



**EFORWOOD**

Sustainability Impact Assessment of the Forestry-Wood Chain

# **Scandinavian case study**

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# **A technology-driven utilisation of the forests**

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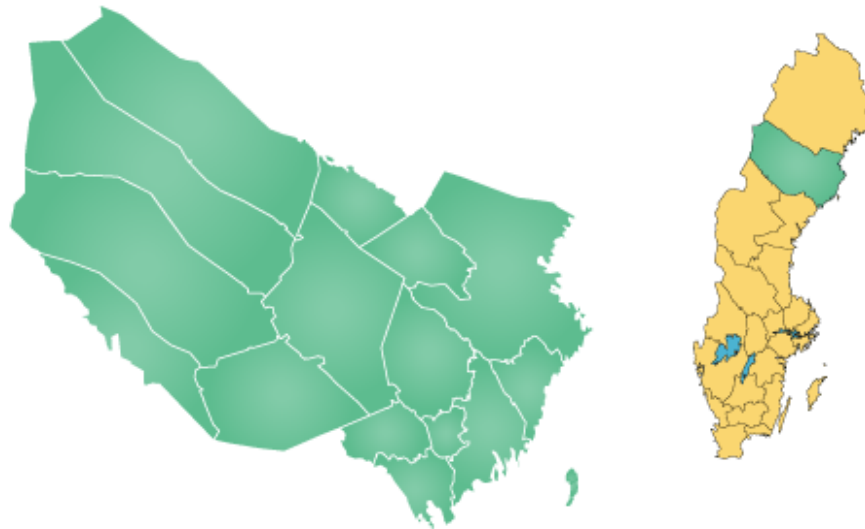
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**2009-09-23**



## The case

The Scandinavian case was dealing with the whole forest wood chain (FWC) from the production and harvesting of the trees to the end-user of the forest product originating from the wood in the county of Västerbotten.



## **M2 - The forests in 2005**

Forested area of 3, 2 million ha

Five different management regimes:

close to nature forestry (pine and spruce),  
combined objective forestry (birch and mixed),  
intensive even-aged forestry (mixed).

The initial proportion of the regimes was 18, 2, 1, 70 and 9%,  
respectively.



## **M3 - The transportation**

Description of the transport of the annually cut trees from the woods to the industries.

During 2005, the amount of stemwood cut in the forests of Västerbotten was 7,8 million m<sup>3</sup>ob. That year, approximately 30% of the volume cut came from thinning.



## **M4 - The Industries**

The flow of wood through the wood chain to the market outside the county were handled through two different sizes of sawmills (150 000 and 50 000 m<sup>3</sup>/yr), and all pulp wood went to one integrated fine paper mill (85 000 tonnes/yr) and one kraftliner mill (290 000 tonnes/yr). Furthermore, the pellet production for energy (80 000 tonnes/yr) within the whole chain was also described.

All mills were model mills.



