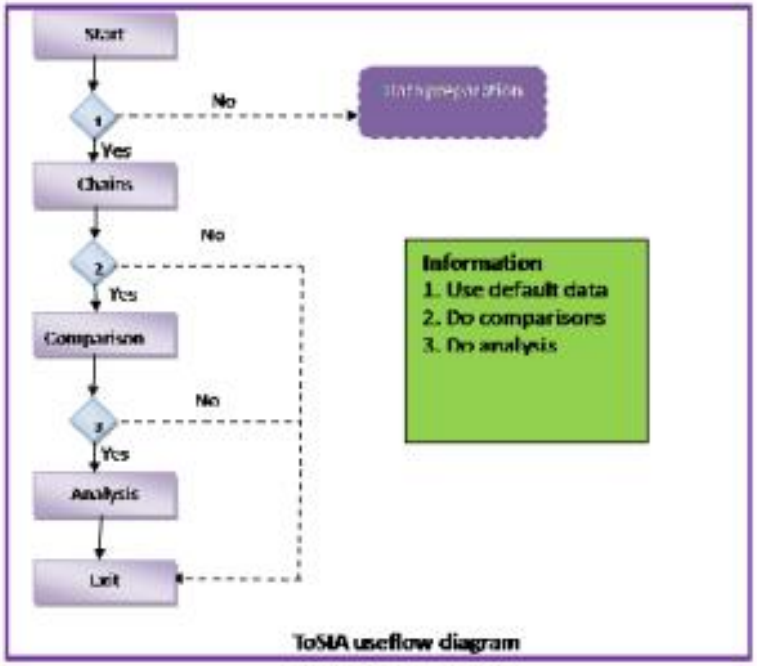
Maximize

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

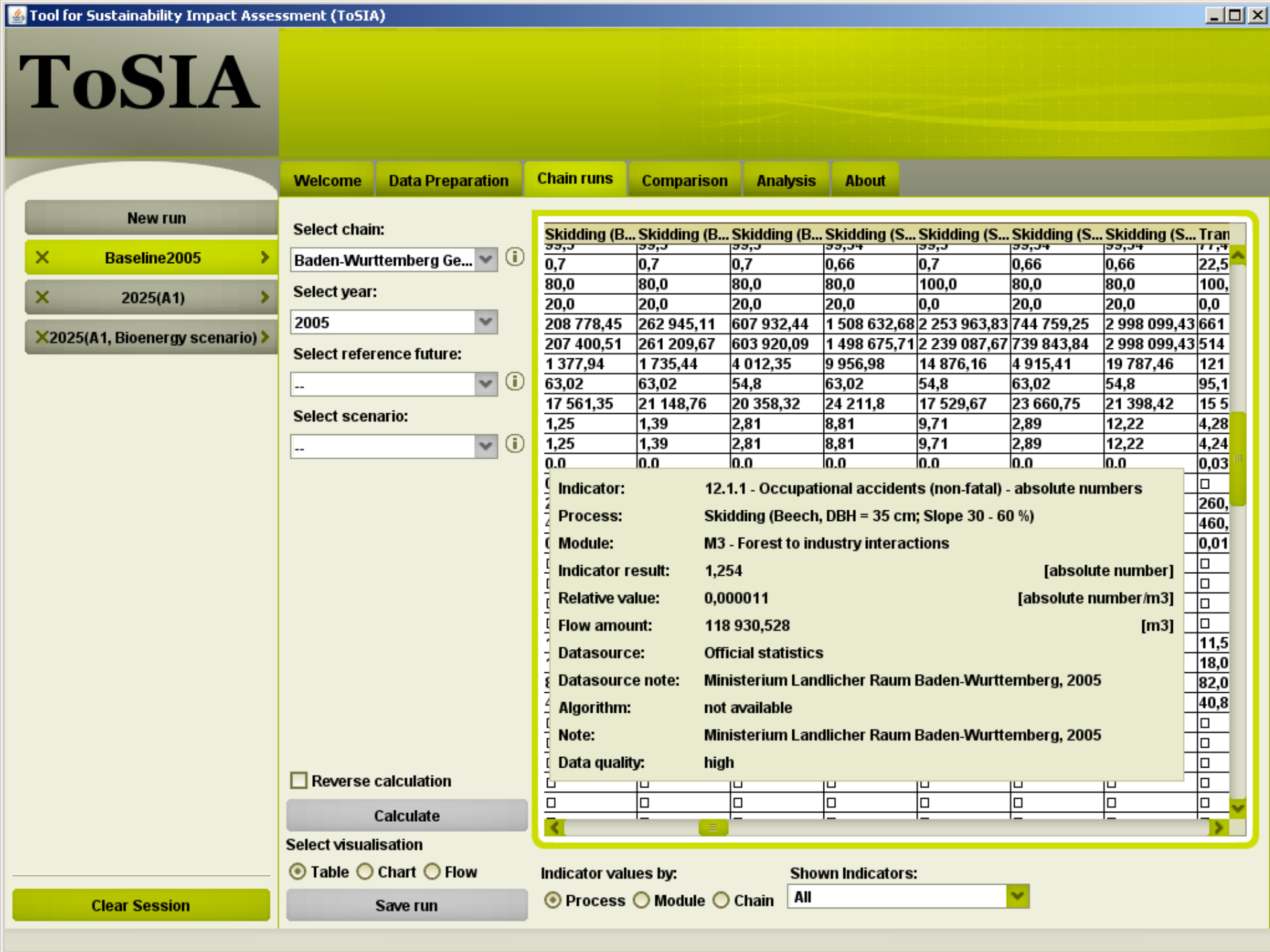
Welcome



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 useflow diagram


Tool for Sustainability Impact Assessment (ToSIA)
ToSIA
Welcome
Data Preparation
Chain runs
Comparison
Analysis
About
New run
Baseline2005
2025(A1)
2025(A1, Bioenergy scenario)
Clear Session
Select chain:
Baden-Wurttemberg Ge...
Select year:
2005
Select reference future:
--
Select scenario:
--
Reverse calculation
Calculate
Select visualisation
Table
Chart
Flow
Save run
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
Indicator values by:
Process
Module
Chain
Shown Indicators:
All

Tool for Sustainability Impact Assessment (ToSIA)

ToSIA

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

New run

- BaWue_Base2005
- BaWue_Ref-A1_2015
- BaWue_Ref-A1_2015_bio
- BaWue_Ref-A1_2025
- BaWue_Ref-A1_2025_bio

