iMPU survey results: Tools and Methods

Over the last 30 years there has been significant development in the range of tools and methods available to support environmental initiatives within product development. We used the survey to learn more about:

- What are the ecodesign **tools and methods being used** by companies?
- How do companies **apply tools in the context of the product development process**?
- What are the **limitations companies have found** when trying to apply tools and methods for ecodesign?

Tools and methods being used

In terms of the types of methods, approaches and standards that are currently being applied, Life Cycle Assessment was the most frequently mentioned (45% of responses), see Figure 1. This is logical given that a company needs to understand its products' lifecycle impacts and identify the 'hotspots' before it can begin to take to effective action.

The second most commonly used approach was 'Design for Environment/ Ecodesign' (42%). Within the comments to this question several respondents mentioned the DTU/IPU Ecodesign Guide as the basis for their implementation of this approach.
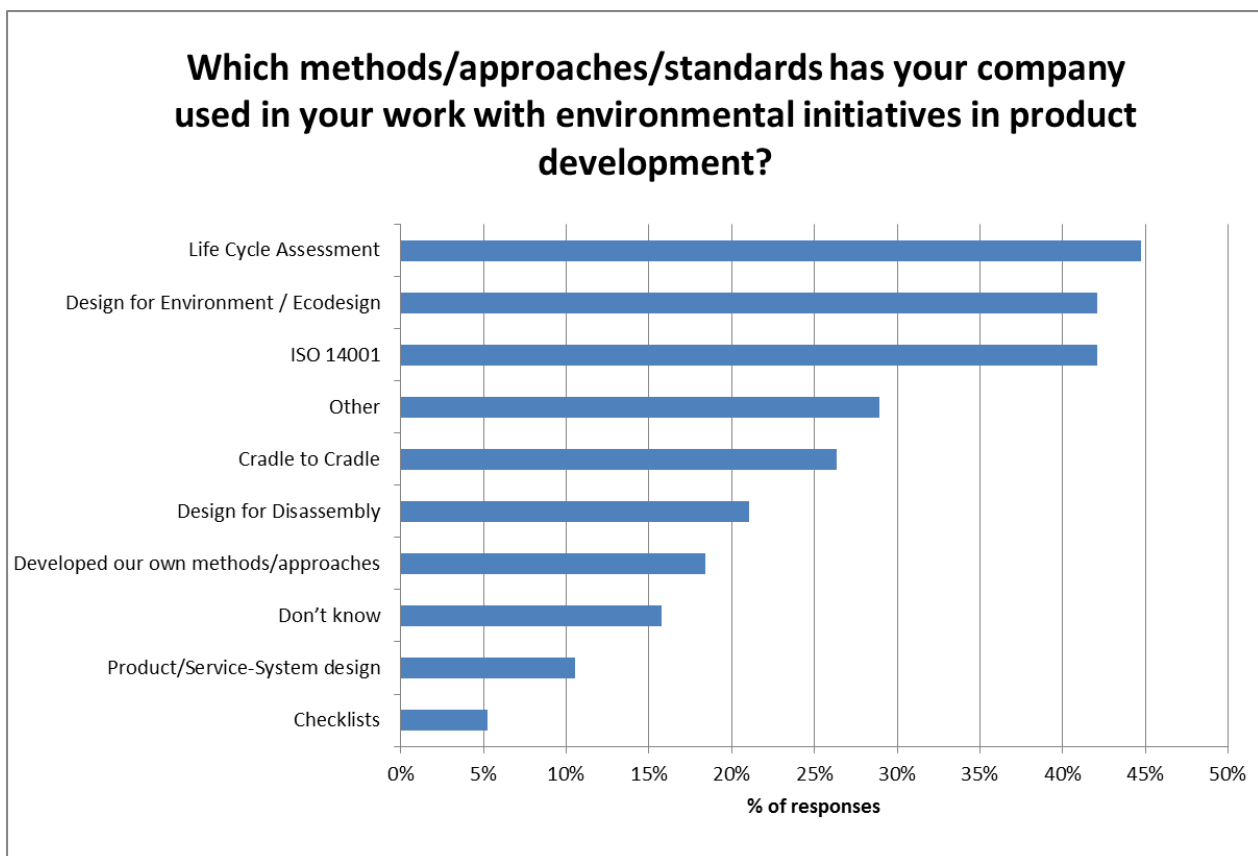

Figure 1. Responses (n=23) to the question: *"Which methods/approaches/standards has your company used in your work with environmental initiatives in product development?"*

The ISO 14001 environmental management standard also featured highly in the responses (42%) – see the [Organization](#) section for an explanation of why this is a smart and powerful approach to adopt when implementing environmental initiatives within product development.

