

# ToSIA – a Tool for Sustainability Impact Assessment of Forest-Wood Chains

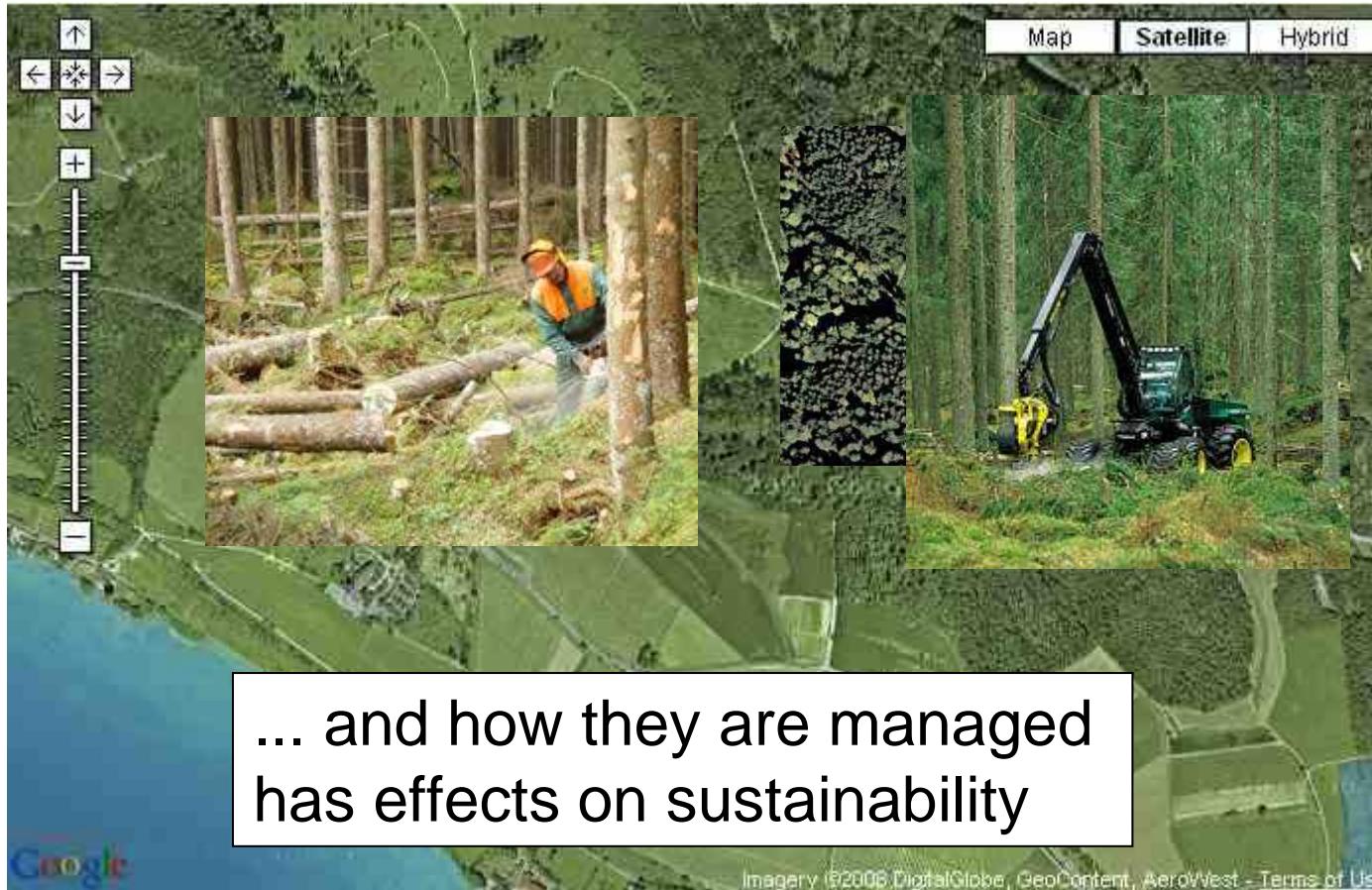
**Marcus Lindner  
Tommi Suominen, Jordi Garcia-Gonzales,  
Taru Palosuo, Risto Päivinen**