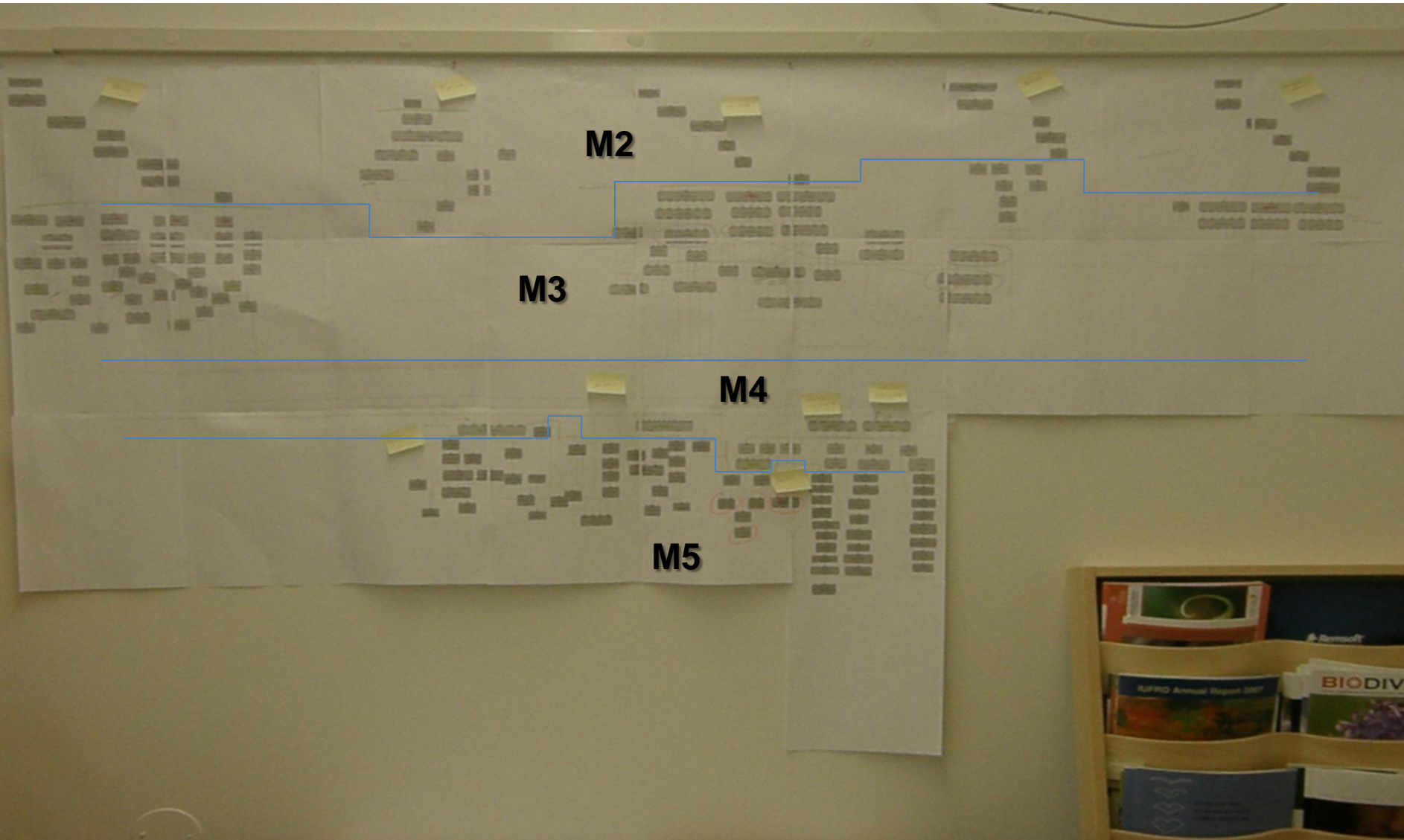
## **M5 - The end-products**

The producer-consumer interaction were divided into three groups (wood products, paper products and bio-energy).

Germany and Spain were selected as the two markets to which the paper products were delivered to, representing western/northern (64 % of total deliveries) and southern Europe (10% of total deliveries).

