Energy efficiency along the value chain

By studying organizational challenges for companies working with energy efficiency in value chains, this study has sought better understanding of why many companies still struggle with implementing life cycle management, despite good intentions to do so. With life cycle assessment (LCA) experts and tools in place, challenges may yet relate to intra-organizational aspects (like translations, tradeoffs and budgets) or lack of incentives and trust along the value chain. This study further explores such challenges, with particular interest in energy efficiency along the value chain, illustrated in figure 1.

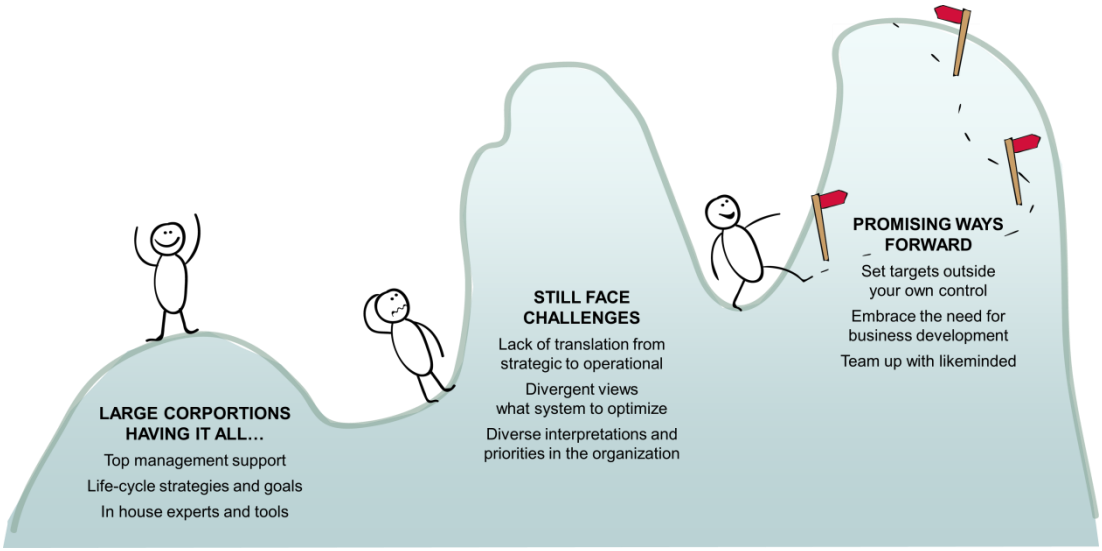


Figure1. Some examples of premises, challenges and ways of working found in the study.

Despite favorable conditions, many challenges exist. Strategic challenges include lack of translation from strategic to operational levels, and divergent views on what system to optimize. Intra-organizational challenges include diverse interpretations and priorities of the many employees, with their respective context and trade-offs. Examples of challenges along the value chain are split motivations and weak stakeholder interest. In the study a range of promising ways forward was identified, further explored below.

Recommendations to industry

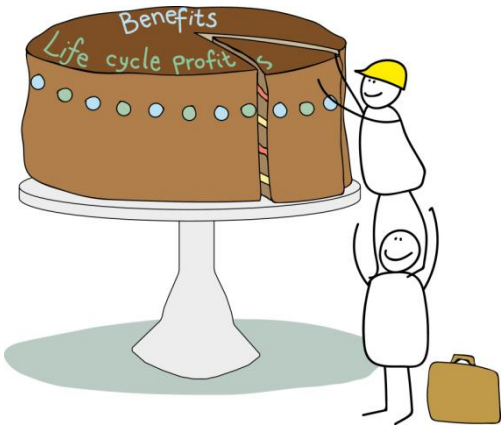
There is no single way of working for increased energy efficiency in value chains, but many. Therefore, there is a need to work on many levels simultaneously, and at the same time adapt to the specific premises for each company. Although all case

studies in this project were unique in their specific settings and results, similarities could be found in barriers and enablers experienced, resulting in four strategies for progress in which identified ways of working could be categorized.

Find and share the life cycle benefits

Find and share the life cycle benefits relates to the procedure of extending the scope of optimization from a single company to entire value chains, and what implications this extended scope will have on business models and practices. This includes both a rethinking of the practices and scope of business of today, and how to deal with the sharing of risks and benefits with related actors. Identified ways of working relate to how companies can:

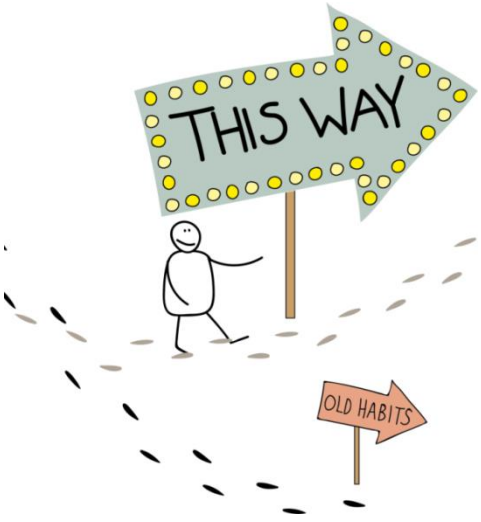
- ***Optimize a broader system***, e.g. through setting energy efficiency targets on the entire value chain.
- ***Challenge existing business models and practices***, including outsourcing, product portfolio strategies, and sales of products vs services
- ***Deal with changed cost-benefit distribution***, in the value chain, through new models for the sharing of risk and profit, possibly with the assistance of a third party.



