

Policy brief

Ecodesign Requirements for Textiles and Furniture

Eco design requirements that can be drawn up for non-energy-related products are in focus



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Ecodesign Requirements for Textiles and Furniture

The project was initiated, financed and steered by the Nordic Council of Ministers' Working Group for Sustainable Consumption and Production and carried out by a consultant team led by PlanMiljø.

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The Ecodesign Directive and Material Efficiency

A large part of the lifecycle environmental impacts of a product are determined at the design stage. By developing products that are durable, easy to repair and upgrade and where recovery of valuable materials and components is enabled at end-of-life, designers can provide the best possible conditions for material efficiency. Whether or not the potential integrated into the product via good design is fully utilised, depends on the existence of systems and incentives for collection, reuse, refurbishment and recycling. But the designer has done what he/she can to enable resource efficiency.

On the other hand, designers may not have the knowledge, incentives or mandate within a company to design for material efficiency. The EU Ecodesign Directive has strong potential to ensure that designers take material efficiency considerations along with other environmental impacts into account when developing products. However, the implementing tools of the Directive (see Box 1) have so far mostly focussed on improving the energy efficiency of energy-related products. Little focus has been given to material use.

The Nordic Council of Ministers commissioned this project to demonstrate how material resource-related ecodesign requirements can be drawn up for non-energy-related products using textiles as an example.

A 'light application' was then applied to the furniture sector. Clothing and home textiles were chosen due to significant wastage in the value chain due to fast fashion, dropping quality and relatively low repair and reuse rates. While some brands design for longevity, fewer design for reparability and recyclability.

Box 1

The Directive adopted in 2005 and revised in 2009 has been an effective tool for improving the energy efficiency of products by eliminating the worst performing products from the market. The Directive sets out mandatory minimum requirements that are applicable to all products produced in or imported to the EU within a particular product group.

The product groups for which requirements are to be established are listed in successive working plans and have been prioritised according to the energy relevance of the product group. So far three successive Working Plans have been set out: 2009–2011, 2012–2014, 2016–2019 and requirements have been established for 40 product groups.

The Directive's potential for application to non-energy related themes has come under the spotlight in recent years with Nordic countries at the forefront.

Developing Ecodesign Requirements

The consultants used a simple process for developing ecodesign requirements for textiles (see Box 2). The consultant team included eco-design experts, experts in lifecycle impacts of textiles and in circular economy. External input was provided by a group of industry stakeholders and textile and ecodesign experts. The goal of the consultation was not to achieve industry consensus but to gain inspiration. Thus, ambitious stakeholders were selected.

Inspiration for ecodesign requirements for material and resource efficiency can be found in ecolabels criteria and green procurement criteria for products. Ecolabel and GPP criteria establish inspirational benchmarks for best-performing products. Ecodesign requirements under the ED on the other

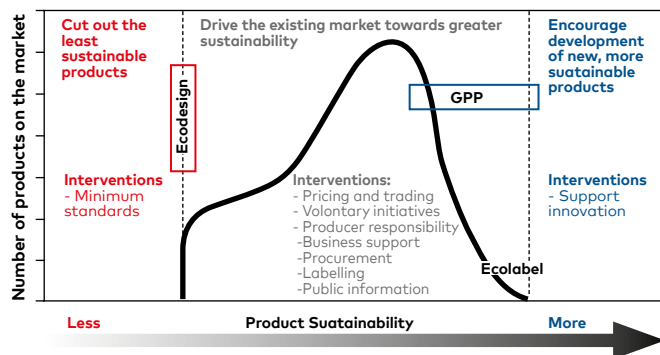
Box 2 Development process

- Establishing a cross-disciplinary team
- Defining the scope for textiles
- Literature review and internal workshop
- Drawing up first draft requirements
- Stakeholder consultation
- Development of final proposals

hand, establish minimum standards that all products must meet (see Figure 1). This means that ED requirements should be less stringent, should develop over time to allow gradual improvement of products and advanced warning should be provided to producers of increasing stringency.

Figure 1: The effects of different product instruments

Galatola, Michele,
DG ENV, EU
Commission



Ecolabel and GPP criteria for textiles address product durability to a certain degree, but do not touch on recyclability, reparability or on conditions which enable and encourage repair and recycling. These can include recyclers' knowledge of material content, the availability of spare parts and markets for recovered materials. Inspiration for requirements that can address such issues were gained from research on material efficiency and circular economy in textiles and the team's own knowledge and ideas.

A further inhibitor of material recovery from clothing can be content of persistent chemicals that may prove harmful to staff in recycling facilities or unwished for in the next generation of products for which the recovered materials are used. Existing legislation such as REACH addresses some of these issues but one example requirement was developed to demonstrate how this can also be addressed under the ED.

Box 3

Threshold and declaration-based requirements

Minimum/maximum thresholds: these are concrete requirements for a minimum or maximum level of some kind of variable. This could be minimum recycled content by weight or number of times a zipper can be zipped etc. Threshold requirements can specify a planned stepwise progression (tiers) to allow producers to innovate their products gradually.

