

## The feasibility of an EU eco-label for furniture: final report

Bärsch, Jürgen

Veröffentlichungsversion / Published Version  
Abschlussbericht / final report

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:  
SSG Sozialwissenschaften, USB Köln

### Empfohlene Zitierung / Suggested Citation:

Bärsch, J. (2001). *The feasibility of an EU eco-label for furniture: final report*. Köln: Klaus Novy Institut e.V.. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-126296>

### Nutzungsbedingungen:

Dieser Text wird unter einer Deposit-Lizenz (Keine Weiterverbreitung - keine Bearbeitung) zur Verfügung gestellt. Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

### Terms of use:

This document is made available under Deposit Licence (No Redistribution - no modifications). We grant a non-exclusive, non-transferable, individual and limited right to using this document. This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

# **THE FEASIBILITY OF AN EU ECO-LABEL FOR FURNITURE**

## **Final Report**

prepared for the  
Umweltbundesamt (Federal Environmental  
Agency)  
Mr. Christian Löwe  
P.O.B. 33 00 22  
14191 Berlin

Authors:  
Klaus Novy Institut e.V.  
Dr. Jürgen Bärsch  
Annostraße 27-33  
D-50678 Köln  
fon +49 221 931 207 0  
fax +49 221 931 207 20  
juergen.baersch@kni.de  
www.kni.de

IN COOPERATION WITH

Tauw bv  
Environmental Management Department  
Mr. E. Deliege MSc  
Mr. P.W.J. Luiten BSc  
Handelskade 11  
P.O. Box 133  
NL-7400 AC Deventer  
The Netherlands  
fon +31 570 69 99 11  
fax +31 570 69 96 66  
www.tauw.nl

Cologne/Deventer, February 2001

## Contents

<u>0</u>	<u>Recommendations (KNI &amp; TAUW)</u> .....	4
<u>1</u>	<u>Summary (KNI &amp; TAUW)</u> .....	5
<u>2</u>	<u>Introduction (KNI)</u> .....	6
<u>2.1</u>	<u>Overview</u> .....	6
<u>2.2</u>	<u>Legal Background</u> .....	6
<u>2.3</u>	<u>Role of the Feasibility Study</u> .....	6
<u>3</u>	<u>Work Plan (KNI)</u> .....	8
<u>4</u>	<u>General Context of Labelling for Furniture Products (KNI)</u> .....	10
<u>5</u>	<u>Kinds of Furniture and Possible Consequences for Eco-labelling (KNI)</u> .....	11
<u>6</u>	<u>The Market for Furniture in the EU (KNI)</u> .....	14
<u>6.1</u>	<u>Furniture and the Supplying Industries</u> .....	14
<u>6.2</u>	<u>Furniture Industry</u> .....	15
<u>7</u>	<u>Environmental Impact of Furniture (TAUW)</u> .....	20
<u>7.1</u>	<u>Production</u> .....	20
<u>7.1.1</u>	<u>General</u> .....	20
<u>7.1.2</u>	<u>Material Related Environmental Aspects</u> .....	20
<u>7.1.3</u>	<u>Energy Use of Materials</u> .....	21
<u>7.2</u>	<u>Use and disposal of furniture</u> .....	22
<u>7.3</u>	<u>Environmental Assessments of Actors in the Market(KNI)</u> .....	22
<u>8</u>	<u>Comparison of different ecolabels (TAUW)</u> .....	23
<u>8.1</u>	<u>Definition of the Product Group</u> .....	23
<u>8.2</u>	<u>Overview of Criteria</u> .....	24
<u>8.3</u>	<u>Product Groups</u> .....	27
<u>8.4</u>	<u>Criteria of the Labels</u> .....	27
<u>9</u>	<u>Examples of Best Practice (KNI &amp; TAUW)</u> .....	29
<u>10</u>	<u>Main Obstacles and Opportunities for a New EU Eco-Label (KNI)</u> .....	33
<u>10.1</u>	<u>National Characteristics to be Considered</u> .....	33
<u>10.2</u>	<u>Obstacles and Strategies</u> .....	33
<u>11</u>	<u>Appendix</u> .....	37
<u>11.1</u>	<u>Questionnaire for Actors and Experts in the Furniture Market in the EU Member States</u> .....	37
<u>11.2</u>	<u>First Information Leaflet Distributed on the Feasibility Study</u> .....	40
<u>11.3</u>	<u>Overview of Eco-labels For Furniture</u> .....	43

