

# Sustainable Development

Only an expense for companies?



Karel Mulder

<http://www.ngms.state.ms.us/env/images/recycle,%20reuse%20reduce.jpg>

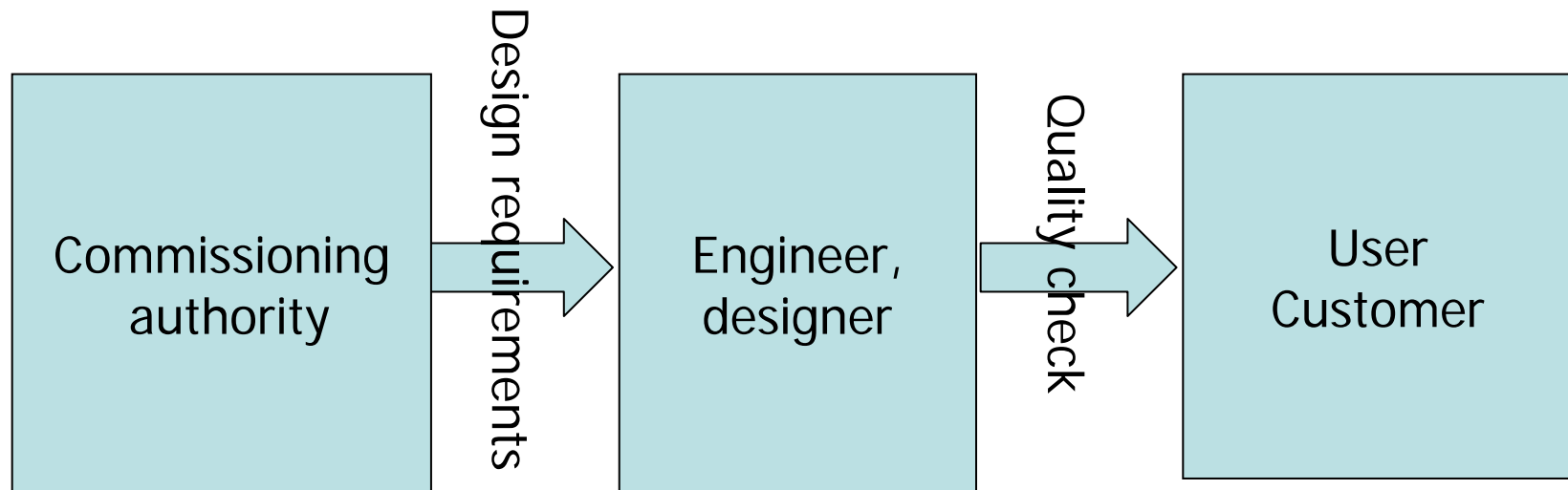
# Content

- The role of the engineer in companies
- Sustainability in the company
- Sustainable companies, examples

# Design of products, processes and systems

- Traditional: 3 phases
  - Commissioning/assignment
  - Design
  - Implementation/Use
- Similar division of responsibilities
  - Executives/managers
  - Engineer
  - Executives/user/government

# Traditional division of tasks of engineering design:



Conclusion: all moral/ethical decisions outside the realm of engineering design?

# Role engineer in the company: only designer?

- Engineers are not only responsible for the design job. They also are involved in
  - Analysis
  - Suggestions
  - Feed back
  - Evaluation
- SD is not an extra requirement in the program of requirements for the design because:
  - ????

# Sustainable Design

- Focus on functional requirements of user
  - Car --- need for mobility or need for access of services, green wheels
  - Packaging--- need for product protection
  - Clothes---Need for comfort/need for self expression
  - Paper--- Need for data storage and transmission
- Interact, break the walls

# Is a company only about making as much money as possible?

license to operate: a company has to respect the margins set by law and public opinion

- A company might trigger new legislation
- Consumers might take action: Brent Spar

# Time Horizon: should we optimize money now, or in future

*If you have an apple tree, you might cut it for the wood, rent it to somebody by an annual auction, or pick apples yourself to sell on the market. The first activity will give you the quickest return. The last activity will probably yield the highest return in the long run as the harvester will probably take care that the tree will remain in good shape and no auctions have to be organized.*

Companies which never made any profit are sold for high prices



# Earning money by Green Products?

- Green electricity
- DSM-Gist: solving effluent water problem created a new business
- New markets by consumer protest:
  - Animal husbandry,
  - Green wheels
  - Clothing, etc

# Example: 3M – Pollution Prevention Pays

- Eliminate or reduce a pollutant.
- reduced energy/materials use
- avoidance of pollution control equipment

# PPP Results at 3M, 1975-2002

4973 project

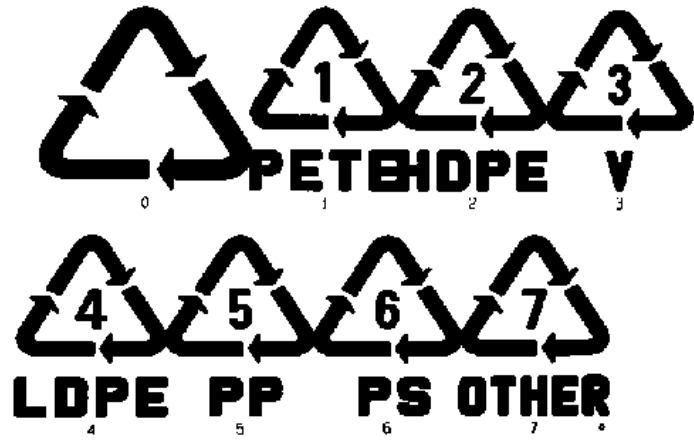
Prevented emissions of 857,282 tons of pollutants

Saved \$894 million

Prevented accidents?