**European Forest Institute**



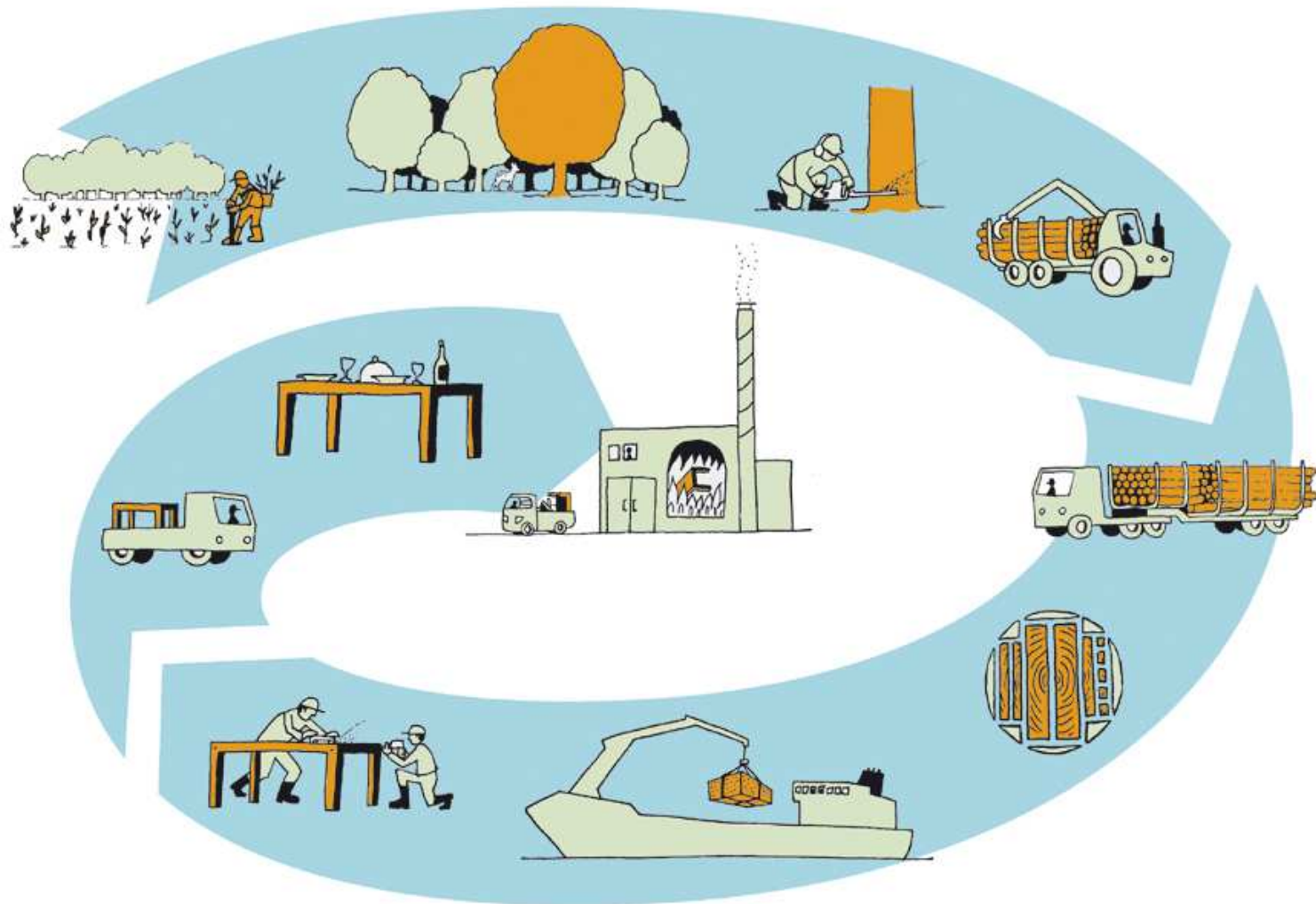
# Forests are parts of European Landscapes ...



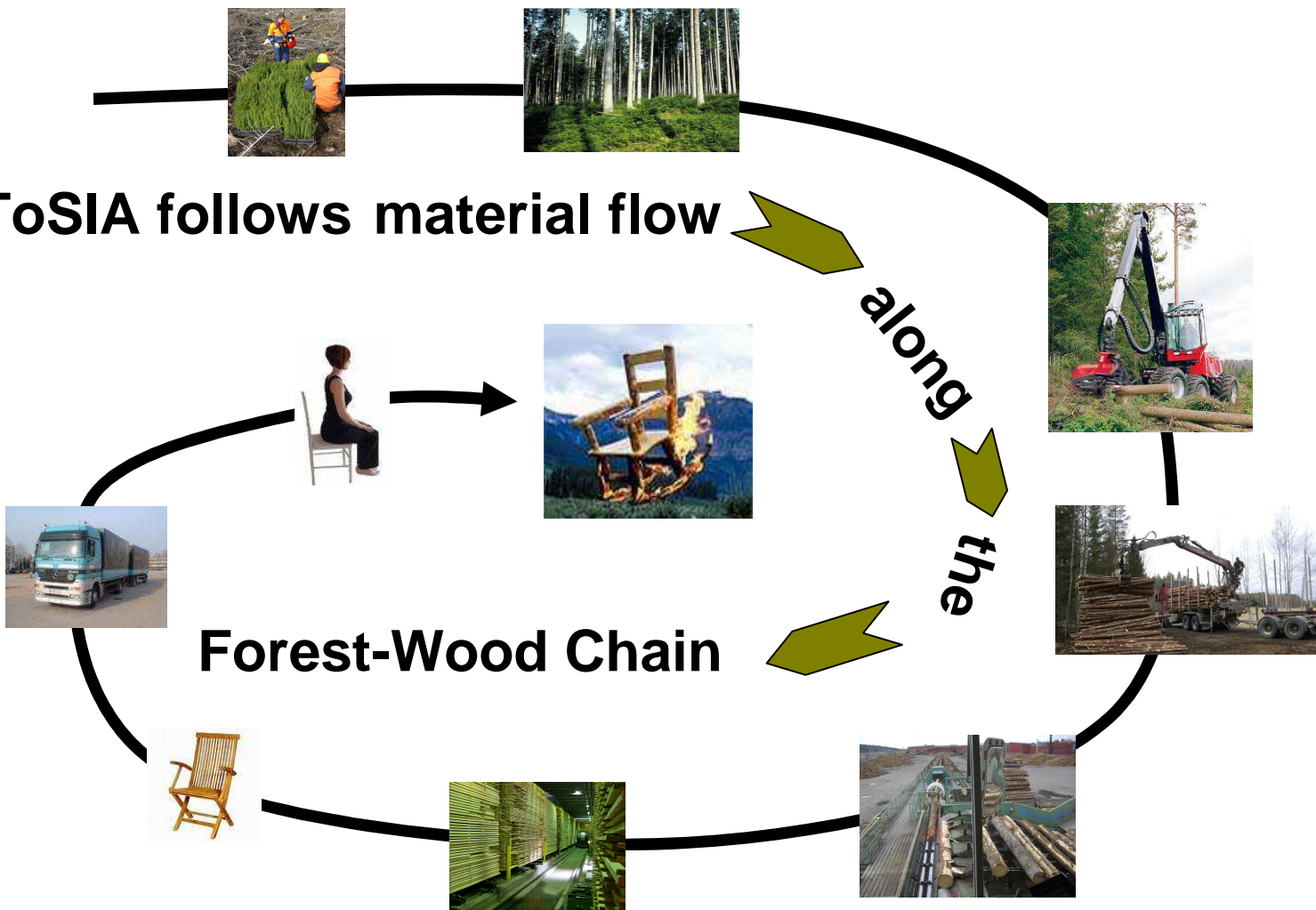
... and how they are managed has effects on sustainability