Declaration-based requirements: place obligations on producers to provide certain types of information. A classic example is the obligatory energy-labelling of electrical goods. Such labelling is aimed at influencing consumers to purchase best-performing products. Obligatory information can also be aimed at other actors such as repairers or recyclers.

Thresholds ensure that environmentally worst performing products are eliminated from the market. Declaration-based requirements on the other hand are more flexible and can respond relatively to technological developments as these arise. The disadvantage is that there is no guarantee that the information will have the required effect, i.e. consumers/recyclers may ignore an information label.

Proposed Requirements for Textiles

The final proposals comprise 15 ecodesign requirements (see Table 1). These include both information/declaration based requirements and threshold-based requirements. These two types are summarised in Box 3.

The set of requirements is intended to give inspiration to a future working group under the Ecodesign Directive. No attempt has been made as yet to define levels of thresholds for the threshold-based requirements. Determining ambitious but feasible thresholds requires intensive consultation with market stakeholders and not least a political process during which the setting of tiers for future ecodesign requirements can be decided in light of other important parameters and prioritisations.

Care must also be taken, when setting thresholds, to ensure that a requirement that strengthens one resource efficiency parameter does not weaken another. Requirement 1 on recycled content, for example, strengthens markets for recycling but can potentially weaken technical durability. Thresholds in many cases will need to be defined for each fibre type.

There are some issues for which ED is not appropriate. An example is subjective causes for discarding of clothing such as style, fashion or boredom. However, wear and tear and technical failures account for 50–60% of discards. ED requirements 2–3 and 7–15 tackle these.

The various considerations that should be taken for each requirement are discussed in detail in the main report. These include conflicts between requirements, relevant testing and documentation standards, and which textile groups and fibre types could be covered by each requirement.

Table 1: Proposed ecodesign requirements for textiles

Requirement	Themes addressed	Description	Type of requirement		
			Informative	Threshold	Other
1. Declaration of, and/or minimum threshold for recycled content	Recycling	Textile products must carry a visible label with a declaration of the percentage by weight content of recycled materials AND/OR Products within [stated fibre group] must contain a minimum of X% recycled material by weight.	✓	✓	
2. Durability of fasteners	Durability	Fasteners should be able to be fastened and unfastened X number of times without failure.		✓	
3. Availability of spare parts	Durability Repairability	The producer must make spare parts available for X years after product has been on sale, or alternatively must provide spare parts with the product (e.g. extra buttons, thread of correct colour, replacement zips etc.).			✓
4. Design for disassembly	Durability Repairability Reusability Recyclability	The product logo, buttons and zips should be removable within X seconds. Seams should be disassembled within X seconds but without reducing durability under normal use and care. Instructions should be provided on how to do this.		✓	
6. Provision of detailed bill of materials	Recyclability Recycled content	The product must include, or link to, a list of all materials included in the product and at what level they are pure or mixed with other materials, and the share they make up by weight of the product down to a chosen threshold (e.g. 1%). Products that are made from a single material (with tolerance around 98%) must be stamped with a '100% recyclable' stamp.	✓		
7. Care and maintenance labelling	Durability Repairability	The product must be accompanied with information (or link to information) on recommended care and maintenance tips that can prolong the lifetime of the product (and reduce use phase impacts).	✓		
8. Dimensional changes during washing and drying	Durability	Between minus X % and plus X % for woven products, and durable non-wovens, other knitted products.		✓	
9. Colour fastness to washing	Durability	Colour-fastness to washing must be at least X (test score) for colour change and at least X (test score) for staining.		✓	
10. Colour fastness to perspiration (acid, alkaline)	Durability	Colour fastness must be at least X (test score for colour change and staining).		✓	
11. Colour fastness to wet rubbing	Durability	Colour fastness to wet rubbing must be at least X (test score).		✓	
12. Colour fastness to dry rubbing	Durability	Colour fastness to dry rubbing must be at least X (test score).		✓	
13. Colour fastness to light	Durability	Colour fastness to light must be at least X (test score).		✓	
14. Resistance to pilling and abrasion	Durability	Fabrics shall resist pilling of a minimum of at least X (test score).		✓	
15. Chemical content – organic fluorine	Recyclability	The total content of organic fluorine must not exceed X µg F-/g garment.		✓	

Potential Environmental Benefits

There are three broad routes via which the proposed requirements for textiles will give reductions in impacts over the lifecycle of textiles:

- Extend the active lifetime of products and offset new production
- Offset the extraction of virgin materials through use of recycled materials
- Altering laundering habits to reduce water and energy use

The requirements have varying impacts on each of these three main routes. Firstly, there will be varying strengths of links between a requirement and the route. For example, a minimum threshold set for the recycled content in all cotton products at 5%, is likely to lead to a 5% or higher replacement of virgin cotton used in textiles consumed on the European market. The impact of a declaration requirement, for example on recycled content, is more uncertain and should be based on measured responses to other types of information declarations. A second factor is the share of textiles that will be affected by a particular requirement e.g. requirement 2 will only affect the lifetime of products with fasteners. Finally, the three routes themselves have different saving potential: extending lifetimes generally leads to higher environmental savings than recycling.