## Tables

<a href="#">Table 1</a>	<a href="#">Preferences for Furniture to be Labelled</a> .....	13
<a href="#">Table 2</a>	<a href="#">Woodbased Industry and Furniture Manufacturing Industry</a> .....	14
<a href="#">Table 3</a>	<a href="#">Materials Input and Employment in the Supplying Industries</a> .....	17
<a href="#">Table 4</a>	<a href="#">Import and Export within the OECD Foreign Trade in Furniture and Parts Thereof</a> .....	18
<a href="#">Table 5</a>	<a href="#">Large Enterprises in the EU</a> .....	19
<a href="#">Table 6</a>	<a href="#">Process Energy of Materials (Indicative Values)</a> .....	21
<a href="#">Table 7</a>	<a href="#">Environmental Relevance of Furniture Components</a> .....	22
<a href="#">Table 8</a>	<a href="#">Overview of Different European Eco-labels for Furniture</a> .....	25
<a href="#">Table 9</a>	<a href="#">Wood, Bamboo, Rotan, Wood Based Panels</a> .....	43
<a href="#">Table 10</a>	<a href="#">Metals</a> .....	45
<a href="#">Table 11</a>	<a href="#">Plastics</a> .....	46
<a href="#">Table 12</a>	<a href="#">Textile</a> .....	47
<a href="#">Table 13</a>	<a href="#">Leather</a> .....	48
<a href="#">Table 14</a>	<a href="#">Stone-like Materials</a> .....	48
<a href="#">Table 15</a>	<a href="#">Energy Consumption</a> .....	49
<a href="#">Table 16</a>	<a href="#">Functional Aspects</a> .....	50
<a href="#">Table 17</a>	<a href="#">Assembly / Disassembly / Durability</a> .....	51

## 0 RECOMMENDATIONS (KNI & TAUW)

The discussion on the introduction of a new EU Eco-label for furniture has revealed the high complexity of the product regarding functionality, market conditions and environmental impact.

One way to proceed in the process of establishing an EU Eco-label for furniture is to concentrate on certain kinds of furniture where some positive market interest has been expressed. This would include:

- office furniture
- furniture for children
- wooden furniture
- school furniture
- domestic furniture (without special emphasis on bathroom and kitchen furniture)

Starting with these subsectors does not necessarily mean excluding all other kinds of furniture (such as outdoor furniture). The above list reflects the preferences expressed by market actors. It is supported by positive economic prospects (demand) and it may be useful to take up these expectations first. All relevant identified environmental problems and input materials could be dealt with in the process of the criteria setting.

The criteria for the Eco-Label should address the following issues:

- foams (padding)
- emissions (e.g. formaldehyde)
- lacquering
- solvents
- flame retardants
- adhesives, glues
- VOC
- plastics
- metals
- heavy metals
- wood and wooden boards
- leather
- tissues, fabric
- energy use (specially of plastic and primary aluminium)
- recyclability and take back systems

It is crucial for the success of the introduction of a new Eco-label in the market to invite interested market actors to participate in defining a set of pragmatic criteria. Past experience with other labels in the furniture market indicates that without such an active participation the risk is high of failing to find realistic requirements that promise an improvement to the environment and at the same time find acceptance in the market.

Supportive actions such as the fostering of green procurement to push market demand for labelled products are somewhat beyond the scope of the establishment of a single new label. Nevertheless the need for this kind of backing was repeatedly expressed by firms in the market. Especially small and medium sized firms (SME) often lack the capacity and the resources for far-reaching marketing activities. The perceived low market value of the EU Eco-label in general is another serious barrier closely linked to the reported low current demand for environmentally friendly goods. Additional campaigning for the general idea of a European Eco-label would counter these negative aspects and enhance the chances for a label for furniture.