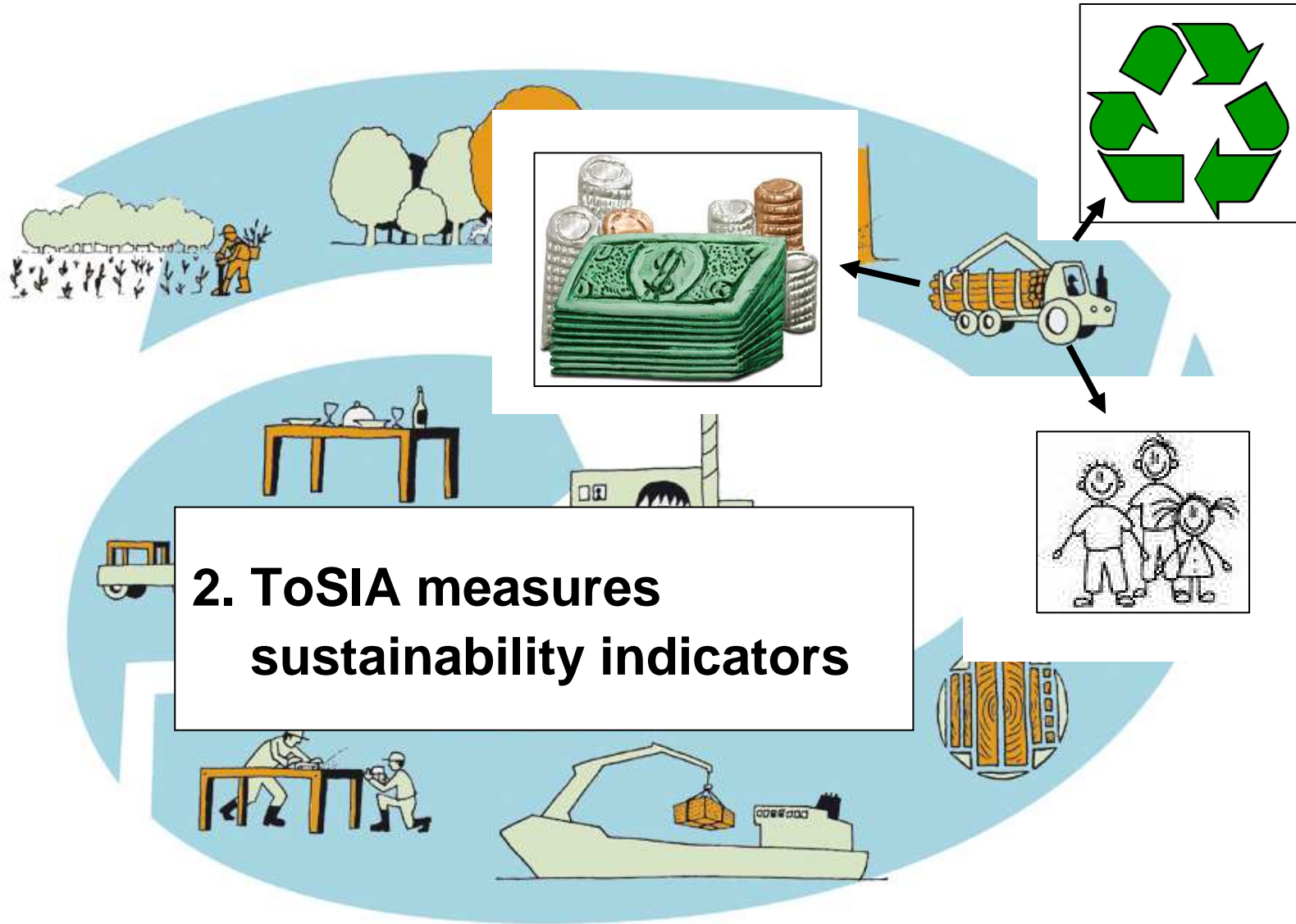
# ToSIA approach to Sustainability Impact Assessment of Forest-Wood Chains: Basic Principles



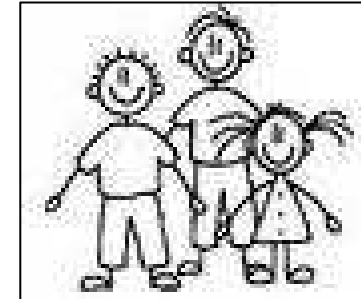
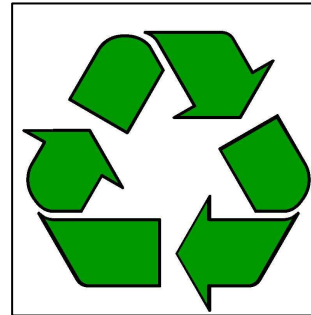
ToSIA approach... (basic principles)



ToSIA approach... (basic principles)