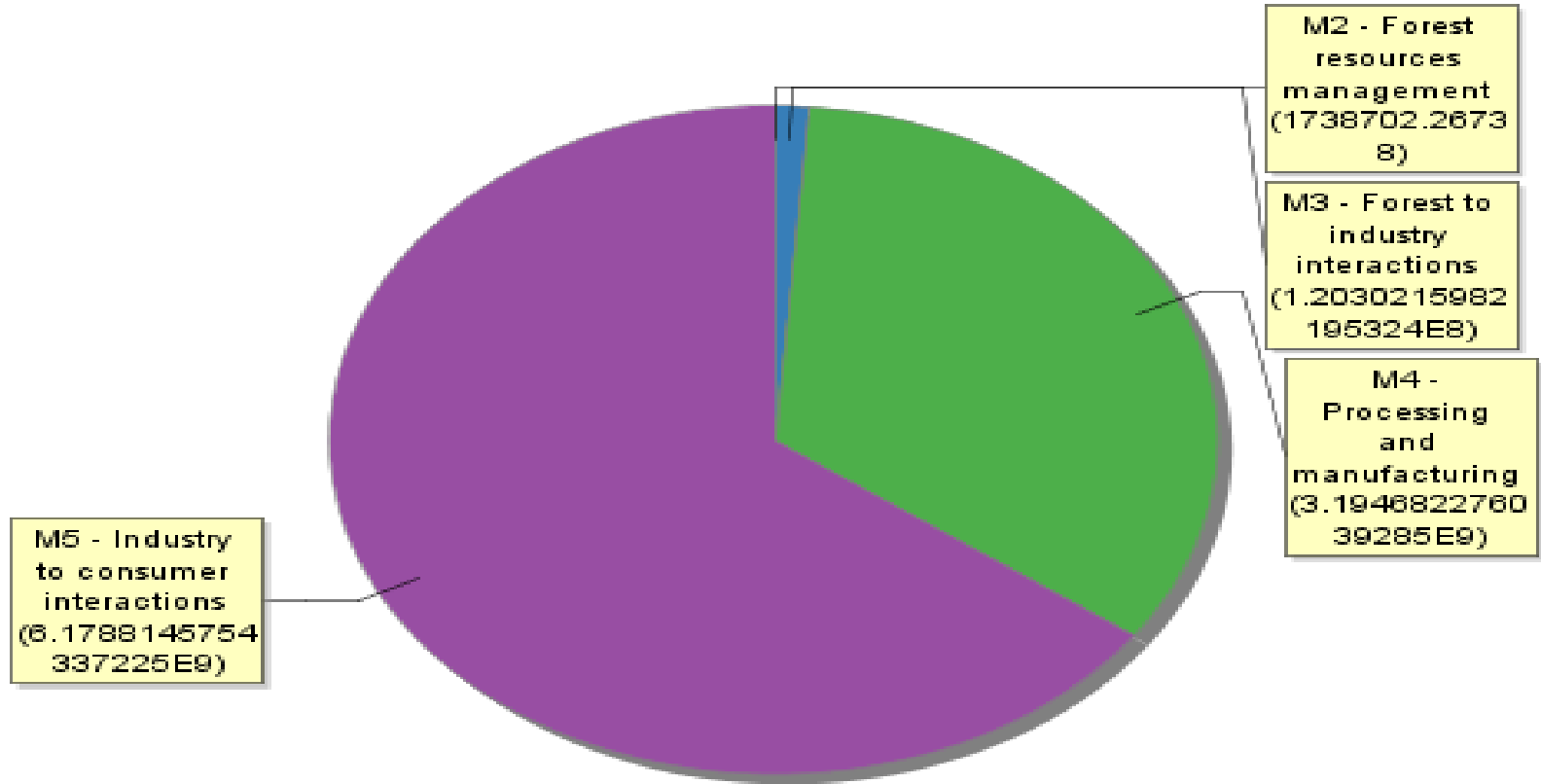


# The Scandinavian case study wall paper





## Division of "19.1 - Greenhouse gas emissions [kg CO2 equivalents]" per Module



- M2 - Forest resources management
- M3 - Forest to industry interactions
- M4 - Processing and manufacturing
- M5 - Industry to consumer interactions



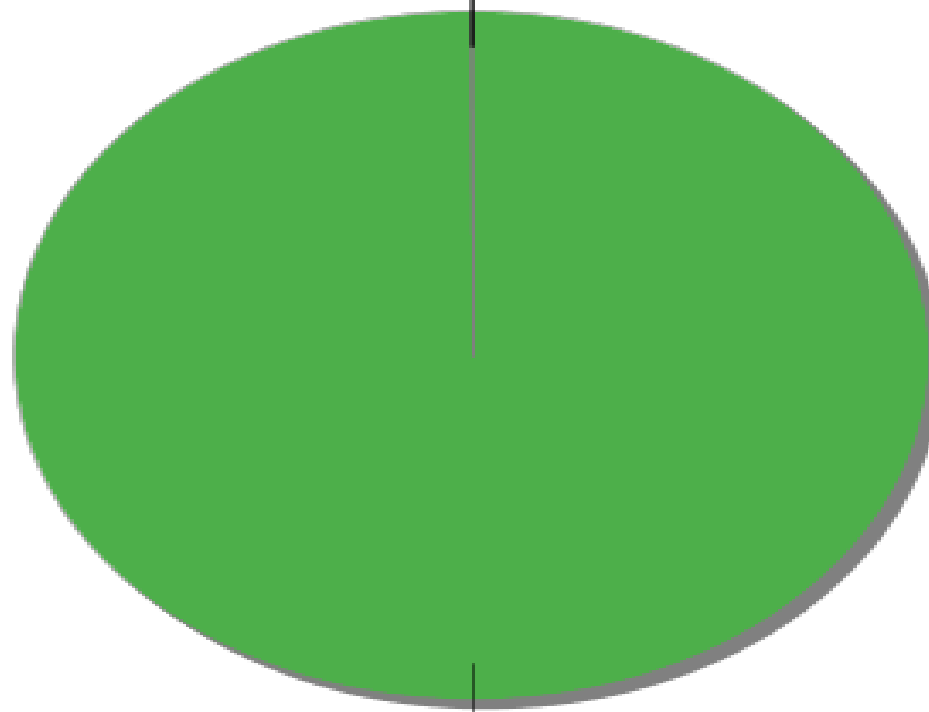


## Division of "18.2.1.1 - Energy use - Heat from renewable sources [MJ]" per Module

M5 - Industry to consumer interactions  
(93909.73634780078)