The magnitude of environmental savings for a given environmental impact category can be approximated as follows:

$$\text{Environmental savings} = \text{Environmental footprint of all consumed textiles} \times \text{Potential percentage reductions for a given route} \times \text{Strength of link between requirement and route} \times \text{Share of total textiles affected}$$

Using such a method, an upper limit for the greenhouse gas savings of the set of proposed requirements was estimated at 85 million tonnes CO₂-equiv. per year if implemented at EU level. The achieved benefits will depend on levels set for threshold requirements and responses to declarations. These are considered in detail in the main report.

First Requirements for Furniture

A 'light application' of the methodology was applied to furniture. The resulting draft requirements are given in Table 2.

These have not undergone consultation with industry stakeholders.

Table 2: Proposed ecodesign requirements for furniture

No	Potential requirement	Comment
1	Fitness for use Furniture shall be considered as fit for use if it complies with the requirements set out in the latest versions of relevant standards on durability, dimensional requirements, safety and strength.	<ul style="list-style-type: none"> Third part verified/developed standards can secure a continuous improvement raising the bottom level. ISO standards normally correspond to around 5–10 years of use, before revision.
2	Expected lifespan Product manufacturer must declare the expected lifespan of the product by normal use.	<ul style="list-style-type: none"> Could also serve as a precursor to a requirement on prolonged warranty. The present standards that address durability simulate 5–10 years real life usage. Some companies have their own testing equipment and may run longer cycles (tests).
3	Provision of spare parts The furniture manufacturer shall make spare parts available to customers for a period of at least X years from the date of delivery of the product.	<ul style="list-style-type: none"> Making spare parts available (or producing these on demand) can enable repair and with this a longer life of the product.
4	Design for disassembly Simple and illustrated instructions regarding the disassembly and replacement of damaged components/ parts/ materials shall be provided. Disassembly and replacement operations shall be capable of being carried out using basic manual tools and unskilled labour.	<ul style="list-style-type: none"> Design for disassembly is essential in enabling repair and recycling since many products on the market today are difficult to separate into different materials for recycling or to repair. There is a potential conflict between disassembly and durability/expected lifetime since joints with bolts and screws tend to be more prone to fatigue and loosening with time than fixed joints.
6	Consumer information/instructions The consumer shall be provided with i) Assembly and disassembly instructions ii) Guidance on cleaning, maintaining and repairing the product; iii) a detailed description of the best ways to pass a product on when no longer wished for.	<ul style="list-style-type: none"> In order to ensure a longer active life of the product guidance on maintenance and repair shall be provided to the consumer, furthermore the consumer should be encouraged to reuse etc. if comprehensive instead of disposal.
7	Bill of materials Producers must provide an overall bill of materials stating the total weight of the product unit, how the weight is split among different materials, and placement of different components. Plastics must be defined by type and physically marked. Recycled materials must also be declared.	<ul style="list-style-type: none"> Information on the contents of recycled materials could increase the use of such materials (in order to meet consumer demands). Information criterion criteria to allow industry to adapt and invest with a long-term perspective. Definition of plastic parts and recycled parts will ease recycling.
9	Packaging materials Packaging must consist of readily recycled material and/or materials taken from renewable resources or be a multi-use system.	<ul style="list-style-type: none"> There are considerable environmental perspectives in increasing the use of recycled/renewable packaging materials.

What Next?

Via their representation in the European Council and via regular Member State Consultation Forums conducted under the EU Ecodesign Directive, Nordic governments can make use of these proposals as a first input to the development on material efficiency-based ecodesign requirements for product groups not normally described as energy related.

The time may be ripe for such an approach. The Commission's current Working Plan 2016–2019 notes that 'in future, Ecodesign should make a much more significant contribution to the circular economy, for example by more systematically tackling material efficiency issues such as durability and recyclability.'

Under that working plan, considerations of circular economy inspired requirements were to be limited to the energy-relevant product (ERP) groups prioritised under the plan. Moreover, one of the first outputs of the Circular Economy action plan was a request by the Commission to the European Standardization Organizations (ESOs) for material efficiency requirements, again for ERPs in support of the Ecodesign Directive.

Under the next working plan there may also be room for setting requirements which are not normally interpreted as energy related but that have high material use impacts. Textiles and furniture appear to be valid product groups under such a development. Should these be taken up, EC working groups would need to engage with stakeholders from industry to negotiate thresholds and the formulation of requirements. The proposals given here should provide a good starting point for this work.



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The EU Eco design Directive's potential for application to non-energy related themes has come under the spotlight in recent years with Nordic countries at the forefront. A large part of the lifecycle environmental impacts of a product are determined at the design stage.

In this report potential eco design requirements that can be drawn up for non-energy-related products are in focus. Textiles are here used as an example, and a light application of the approach has subsequently been applied to the furniture sector. Clothing and home textiles were chosen due to significant wastage in the value chain due to fast fashion, dropping quality and relatively low repair and reuse rates.

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