# Sustainability Indicators



## Economic

## Environmental

## Social

Gross value added

Production costs

Resource / material use

Total production

Investment and research & development

Energy generation and use

Greenhouse gas emissions and carbon stocks

Transport distance and freight

Water use

Soil, water and air pollution

Generation of waste

Forest biodiversity

Forest resources

Employment

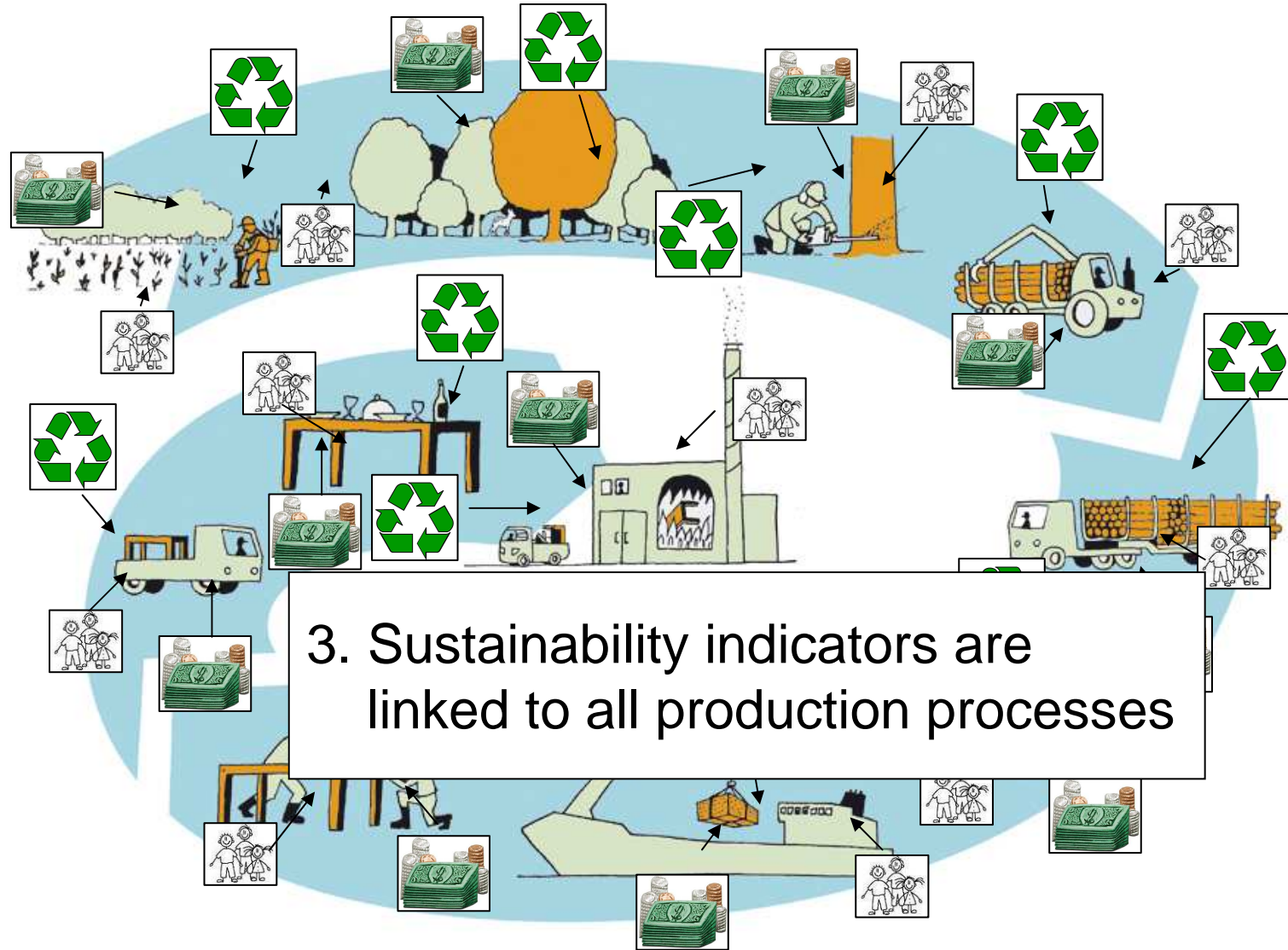
Wages and salaries

Occupational safety and health

Education and Training

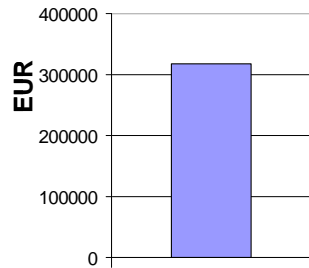


ToSIA approach... (basic principles)

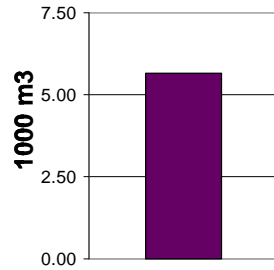




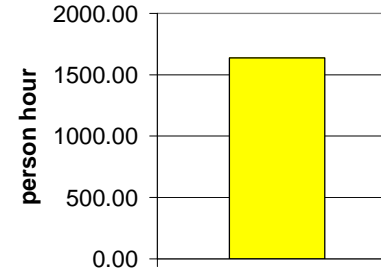
## ToSIA approach... (basic principles)



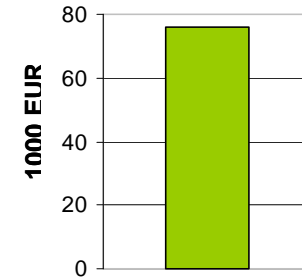
**Production costs**



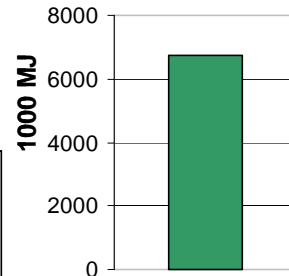
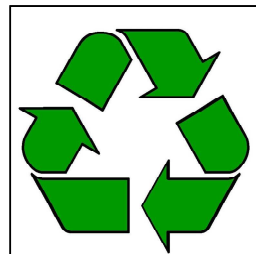
**Resource use**