M2 - Forest resources management  
(0.0)

M3 - Forest to industry interactions  
(0.0)

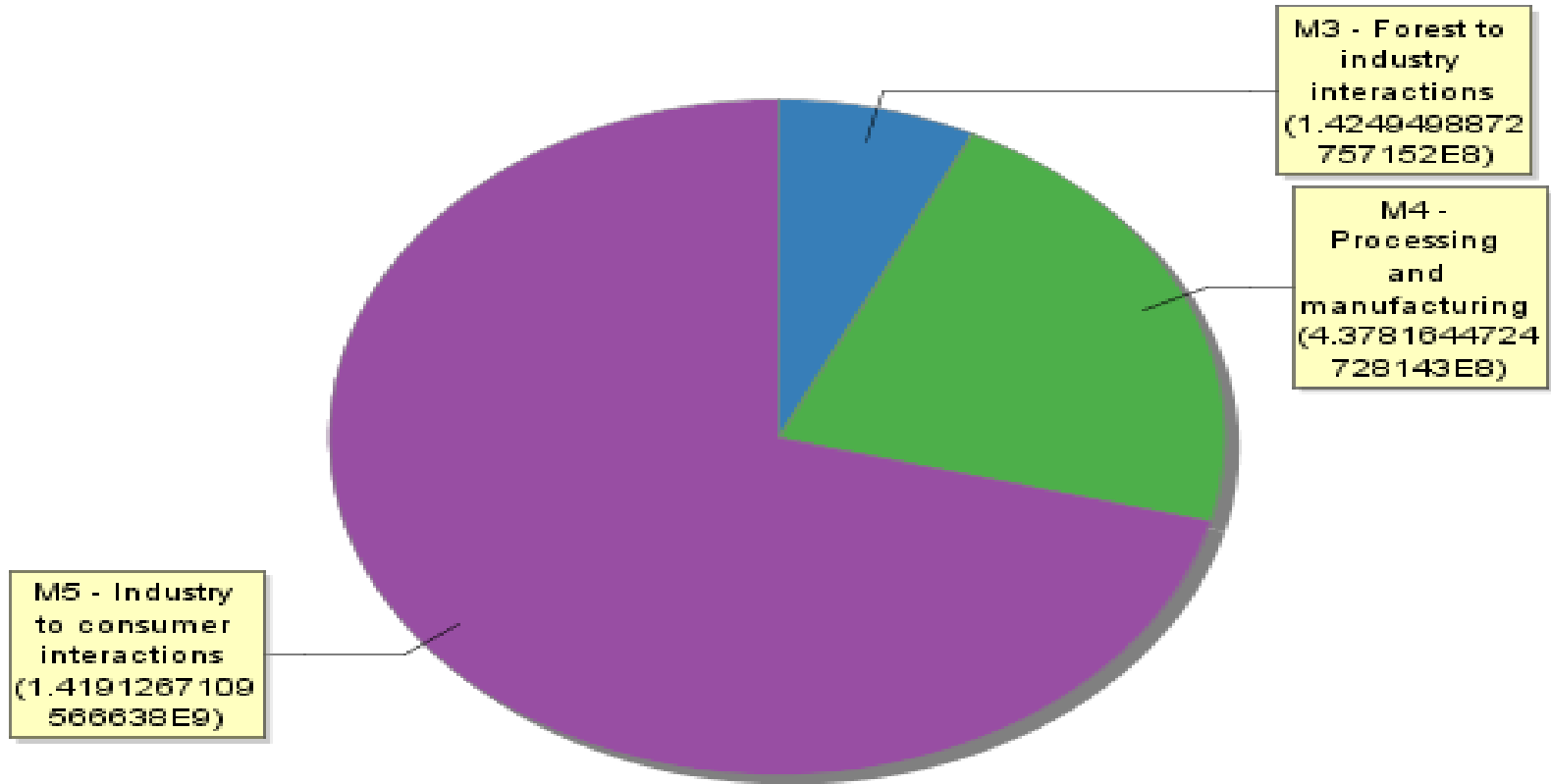


M4 - Processing and manufacturing  
(2.4230490656948026E10)

- M2 - Forest resources management
- M3 - Forest to industry interactions
- M4 - Processing and manufacturing
- M5 - Industry to consumer interactions



## Division of "1.1 - Gross value added (at factor cost) [EURO]" per Module



- M3 - Forest to industry interactions
- M4 - Processing and manufacturing
- M5 - Industry to consumer interactions

## **The scenario**

A development in technology within the sawing industry, leading to scanning of internal properties of stems and logs for optimizing sawing operations, measuring systems for characterization and grading of sawn timber as well as supporting secondary conversion, and information system and intelligent material flow control was established.