Get focus and priorities in line

Getting focus and priorities in-line is based on the observation that many divergent focuses and priorities exist today acting as a barrier to life cycle work. Ways of working include managing complexity, as well as making life cycle thinking, both in environmental and economic terms, influence strategic decisions, prioritization, targets and KPIs.

- ***Dare be strategic!*** Life cycle thinking will not permeate company action in a systematic way unless strategic targets also show in company incentives and follow up.
- ***Manage potentially conflicting goals,*** such as possible tradeoffs between financial and environmental targets, but also among potentially competing environmental goals e.g. internal efficiency vs. life cycle improvements.



- ***Formulate KPI and ensure follow up,*** a challenging task that is surprisingly often neglected but powerful if performed well.

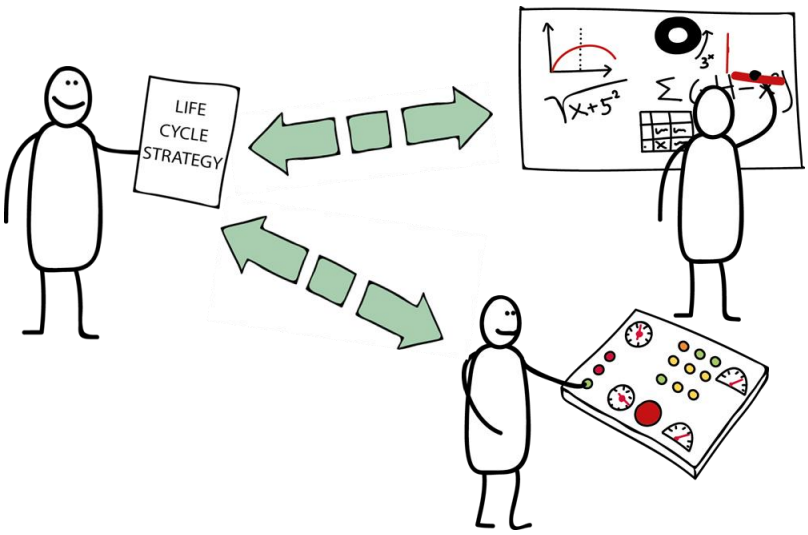
Encourage and enable understanding and action

The strategy of encouraging and enabling understanding and action points to the need of increasing knowledge and understanding of the life cycle perspective within the different functions of the organization, including the translation of strategic ambitions into operational work at different levels. Identified ways of working were:

- ***Support in-house capacity and understanding***, by discussing rationales for engagement, invest in education and knowledge sharing and provide data for follow up and learning.

- ***Assist in the transition from strategic to operative***, by recognizing the need for appointed translators, and adapting language and support to each function.

- ***Boost motivation and commitment***, through e.g. pointing out what is unique, frequent follow up and appreciative attention to achievements made.



Seek or create a way forward

Seek or create a way forward is primarily about how to proceed internally when priorities, incentives and structures are not supportive enough as is. Identified ways of working to progress before formal structures are set include to:

- ***Anticipate and meet reluctance and insecurity,*** by proactively assisting with rationales and arguments, possibly with the use of third party actors.

- ***Seek beneficial conditions,*** such as a "fast lane" to interested managers, resources to a specific project, or co-development with other goals.

- ***Start where it is possible***, e.g. by teaming up with partners showing interest, internally as well as in the value chain.

Potential for life cycle energy efficiency – theory and practice

From the quantification of life cycle energy efficiency measures and climate impact reductions in the case studies it was concluded that energy efficiency measures beyond own activities generally have higher energy efficiency potential than measures in own activities in the production of active products (e.g. products that require input and/or influence other products during the use phase). However, policy making is needed to unlock these more important energy efficiency potentials.

It was also concluded that the actual and/or semi-empirical energy efficiency potential is generally very much lower (10 % or even less) than the theoretical potential.

Recommendations to policy

From a national authority point of view, it would be desirable to optimize the use of financial and other resources targeting increased energy efficiency and reduced greenhouse gas emissions. In this project we have shown that the potential for improvements often is higher in value chains than in single operations. However, as life cycle stretches across actors and countries, policymaking need to consider how to transform national environmental targets and national energy use targets to life cycle environmental and energy use targets. Legal requirements can e.g. be set on life cycle energy efficiency, applied on the relevant step in the value chain,

rather than production plants or units. Also policy can support global initiatives in the life cycle area such as standardization, incentives and regulations.

Policymakers have an important role to play in “getting priorities in line”, through making economic/market incentives and environmental impact coincide. One example is processes for innovation procurement based on energy performance in a life cycle perspective. Finally national and international governments can act as catalysts for wider system innovation by hosting forums for governance in supply chains, support not only research but also implementation and demonstration, and seek ways to integrate life cycle thinking in higher education.

Next step

This report points to the needs and premises for companies to elaborate on their role in extending the scope of optimization of energy use from a single company to a value chain. A range of different ways of working has been identified, in particular on how to proceed in the internal work of multinational corporations. A PowerPoint presentation illustrating ways of working identified in this project has been developed to assist in the internal dialogue in industry and other interested organizations.

To this end, it must also be recognized that change in value chains is not the work by single actors. More profound changes are needed in the entire system of actors, to go from product or process improvement to system innovation. Important questions to discuss include who can and should be the “agent of change” for such development, how risks and profits can be demonstrated and shared and what societal incentives might be needed. These are hopefully areas for further research and joint developments between industry, academia, institutes and governmental agencies.