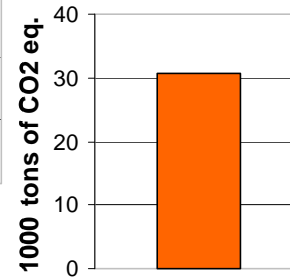
**Employment**



**Wages and salaries**



**Energy use**



**GHG emissions**

4. ToSIA aggregates indicator results along the FWC



ToSIA perspectives on  
**Sustainability Impact Assessment**



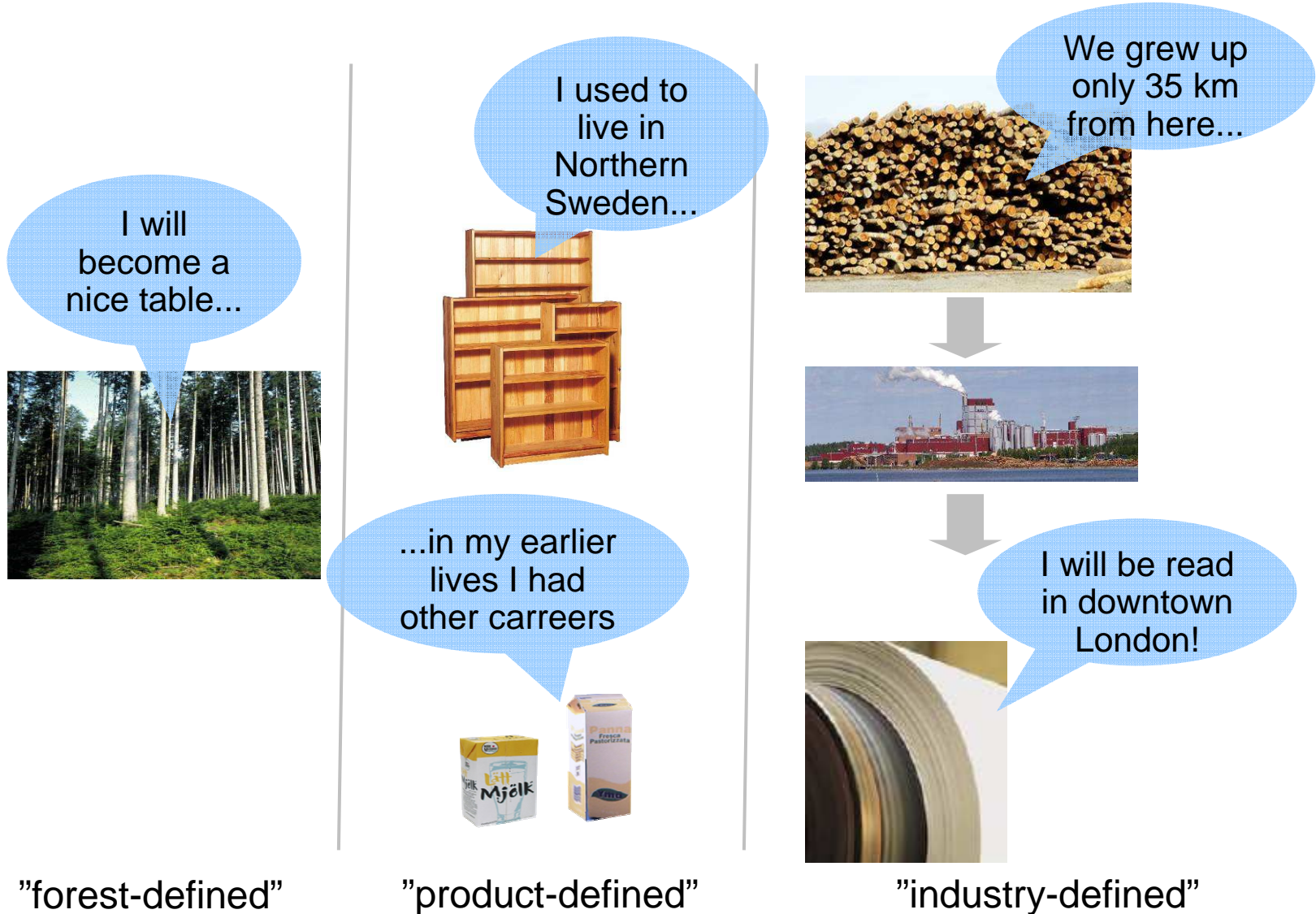


How you look at things  
makes a lot of difference!





# Different ToSIA perspectives at sustainability impact assessment



"forest-defined"

"product-defined"

"industry-defined"

## **ToSIA allows all these different perspectives**

The choice affects

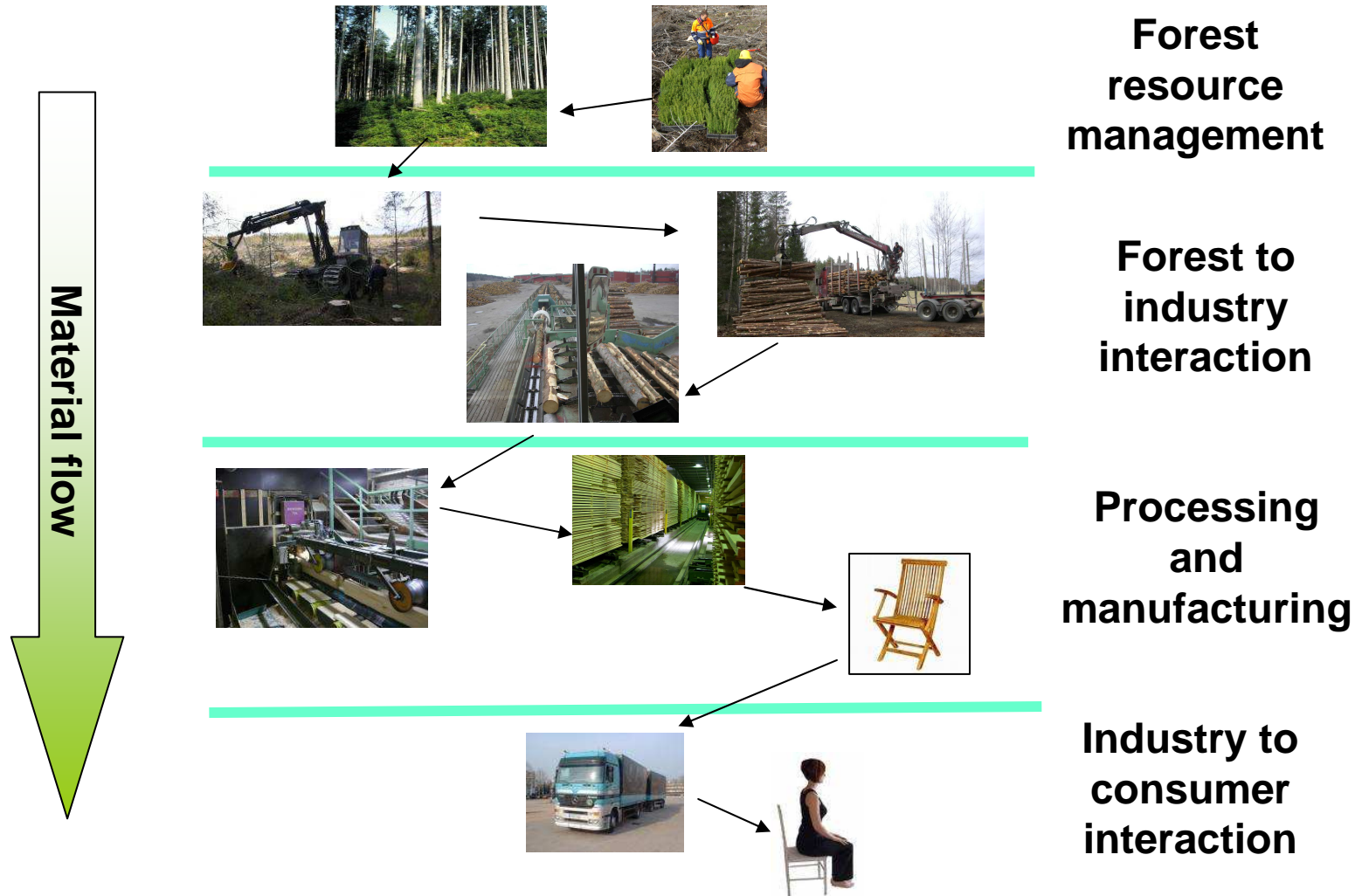
- system boundaries of the analysis
- data collection