Clear Session

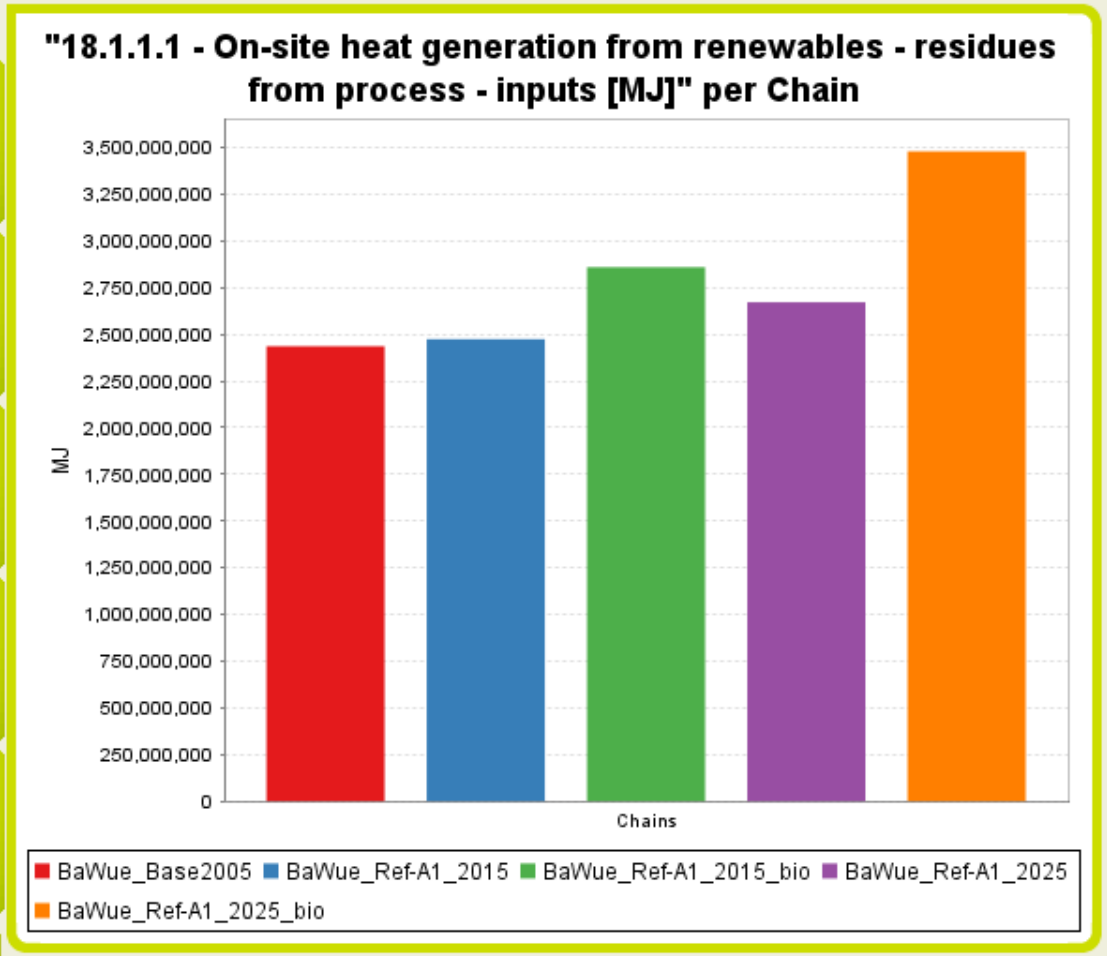
Runs to compare:

- BaWue_Base2005
- BaWue_Ref-A1_2015
- BaWue_Ref-A1_2015_bio
- BaWue_Ref-A1_2025
- BaWue_Ref-A1_2025_bio

Compare

Select visualisation

Table | Chart



Select indicator:

18.1.1.1 - On-site heat generation from rene...