## 1 SUMMARY (KNI & TAUW)

The discussion on the introduction of a new EU Eco-label for furniture has shown that the product under scrutiny is highly complex regarding functionality, market conditions and environmental impact. The implementation strategies for a new labelling scheme are correspondingly complex.

The market for furniture is split into many subsections. The respective distribution channels and marketing strategies vary accordingly. When asked what sort of furniture should be labelled most, many actors in the market support a broad approach and propose to include a variety of furniture products: contract furniture and furniture for children are seen as most attractive (see Table 1). Furniture for special use is clearly excluded, as is kitchen, shop and bathroom furniture. Views on whether to include upholstered furniture are somewhat balanced.

The environmental relevance of furniture is seen as high. The EU labelling scheme should therefore at least cover important input components such as foams (for padding), solvents, flame retardants, formaldehyde, textiles, plastics and wooden boards. Recycling and other systems to extend the lifetime of the products and the sustainability of forestry should also be part of the new label (see Table 7).

There are a number of established Eco-labels in some European states (F, D, NL, A, S, DK, NO, FIN). Many of them apply to a particular type of furniture (e.g. chairs). Some even concentrate on one major input material (wood). All relevant environmental aspects are addressed and criteria are stipulated. None of these labels is widely accepted by the furniture industry (see chapter 8). There is no label that covers all relevant market sections and that could be easily used as a blueprint for a European Eco-label. It will be difficult to avoid splitting the new EU-Label accordingly into different subsections with separate criteria.

Without convincing a substantial proportion of the manufacturers and the trading sector that there is real added value to be expected, a new label will not succeed in the furniture markets. The main obstacle is the perceived lack of consumers' environmental awareness and willingness to pay for (additional) ecological qualities. Experience so far in the furniture market with labelled products is not considered successful. Existing labels are not valued as credible and direct sources of information but instead are seen as adding to the confusion of customers.

There is an obvious need for supportive actions to turn a new Eco-label for furniture into an attractive marketing tool. The EU scheme is still unknown to consumers and also among actors in the furniture industry. Additional demand could be attracted by policy measures to substantially increase the popularity of the labelling idea at EU level. For that purpose cooperation among different labelling institutions in the supply chain and across national borders should be examined.

One way to substantially raise the market share of labelled products would be through green procurement by administrations and enterprises. A green procurement strategy that is more closely linked to existing EU Eco-labels could give a decisive incentive to all market actors and constitute at the same time a credible commitment of the issuing institution.

The opportunities for the EU Eco-label seem best for furniture that is already sold under a brand name. Different marketing options and strategies to integrate the new EU label should be developed to support manufacturers and traders and facilitate dissemination in the market (see chapter 10.2). Estimates on possible market shares range from 5% to 16% in the respective segments. If that is a realistic assumption the process of introducing an EU Eco-label should be developed further.

## 2 INTRODUCTION (KNI)

### 2.1 OVERVIEW

First some information on the legal background of the EU Eco-label, the character of the feasibility study, the steps undertaken during the research (chapter 3) and the general context of the labelling for furniture (chapter 4) are given.

The starting point of debate is the question: What sort of furniture are we talking about and which kind of furniture is most interesting for the introduction of an Eco-label (chapter 5)? To ground the debate further, the main environmental issues to be tackled are briefly summarised (chapter 6) and a rough overview of the furniture market in Europe is given (chapter 6).

A synopsis of the different existing Eco-labels in the EU is provided in chapter 8. It analyses the standards that are known and have established themselves in the markets - if not EU-wide then at least within some national settings. That can help answer the question of what the proposed EU Eco-label might stand for in the future.

Some examples of best practice are documented to show that environmental management practices have a place in the market and can be a business success (chapter 9). Finally the main conclusions and recommended strategies on the introduction of a new Eco-label are presented (chapter 10).