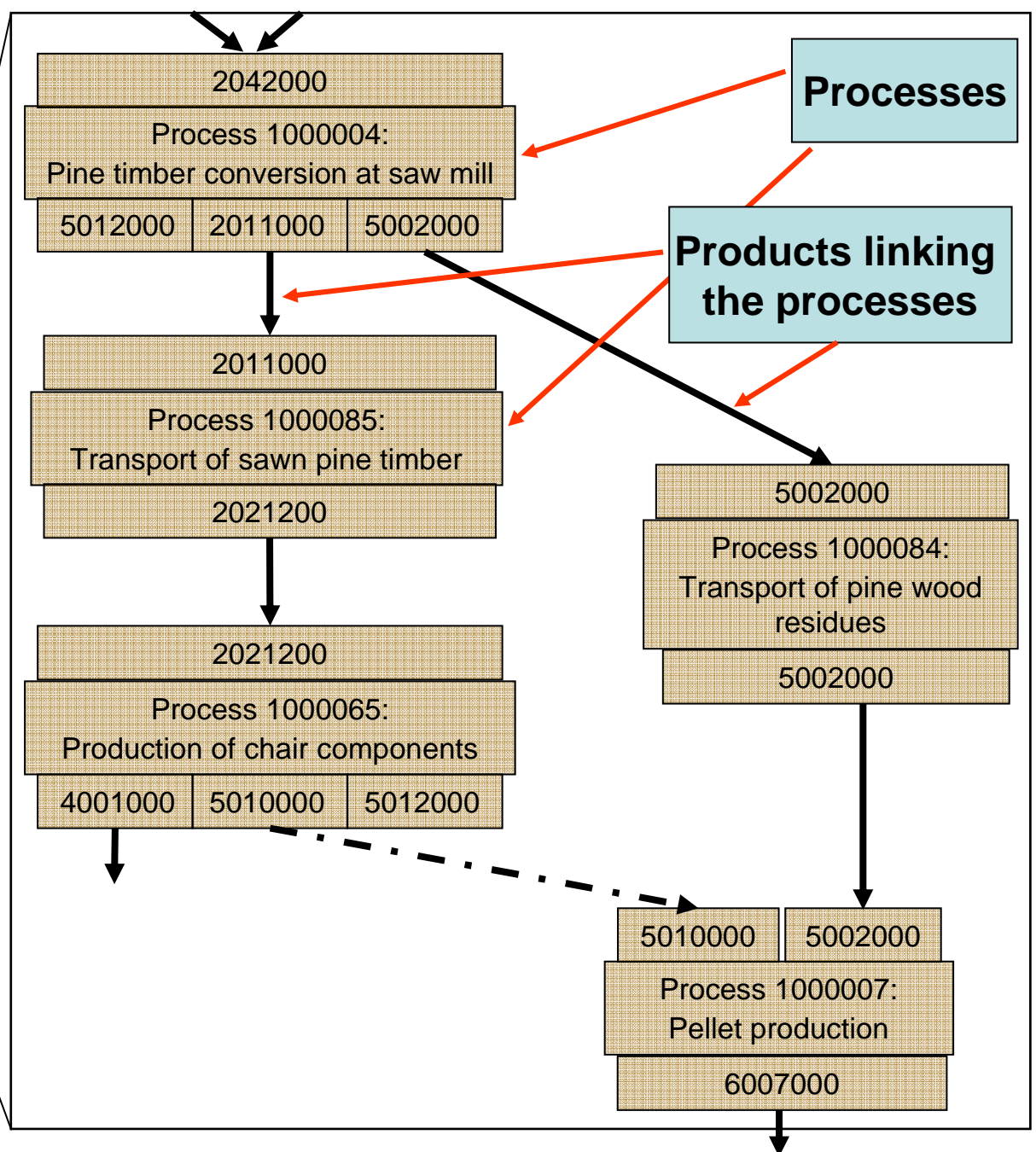
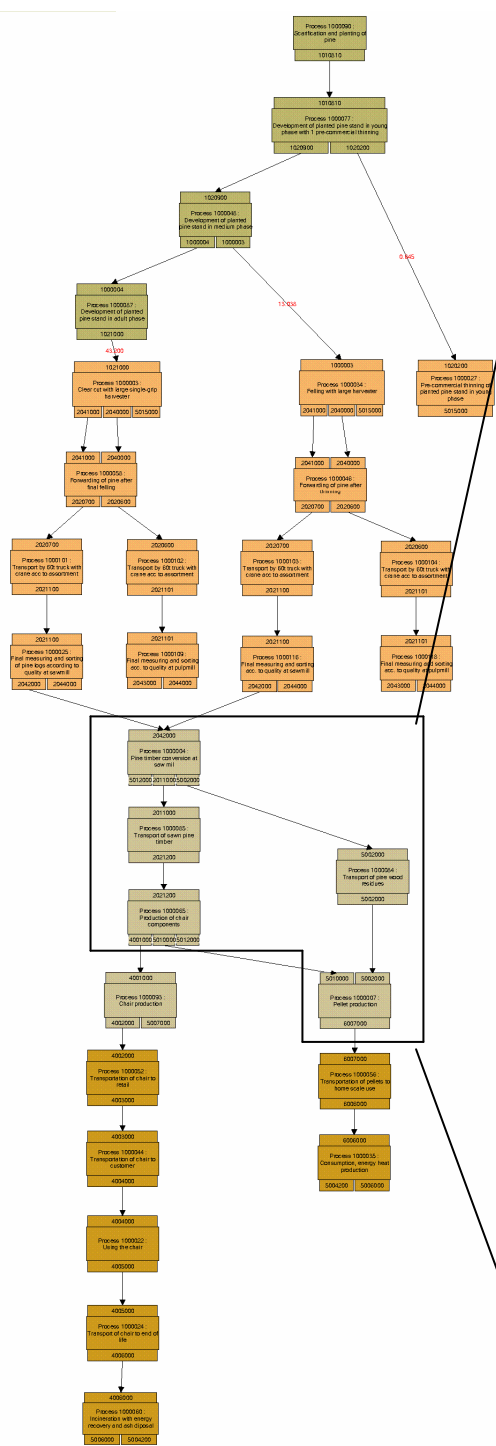




