

In collaboration with



# Life Cycle Management in decision making: a monetization approach Case study 3D P&L Accounting at AkzoNobel



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- Introduction
- Methods
- Case 1 Product perspective: A book
- Case 2 Company perspective: AkzoNobel 2016
- Conclusions

## Monetization of externalities

- **Externalities:** Consequence of an economic activity experienced by unrelated third parties, these could be positive or negative
- **Monetization:** expressing something in Monetary / Financial terms

## AkzoNobel: Paints and Chemicals company

- Using 3D Profit and Loss (3D P&L) since 2014
- Quantify impact on 3 themes: economic, environmental and social
- 3D P&L builds on publicly available methods in line with LC

## Ecomatters: Consultancy firm in Quantitative sustainability

- Specialized in LCA and LCM related topics
- Supported development of 3D P&L
- Implemented and executed various monetization projects



**AkzoNobel**

## Economic capital

Quantifies positive externalities e.g.

- Aims for a wide benefit accounting, regardless the receiver

Gross Value Added based on:

Organisation for Economic  
Co-operation and Development



**Value added =**

- Profit after tax
- + Taxes
- + Interest
- + Depreciation
- + Lease rentals
- + Staff compensation

**References:** Financial capital creation along the value chain (Ecomatters, 2016).  
[www.ecomatters.nl/financial-capital](http://www.ecomatters.nl/financial-capital)

## Environmental capital

**Quantifies negative externalities**

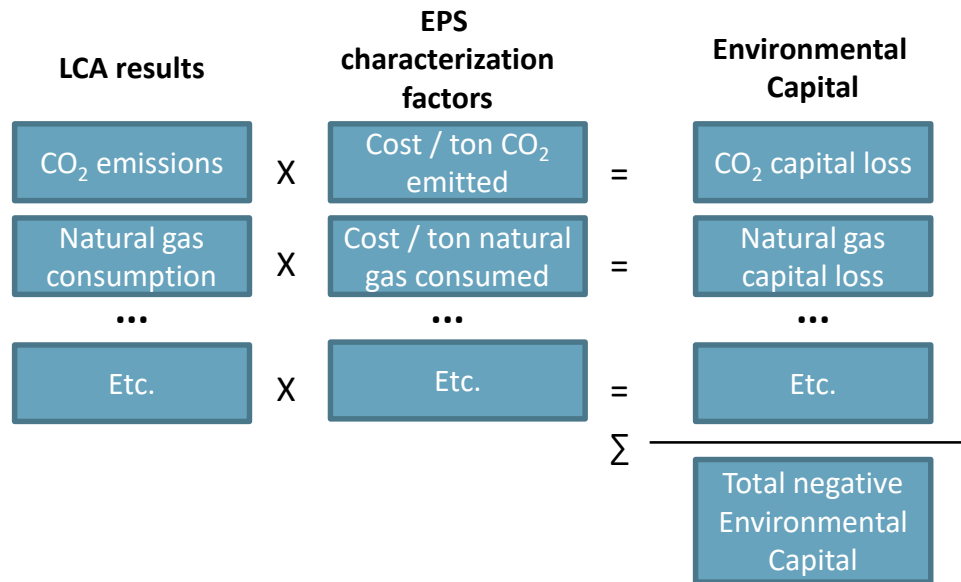
**e.g.**

- Based on Environmental Priority Strategy methodology
- Main drivers are fossil fuel use, CO2 emissions and forestry.

Based on Environmental Priority Strategy 2015 (EPS):



In line with



**Reference:** Environmental Priority Strategy (EPS) system (Chalmers University, Bengt Steen, 2015). <http://www.ivl.se/english/startpage/pages/focus-areas/environmental-engineering-and-sustainable-production/lca/eps.html>

## Social capital

Quantifies positive and negative externalities e.g.

- Future payments to employees as a measure of their human capital value
- Expected inflation corrected wage development

**Social Capital =**

Expected value of future earnings  
(current wage x inflation corrected wage development x time till retirement x fraction of compensation related to work)  
+  
Societal costs of incidents

Data based on:



Reference: Human capital creation along the value chain (Ecomatters, 2016).

[www.ecomatters.nl/human-capital](http://www.ecomatters.nl/human-capital)