Less popular approaches included:

- Product/Service-System design (11%) - which suggests that this is still a relatively low maturity field in terms of industrial application despite successful initiatives such as [PROTEUS](#) in the Danish maritime industry.
- Checklists (5%) – which is surprising given that checklists are simply to apply and have previously proven popular with companies starting out on the journey of ecodesign implementation.

Focusing next on the specific tools being used, we found that many respondents were not aware of any specific tools being applied in the company or did not know the names of the tools (32%). Again, this is slightly surprising given the major emphasis that has been placed on tool development and application in the research literature. This could also indicate that although many people within a company have some level of awareness and involvement in ecodesign activities only a small minority formally apply tools (particularly Life Cycle Assessment software tools, which make up the majority of the tools list in the survey).
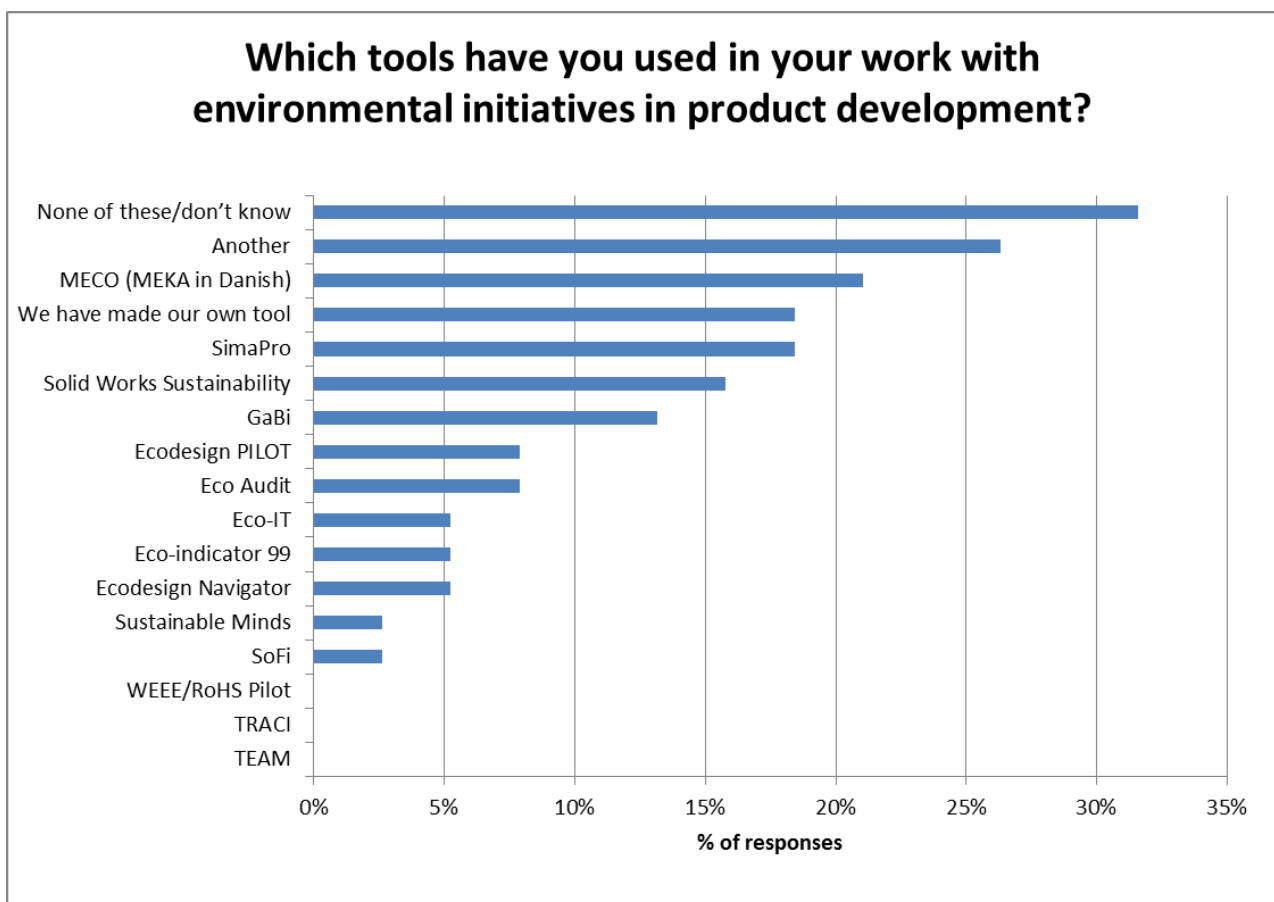

Figure 2. Responses (n=38) to the question: *"Which tools have you used in your work with environmental initiatives in product development?"*

The most commonly mentioned tool was 'MECO' (21%) which is a simple matrix that allows users to list significant environmental impacts in terms of four categories (Materials, Energy, Chemicals, Other) across the product lifecycle. This information is then used to identify the main environmental hotspots. This suggests that despite the major improvements in functionality and ease of use of the sophisticated ecodesign software tools available, practitioners still commonly use this type of simple, quick paper-based methods.