# Steps needed to apply ToSIA

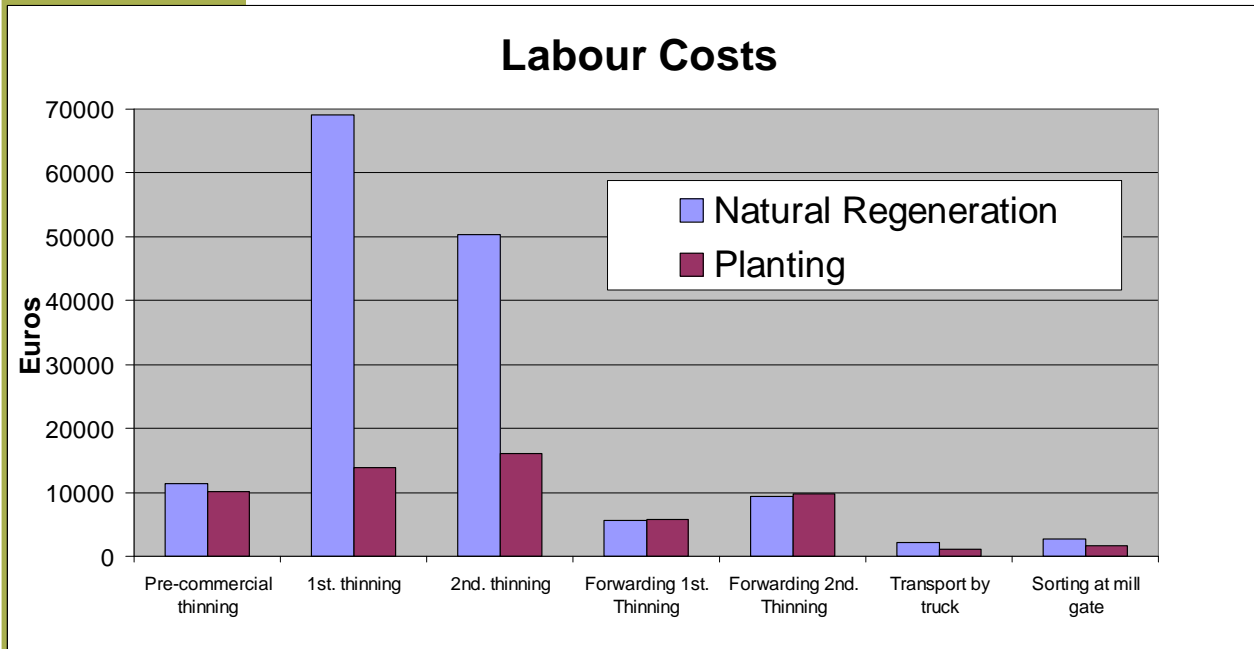
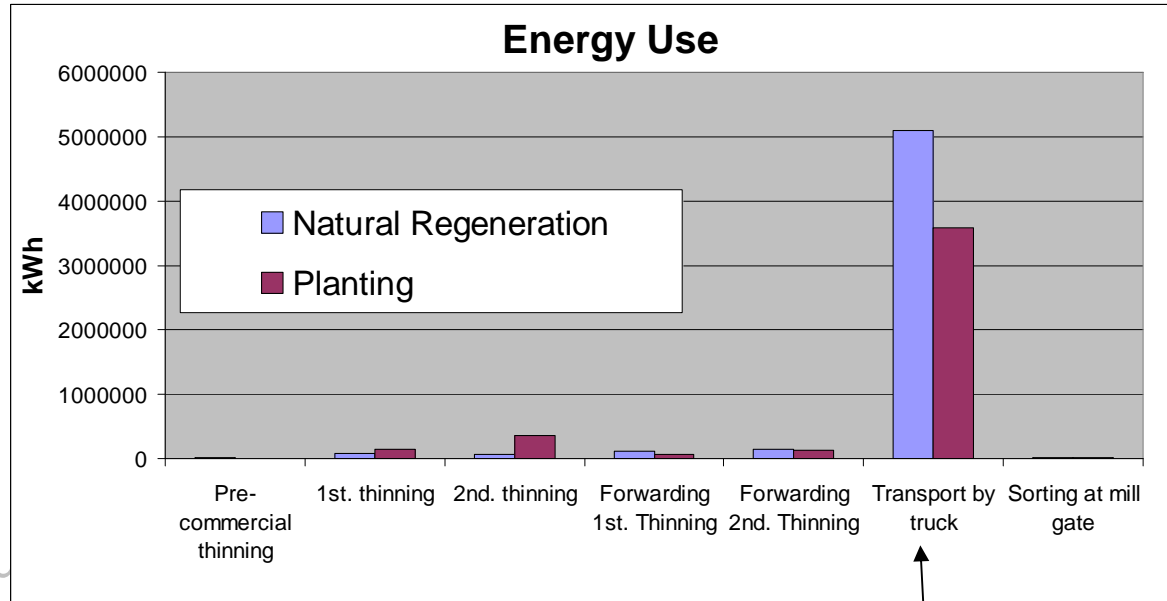
## 1. Define structure of the forest value chains





