

**View on environmental implications
from a production development
perspective – findings from case
studies**

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Jutta Hildenbrand

Background

- Aim: exploring production processes and especially changes in production
- Focus on inclusion of environmental information with relevance for the life cycle: mapping what is done already, what else could be done?
- Changes come with investments and different options; effects can last for a long time and for several product generations
- Qualitative information gathered during interviews with employees and from publicly available reports and documents to describe the situation.

Starting point production

- Production processes have been a subject of environmental legislation for a long time; 1969 Swedish Environment Protection Act defined “environmentally hazardous activities” for which “the mere risk (if not remote) is to be deemed enough to warrant protective measures or a ban on the activity
- Production sites have neighbours, local authorities, and employees (unions) as immediate stakeholders
- Emissions with local effects can often be traced back to a production site (direct cause effect relation)
- Emissions are monitored according to permits, limits have to be observed (concentration and load); verification feedback

Observations

- Environmental considerations in a production unit are related to the specific production site with its own environment: neighbours, workers, local authorities
- "Risk view", environment as a constraint, roles and responsibilities
- Detailed level of knowledge and high competency are with process specialists
- Global environmental implications are (partly) identified: electricity and heat demand, raw material - but not systematically monitored by environmental specialists

Features of the "best example"

- Capacity extension including abatement
- Resources were available – the environmental manager could dedicate time for a development project
- Environmental manager had experience and a high level of detailed and in-depth knowledge about the process, "insider position"
- Project outcome was connected to a better resource efficiency
- Difficult to use as a blueprint for other projects – unique circumstances

Regular conditions

- Projects are organised with division of work into many tasks with short delivery time
- Environmental specialists have a role as connection to authorities, not as a process specialist
- Project leaders coordinate and observe timeline for closing items
- Benefits of installing best life cycle option from the perspective of a production unit are not clear
- Contribution of production to overall life cycle is considered to be small

What is and can be done?

- Training and education of production staff in environmental issues (workshops and networks)
- Communication of good examples internally and externally to show benefits and inspire transfer
- Using good examples in project planning templates and internal documents; involve life cycle specialists in reviews of the documents
- Considering different levels of aggregation: there is only one global environment, but there are different local environments