### 2.2 LEGAL BACKGROUND

In 1992 the Council of the EU adopted a regulation establishing a Community Eco-label Award Scheme. In the meantime 55 licences for the use of the logo have been granted for 240 products. The range of eligible products is to be expanded.

Some details of the scheme have been the subject of revision. The new Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17.7.2000 on a revised Community Eco-label Award Scheme was published on 21.9.2000.

The key elements of this new Regulation, which entered into force on 24 September 2000, include:

- "Widening the scope to cover services as well as products.
- Reinforced stakeholder participation, in particular in developing environmental criteria.
- Creation of an EU Eco-labelling Board, comprising Eco-label Competent Bodies and interest groups whose main role is to develop the Eco-label criteria.
- Reduced fees for SMEs and developing countries.
- Introduction of a ceiling on the annual fee.
- Reinforced transparency and methodology.
- Renewed emphasis on the promotion of the scheme.
- Reinforced co-operation and co-ordination with the national eco-label schemes.
- More information on the label.
- Allowing traders and retailers to apply directly for their own brand products.
- Allowing non-EU producers to apply directly"<sup>1</sup>.

### 2.3 ROLE OF THE FEASIBILITY STUDY

The decision of the Commission of the EU to carry out a feasibility study on the introduction of an Eco-label for furniture is the first step in the process of establishing a label for a new product group. The Community Eco-label scheme is one element of a wide strategy aimed at promoting sustainable production and consumption. The main objectives of the scheme are

---

<sup>1</sup> see <http://europa.eu.int/comm/environment/ecolabel/regulation.htm>

- 1) to promote the design, production, marketing and use of products which have a reduced environmental impact during their entire life cycle, and
- 2) to provide consumers with better information on the environmental impact of products.

On the basis of the results of the feasibility study, an analysis of the lifecycle of the product group is to be made. This will comprise an inventory and evaluation of the environmental impact of the group of products, a market study and a set of criteria for the Eco-label.

It is crucial for the success of a new Eco-label that the scheme finds acceptance in the market. To investigate this is one of the main reasons for launching a feasibility study at an early stage. All interested parties were therefore asked to participate in this process by bringing in their expertise. The different groups range from representatives of industry, commerce (both groups including trade unions as appropriate) to consumer and environmental organisations. The emphasis of the study was placed on obtaining stakeholder opinions and assessments to stimulate discussion and channel the decision process.



### 3 WORK PLAN (KNI)

The feasibility study consists of seven steps, of which some were carried out simultaneously:

Step 1:	Analyses of the structure of the European furniture market
Step 2:	An inventory of existing Eco-labels in the EU Member States
Step 3:	Workshop of the AHWG in Brussels
Step 4:	Analyses of best practices in the furniture industry
Step 5:	Survey of statements and assessments from key actors regarding the acceptability of a new Eco-label in the respective market sectors
Step 6:	Identification of main hurdles and opportunities for the introduction of an Eco-label
Step 7:	Final report to the EU

The FEASIBILITY STUDY began in August 2000. Since the end of August an information leaflet containing basic information on the study, a list of all contact persons and the timetable of the project has been delivered to all interested parties. The mailing list covers – besides the members of the *Competent Body* and the *Consultation Forum* – national and European representatives of the furniture industry and different supplying industries, respective trade organisations, research institutes etc. This list has always been kept open for new members at any time.

At the start all participants were asked for their co-operation in the two first major fields:

- a) collecting data on existing national labels for furniture, and
- b) gathering market data and statistics on the different national furniture industries inside the EU.

**Step 1:** Market data have been collected (see chapter 6)

**Step 2:** Most if not all existing environmental labels and their furniture-related criteria within the EU have been listed in a synopsis and analysed (see chapter 8).

**Step 3:** An ad hoc working group (AHWG) composed of experts from the EU Member States and representatives of the parties concerned reviewed some first factfinding papers during a meeting in September 2000 in Brussels. As some results then were considered preliminary in nature it was decided to spread and channel additional information and interim results of the discussion via a snowball procedure using the *Competent Body*, the *Consultation Forum* plus all other participants of the meeting as a starting point.