# Steps

1. Define structure
2. Collect information about sustainability indicators for all production processes



## Steps needed to apply ToSIA

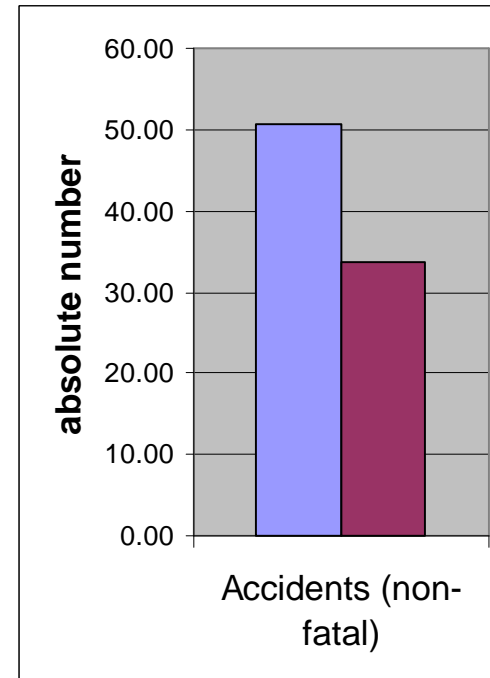
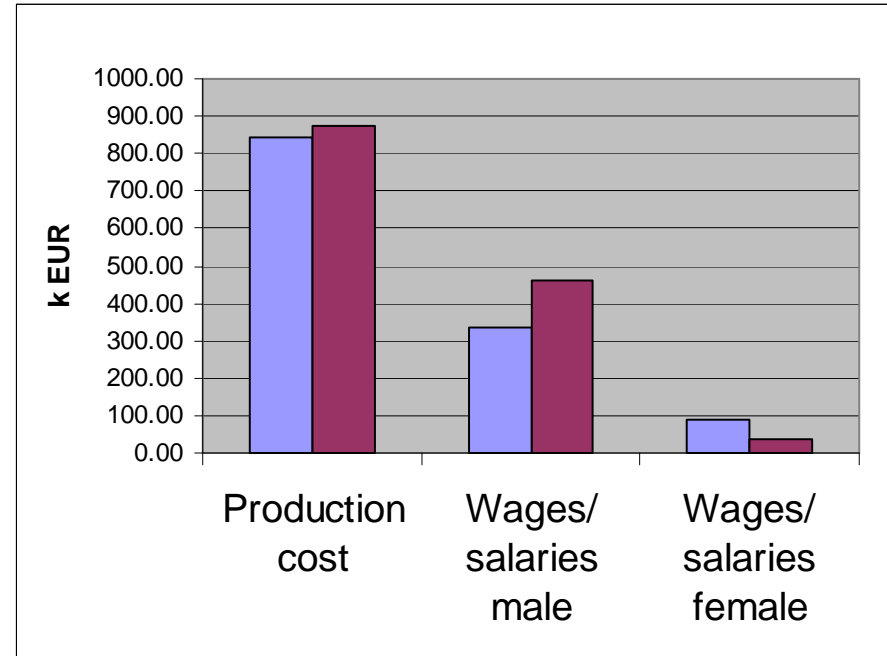
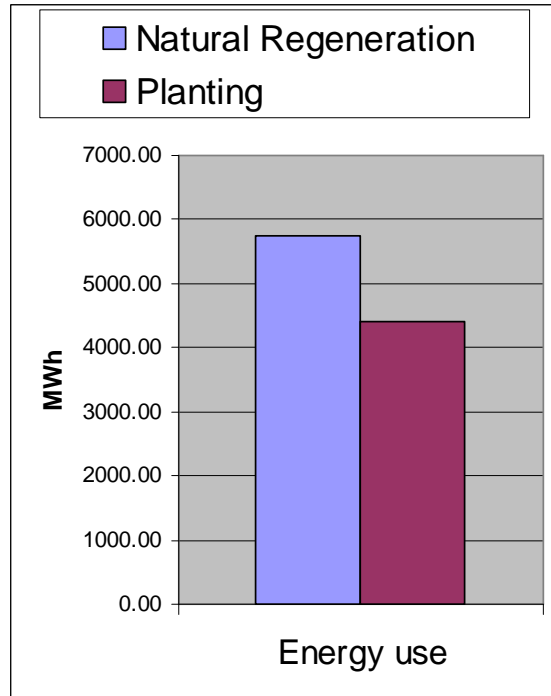
1. Define structure of the forest value chains
2. Collect information about sustainability indicators for all production processes
3. Select scenario / FWC alternatives
4. Calculate scenario indicator data





Steps needed ...

5. Run ToSIA



**Aggregated sustainability values for the FWC**



## Steps needed to apply ToSIA

1. Define structure of the forest value chains
2. Collect information about sustainability indicators for all production processes
3. Select scenario / FWC alternatives
4. Calculate scenario indicator data
5. Run ToSIA
6. Evaluate sustainability impacts
  - ToSIA will apply Multi-Criteria Analysis and Cost Benefit Analysis to evaluate overall sustainability impacts

-> see Wolfslehner et al. Slot 13 (2097)



## Conclusions

- Very flexible tool
- Data driven (input data from statistics, process-specific models, expert knowledge)
- System boundaries critical, clear methods needed (*how to apply...* See Palosuo et al. Slot 8)
- Scenario methodology to be developed further in 2008



EFORWOOD



**THANK YOU!**