## **Hypotheses to be evaluated**

- An increased quality of the produced products with defined properties
- New groups of value added products
- Lower residues
- Less chip for the milling industry and pellet production
- Less demand on increased wood supply for the reference years 2015 and 2025

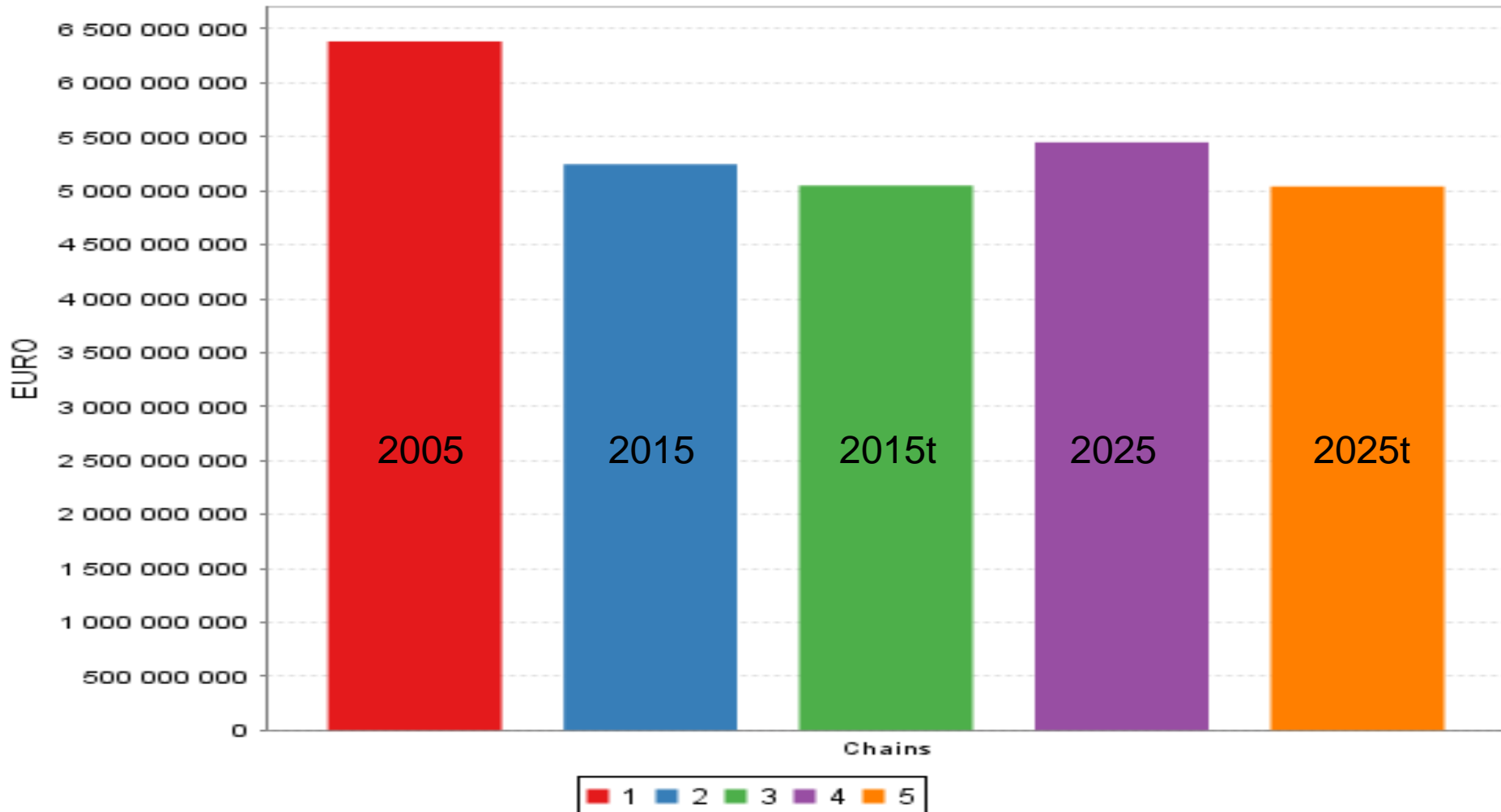
The effect on sustainable political, economic, social, technological and environmental indicators should also be evaluated.