**Step 4:** Examples of good or best practice can serve as an incentive for others and facilitate and stimulate innovations by disseminating knowledge. The success of best practice firms can be seen as a vital demonstration of otherwise theoretical concepts relating to environmentally sound production techniques, procurement strategies, organisational processes, marketing etc. The views and assessments of these pioneering firms on the prospects of a new Eco-label are crucial. All participants on the mailing list were asked for their assistance and expertise in naming examples of best practice firms, i.e. that already have a certain tradition in trading and/or producing environmentally friendly furniture in their countries (see chapter 8).

**Step 5:** A postal questionnaire (see appendix 11.1) was sent to all interested parties. With this instrument it was intended to identify the perspectives of the various actors in the market and record their views in a systematic way. This was seen as a central step towards a better understanding of the different views and the opportunities and barriers associated with setting up the new labelling scheme. The data were used to identify and structure some core

issues related to the insertion process (See mainly chapter 10 and 10.2. Other results of that survey have been integrated into different chapters).

***Further Steps to Stimulate the Participation Process***

There is currently a growing discussion among different actors on the usefulness of an Eco-label for furniture. This is mainly due to the fact that the information has been discussed by some representatives of European organisations (e.g. FEMB, FENA) at their regular conferences and subsequently disseminated to their national members. The national bodies were asked to discuss and complete the questionnaire and return it to the researchers of the FEASIBILITY STUDY. It is therefore strongly recommended that the central findings of the study should again be discussed at an expert meeting of the AHWG in the first half of the year 2001.

## 4 GENERAL CONTEXT OF LABELLING FOR FURNITURE PRODUCTS (KNI)

It is estimated that the building and housing sector is responsible for 29% of all materials (“Stoffströme”) extracted from the natural environment.<sup>2</sup> The life cycles of housing and furniture are closely interlinked. The consumption pattern of housing shows a positive correlation between personal income and the market demand for dwelling floor space. Rising household income leads to increased consumption of dwelling space which in turn calls for rising quantities of furniture, floor and wall coverings etc. This a priori environmentally negative impact is mitigated partly by a simultaneous growing demand for furniture of higher quality, i.e. with longer lifetime. However, to complicate the matter further, growing demand is influenced by the propensity to move home and the resulting higher mobility rate in conjunction with ever changing fashions tends again to increase the resources used for furniture.

The furniture industry together with the paper industry are the main consumers of wood and timber. Therefore questions of sustainable forestry or the quality of wood-based material are closely connected with the discussion of criteria for environmentally friendly furniture.

Much of the environmental focus of the past has been concerned solely with the production sphere. But all kinds of take-back or re-use systems that enlarge the lifetime of a piece of furniture are equally relevant. Market institutions (such as second-hand dealers) that enable some filtering down prior to disposal and thereby work to reduce waste are already popular and well established in many European economies. Other business concepts such as sharing or leasing have only a niche status in the economy and need more elaboration and testing. The integration of the whole life cycle of a product into a labelling scheme can be seen as an element of an integrated product policy.<sup>3</sup>

In some fields consumer behaviour has already become the most relevant factor for the resulting effects on the environment (e.g. zero emission housing, mobility). As scientific debate on sustainable development shifted towards consumption-related impacts on the natural environment, the roles of consumer information, education and lifestyles have become a focus of research. In general, the more complex the environmental implications, the more urgent the need for aggregated and reliable information to facilitate informed and rational choice among consumers. This is where labels can play an important role.

Consumers' choice of furniture is not based on routine behaviour. Instead, the search for information on price, quality and appropriate traders starts again with every purchase. The development of tools to economise on information costs is obviously attractive to guide the decision process. This is where brand names and labels generally find their rationale.

To make public the otherwise confidential environmental information of a product through labelling is necessary because the general price information is still misleading or at least ambiguous in that respect. Green taxation or emission trading could reduce some of that information burden from the consumers because environmental costs would be part of the price.