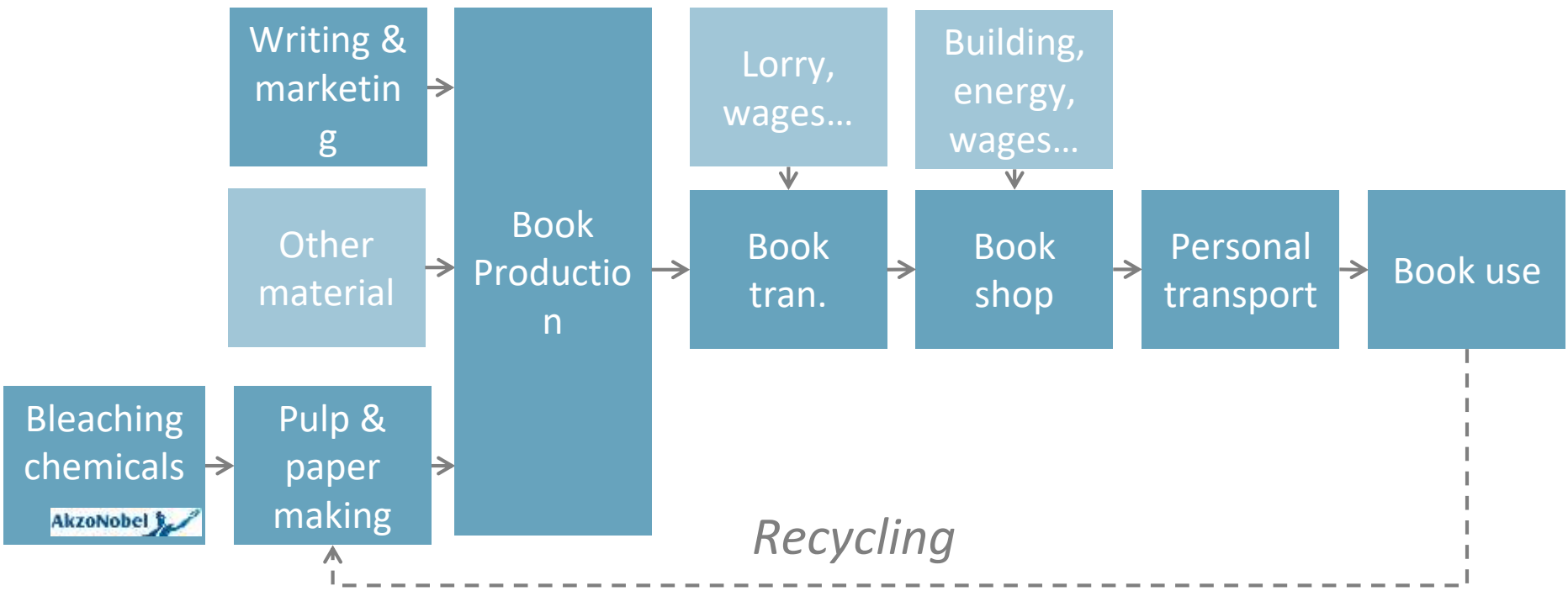
## Why 3D P&L of a book for AkzoNobel?

- Investigate downstream value chain
- Show contribution of AkzoNobel in a consumer product
- Show the real numbers and test and explain method

## System

- Typical book bought in bookstore for €20
- Produced in Europe
- Paper: 50% recycled; 50% produced in Brazil, 50% produced in Sweden
- 100.000 copies sold

# 3D P&L of a book – Value chain





# 3D P&L of a book – Results



Negative Environmental effects in material intensive steps  
 Positive financial effect in services (Writing & sales)  
 Social Capital related to salary growth in sales



## **Large societal challenges to deliver on the Paris Agreement and SDG's**

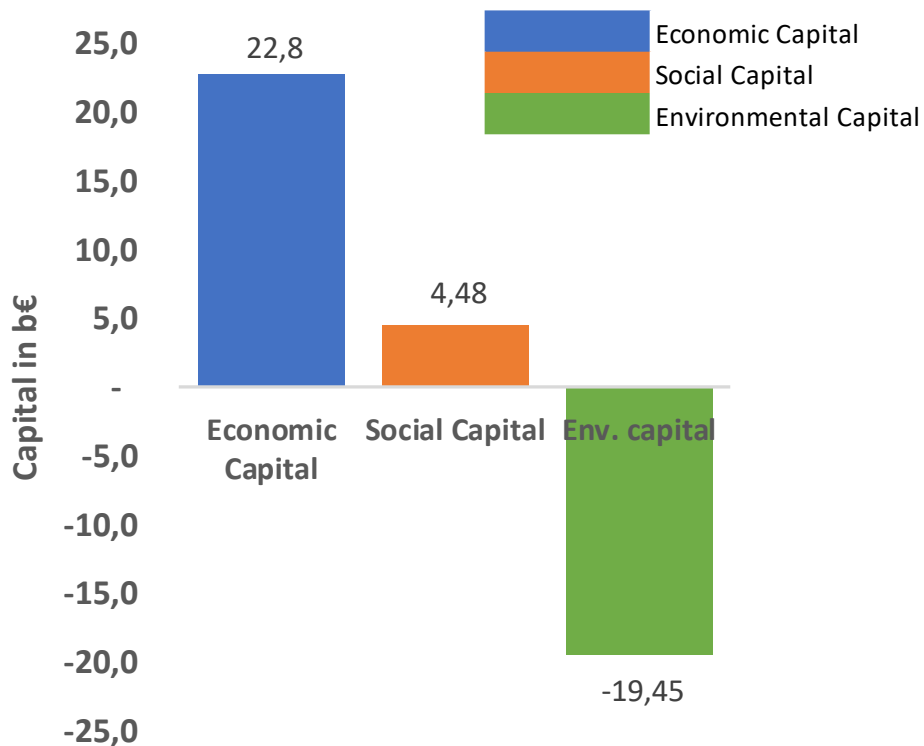
- Accelerating to apply innovation
- Solve societal development challenges
- De-risk value chains from increasing limitations on resource use and carbon emissions