# SD, value for the company

- Product performance and production costs
- Reputation and public image improvements: motivation of personnel also
- Coherence of various parts of the company: increasing effectiveness and flexibility

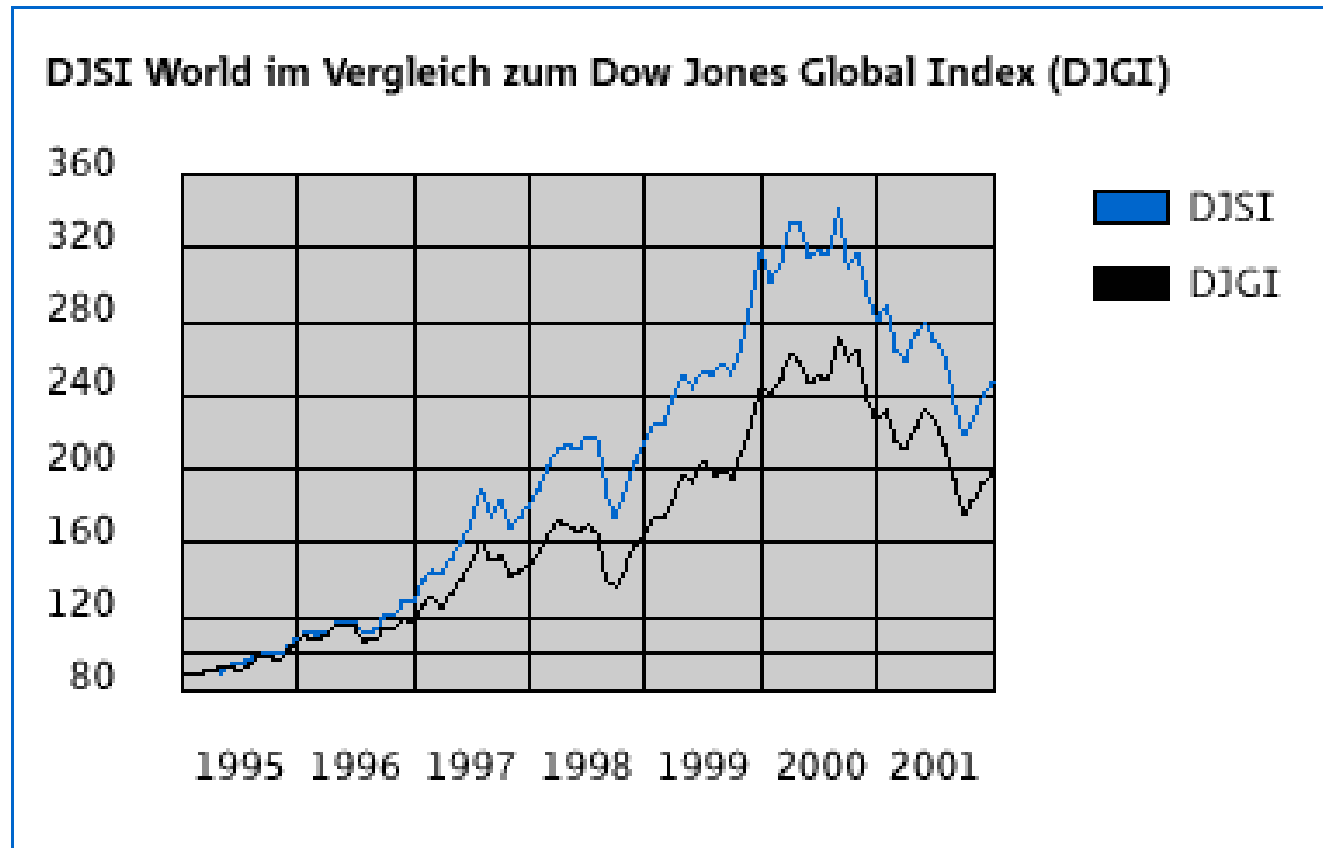


<http://www.ngms.state.ms.us/env/images/recycle,%20reuse%20reduce.jpg>  
<http://www.lamro.com/fonts/specfont/recycle2.gif>

# Many companies engage

- World Business Council for Sustainable Development (WBCSD)
- People Planet Profit
  - 190 international companies
    - Economic growth,
    - Ecologic balance
    - Social progress
- Corporate Social Responsibility

# Dow Jones Sustainability Index



# SD : a better understanding of the company's self interest

Because one needs the **cooperation of stakeholders**  
workers,  
consumers,  
stock owners  
neighbors, media, local officials

Because more Sustainable technologies might become the  
**standard at the market**



# Sustainable Development for Engineers

*Modern engineers must have a holistic approach, so they can not only use their expertise in a scientific or technological context but are also sensitive to social, environmental and political needs. The best technical solution of a challenge is not always the one most acceptable to society.*

*Therefore engineers must also be skilled communicators, able to translate challenges and possible solutions between society and science.*

Jeroen van der Veer  
Chief Executive Royal Dutch Shell