Some arguments in favour of consumer protection compete with environmental concerns, as in the case of fire protection. A requirement for fire retardation conflicts with the goal of reducing chemical impregnation of tissues in upholstered furniture (to avoid landfill or incineration problems). On the other hand, curbs on the use of solvents that emit hazardous VOCs are based on health and ecological arguments alike and require no compromises between different ends.

---

<sup>2</sup> Lorek, S.; Spangenberg, J.H., Felten, Ch. (1999) Prioritäten, Tendenzen und Indikatoren umweltrelevanten Konsumverhaltens (Final Report UBA 209 01 216/03), Wuppertal

<sup>3</sup> See for example Ernst & Young / SPRU (2000): Developing the Foundation for Integrated Product Policy in the EU, June 2000, DG Environment, European Commission

## 5 KINDS OF FURNITURE AND POSSIBLE CONSEQUENCES FOR ECO-LABELLING (KNI)

First of all it is necessary to define the eligible product group for the future Eco-label. Data on the product group and the later proposed testing methods should be available at reasonable cost. To start with a core group of familiar products that already have a considerable market share may be part of a strategy to enhance the attractiveness of a new label. In successive rounds of future refinement and amendment additional furniture products may be included in later years.

The furniture market, like others, is split into different subsections. It is not easy to identify one section as the best or most “natural” for a new Eco-label. Depending on the section, there will be different consequences for the insertion of an Eco-label. None of the available classification systems seems ideally suitable to define the range of products for inclusion in an Eco-labelling process.

“The word furniture comes from the French *fourniture*, which means equipment. In most other European languages, however, the corresponding word (German *Möbel*; French *meuble*; Spanish *mueble*; Italian *mobile*) is derived from the Latin adjective *mobilis*, meaning movable. The continental terms describe the intrinsic character of furniture better than the English word. To be furniture, it must be movable” (Encyclopaedia Britannica 2001).

### Definitions of Furniture

- A piece of furniture is seen as something movable, generally on the floor, and in some cases (at least temporarily) be attached to walls (like kitchen units).
- According to the definition used by CEN furniture is “property or goods intended to provide use of functional purposes and/or decoration purposes for areas and dwelling houses for private and contract uses.”
- The definition used by the Joint Nordic Eco-labelling seems pragmatic and straightforward: Furniture are “products that are movable, portable or fixed to a wall to furnish rooms”. All outdoor furniture is thereby excluded.

### Functions

Furniture is further sorted into and marketed as seating furniture, tables, beds, bedsteads, shelves, cupboards etc. These specifications relate to different functions and are quite independent of the materials used (wood, plywood, particle boards, metal, glass, plastic, stone etc.). Terms like “rustic style” and other slogans, though often associated with certain materials (wood), have no direct and reliable bearing on the inputs used or other characteristics that are of relevance for an Eco-labelling.

### Location of Use

Sometimes a distinction is made between indoor and outdoor furniture. This difference has particular consequences for a label because outdoor furniture has to meet higher and different standards for robustness, durability and protection against water, insects, the effects of changing temperatures and exposure to sunlight. Indoor furniture on the other hand has to fulfil more demanding requirements regarding emissions (e.g. VOC) or the use of flame retardants.

### Client Orientation

The kind of customer targeted determines the marketing policy and distribution channel used. Furniture for private consumers, sometimes termed “**domestic furniture**” generally focuses on furniture for different rooms in a dwelling: living room f., bathroom f., kitchen f. etc. The robustness of the furniture may be regarded less demanding than if used for professional purposes. Domestic furniture generally is not as robust as office furniture, which may

have consequences for an Eco-label. **Children's** furniture will doubtless have to meet high standards regarding emissions and toxic substances (varnishing and paint).

**Contract furniture** (office or shop furniture) has a different customer orientation. Often office table surfaces, for example, are hardened for better weight resistance. Office seating may have higher ratios of metal than domestic seating (see furniture for special uses, below). Bathroom fittings generally have moisture and heat resistant characteristics and in consequence use metal and plastics.