## Preliminary results

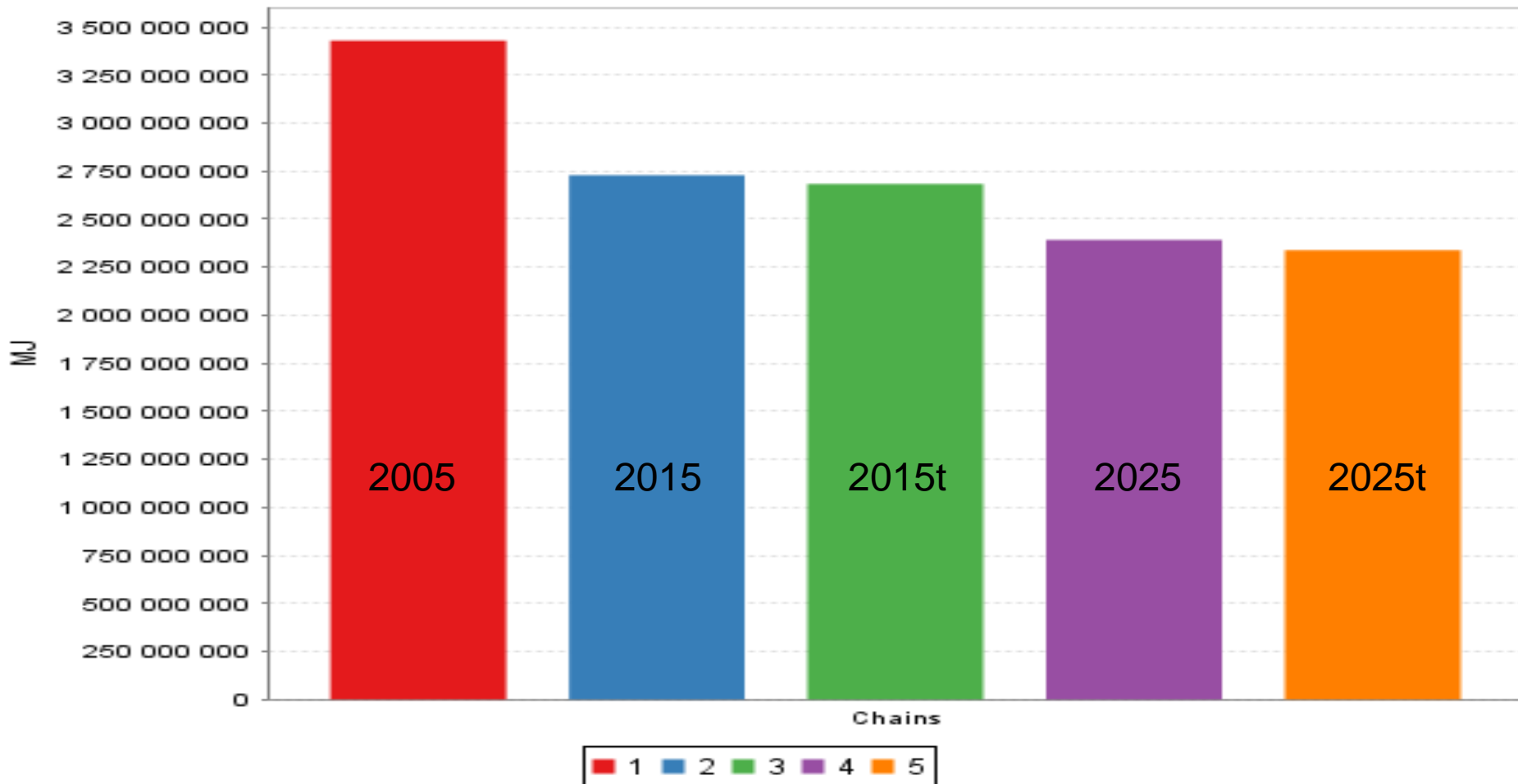
### Division of "2.1 - Production cost [EURO]" per Chain





## Preliminary results

### Division of "18.2.1.2 - Energy use - Heat from fossil sources [MJ]" per Chain



## **Next steps**

As indicated checking of all input data are ongoing but needs intensified attention by all responsible people within the case before calculations of all indicators can be presented.