Within the LCA software domain, there is still an important role for detailed LCA tools such as SimaPro (18%) and GaBi (13%), but we also note a growing role for simplified LCA tools such as SolidWorks Sustainability (16%), and Eco Audit (8%), which are intended for use by designers and engineers rather than LCA specialists. This perhaps reflects the trend towards wider involvement in ecodesign throughout the company that was noted in the Organization section.

Applying ecodesign tools and methods within product development

When we asked participants whether the tools that they had mentioned earlier were used in an integrated manner as part of their product development process there was an even split – see Figure 3. The comments provided in relation to this question revealed that there is some disagreement as to whether tool use should be integrated into the product development process. In particular it seems that the application of detailed LCA tools tends to be separated from the product development process. This is logical given the incompatibility between the fast-paced and iterative nature of the product development process and the long time scales and detailed information required to complete an LCA.
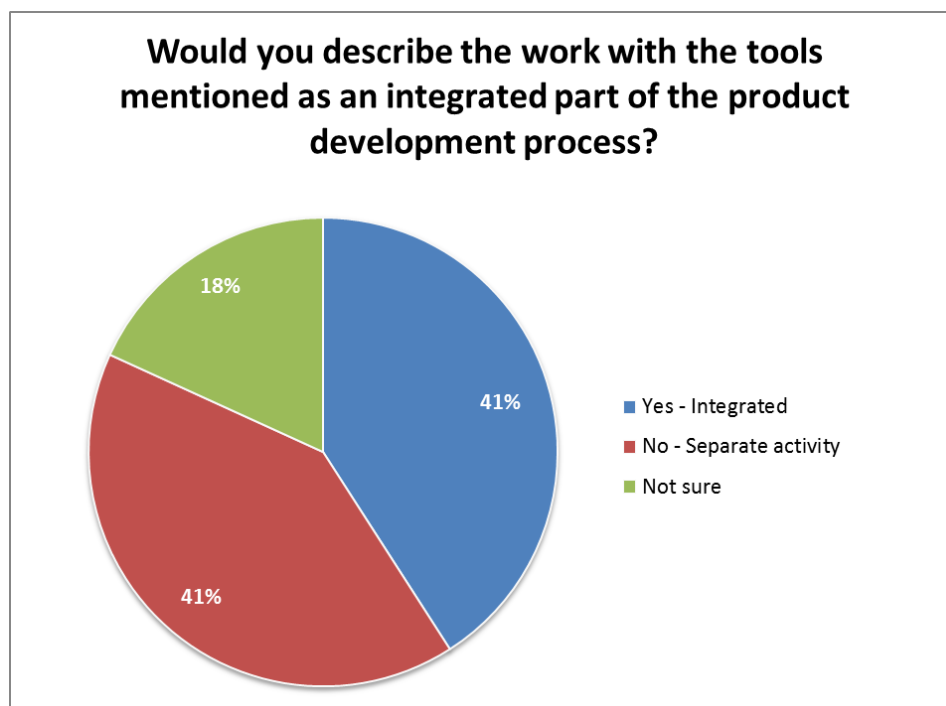

Figure 3. Responses to the question (n=22): *"Would you describe the work with the tools you mentioned as an integrated part of the product development process?"*

Limitation companies have found

The survey participants highlighted a number of limitations that they had found when trying to implement tools as part of their environmental initiatives.

For instance, 10% of respondents felt that one of the most difficult barriers to overcome when they were starting to implement environmental initiatives was that, *"We could not find any relevant/suitable tools to help us to start our environmental initiative".*

Even when they had found the right tools, some companies found it difficult to implement them. As one respondent mentioned, *"…it was difficult to find the right way to implement some environmental guidelines (via tools) as tools rarely fit universally to every company."*

Some respondents also questioned the quality of the results obtained from the tools they used, with one stating, "*When using general data available wrong results can be obtained if every value chain step that is included in the data is not known or wrong assumptions made to begin with."* However, this was not a widely held view as only 1 respondent out of 25 cited, *"The environmental tools we tried did not give trustworthy results"* as a major barrier to their environmental initiatives.