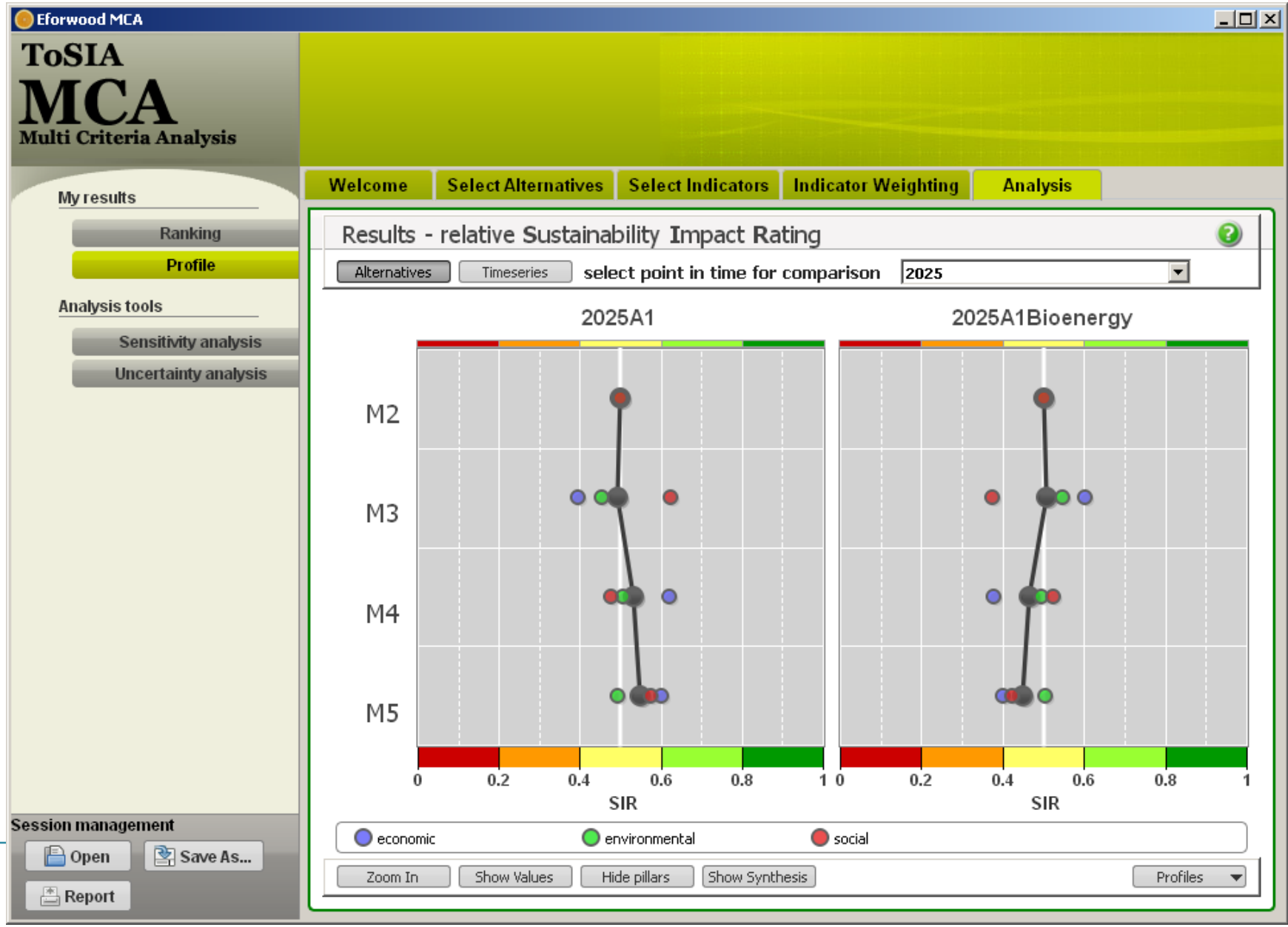
Save Image

start | Total Command... | Microsoft Power... | 2 Java(TM) Pla... | Search Desktop | FI | 100% | 05:15

CBA

Tool for Sustainability Impact Assessment (ToSIA)
ToSIA
Welcome
Data Preparation
Chain runs
Comparison
Analysis
About
Select chain:
Baden-Wurttemberg Gener...
Select year:
2005
Select reference future:
--
Select scenario:
--
Discount rate
2
%
Overview
Results
Parameters:
NPV Components (EE)
Customize
Product prices
Sensitivity Analysis
Select visualization:
Table
Bar chart
Cost Benefit Analysis (CBA)
Direct costs corrected for distortions
Direct benefits corrected for distortions
Waste disamenity costs
Road transport accidents costs
Water pollution costs
Air emission costs
Biodiversity benefits
Carbon sequestration benefits
Forest recreation benefits
OK
Cancel

MCA


Eforwood MCA
ToSIA
MCA
Multi Criteria Analysis
Welcome
Select Alternatives
Select Indicators
Indicator Weighting
Analysis
My results
Ranking
Profile
Analysis tools
Sensitivity analysis
Uncertainty analysis
Session management
Open
Save As...
Report
Results - relative Sustainability Impact Rating
Alternatives
Timeseries
select point in time for comparison
2025
2025A1
2025A1Bioenergy
M2
M3
M4
M5
0
0.2
0.4
0.6
0.8
1
SIR
economic
environmental
social
Zoom In
Show Values
Hide pillars
Show Synthesis
Profiles

From EFORWOOD to Northern ToSIA

Method Development

Real World Applications

Improved Usability

EFORWOOD

Regional planning

Company applications

Thank you for your attention!

Northern ToSIA

Contact:
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