## **Aim to create shared value across three dimensions**

- Economic
- Environmental
- Social

**Use the 3D P&L assessment as a metric to track and follow up impact on society at large**

<http://report.akzonobel.com/2016/ar/sustainability/creating-shared-value-across-three-dimensions.html>



**Overall:** Positive for full value chain (Economic + Social + Environmental)

### Economic Capital impact

- Mainly positive Economic capital in own operations
- Captures only a small part of product value added

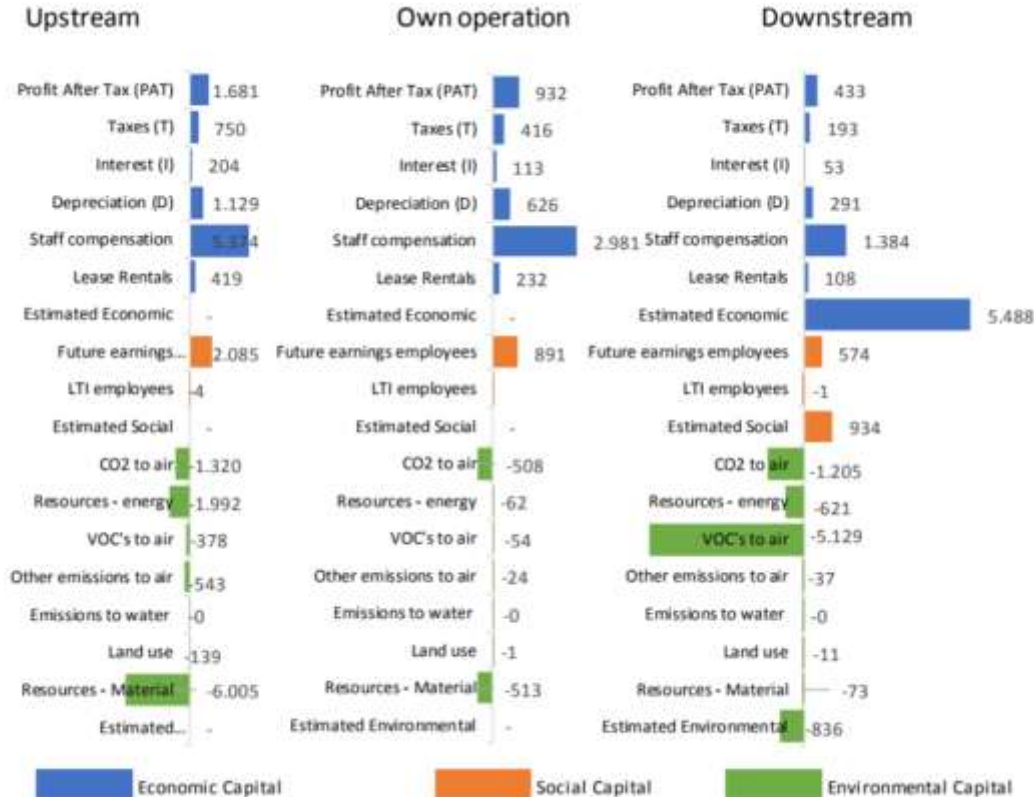
### Social Capital impact

- Dominated by future earning future earnings mainly positive
- Societal cost related to incidents small

### Environmental Capital impact

- Negative environmental Capital about as much as positive economic capital

[https://84e1202b204d21a1cb9b-0e1ab5244fd095dbeb138ed6f973369e.ssl.cf3.rackcdn.com/akzonobel\\_3d\\_profit\\_and\\_loss\\_accounting.pdf](https://84e1202b204d21a1cb9b-0e1ab5244fd095dbeb138ed6f973369e.ssl.cf3.rackcdn.com/akzonobel_3d_profit_and_loss_accounting.pdf)



## Economic Capital

- 46% of fin capital is related to wages
- Overall value created in value chain (22,8 € bln) ~7X Profit after tax (3 € bln)
- Estimated economic mainly downstream

## Social Capital

- Significant future earning especially due to wage increase in China
- Incidents very minor negative effect

## Environmental Capital

- Climate change (CO2+ energy resource + VOC) 33%
- VOC health effects 27%
- Mineral Resources 35%

## Can be used for

- Strategic decision making
- Identifying business risks and opportunities
- Stimulate innovation and cooperation with value chain partners around impacts to reduce the negative and strengthen existing positive externalities
- Various internal comparisons (benchmarking of sites, regions and value chains)
- Monitor progress and refine tracking of externalities

## Limitations

- Very early stage of monetizing and impact measuring
- Not just within AkzoNobel, but as a society in general
- Work needed to fully digest and understand these results in the organization