### **Material and Technical Complexity**

One can sort furniture by its technical complexity, ranging from (simple) chairs and boards made of just one material (wood or metal) to kitchen units equipped with high tech appliances. The more one moves to the complex side, the more one finds a combination of furniture plus some other consumer good of a different kind (furniture designed to incorporate "white goods"; refrigerating or freezing equipment, ovens, microwaves, sewing machines, computers, filing systems etc.) and with a correspondingly different mix of material inputs.

**Upholstered furniture** is a further kind of product of higher complexity because of the additional materials used. However, its high complexity did not lead to its exemption from an Eco-label from the outset. Environmental labels for this kind of furniture do already exist (RAL, "Goldenes M").

Some more complex furniture is made for **special uses** (e.g. seating for aeroplanes, motor vehicles and hospitals [wheelchairs]; medical, surgical, dental or veterinary furniture; beds for older and ill persons). The varying purposes and uses lead to different functional exigencies which are difficult to balance against environmental requirements (at least ex ante). Most such furniture will be for professional use. From an ecological standpoint it may be "right" to use renewable resources as much as possible, like wood or cane. The need for low flammability and minimal weight in aeroplanes rules out the use of wood as the main input material. It seems plausible that this kind of furniture is most suitably to be excluded from the labelling debate, at least in the first round.

Of course, not every professional and functional requirement that has a high legitimacy and priority with respect to some of its product qualities (like fire protection or weight reduction) should lead directly to an exemption of that group of furniture. But manufacturers wishing to apply for the designed Eco-label may be extremely rare from the start.

*In the first meeting of the AHWG a majority of participants voted for the exclusion of furniture for special uses. Proposals put forward to confine the range of eligible products to those consisting of just one major material input like wood or steel (for convenience of testing, ease of detecting environmental impacts, and reducing costs) were not found convincing enough, partly because of the lack of environmental relevance of the resulting label. The survey among actors in the furniture market of the EU (Table 1) shows a quite clear ranking. Only furniture for kitchens, bathrooms, shops and outdoor furniture is excluded, all other types should be labelled. Opinions are evenly divided with respect to upholstered furniture.*

*Many of the preferred types of furniture (contract f., office f.) aim at public sector purchasers or companies with green procurement strategies. The business customer in an administration is apparently different from the private consumer. Maybe rational behaviour and logic decision making are more prevalent in the professional sphere. Labels do economise on information costs and are a valuable tool for rational purchasers.*

**TABLE 1 PREFERENCES FOR FURNITURE TO BE LABELLED**

<b>Kinds of Furniture</b>	<b>High Priority</b>	<b>Low Priority</b>
furniture for children	11	4
indoor furniture in general	9	4
contract furniture in general	9	5
office furniture	9	6
school furniture	9	4
wooden furniture	9	4
domestic furniture in general	8	4
living room furniture	8	4
upholstered furniture	7	6
outdoor furniture in general	6	8
all kinds of furniture	6	7
kitchen furniture	4	7
bathroom furniture	2	9
shop furniture	2	9
furniture for special uses)	2	10
<i>Source: Assessments of Actors in the Furniture Market, KNI, 2000</i>		

## 6 THE MARKET FOR FURNITURE IN THE EU (KNI)

Furniture manufacturing is largely a 20th-century industry, its development is based on the growth of a mass consumer market. Untypical for a modern industry much handwork remains indispensable. That explains why furniture factories have never become as large as production units in such industries as automobiles and steel. Few today employ more than 100 persons. Thus the industry remains vulnerable to rising labour costs and the competition from countries with cheap labour resources.

### 6.1 FURNITURE AND THE SUPPLYING INDUSTRIES

There is a strong interdependence between the furniture industry and its supplying industries. This interlinkage is most prominent in the case of the woodbased industry. In the EU about 3.5 million people work in the furniture industries and the supplying wood and timber industries (Table 2). At the EU level, the furniture industry annually buys more than half of the production of particleboard, 20% of the sawn woods and about 90% of the production of MDF.

Moreover, the furniture industry is a major client for the PU foam industry, annually purchasing a third of their production. About 15% of the products of leather tanneries are ordered by the furniture industry. 10% of coatings for industrial use and 16% of the production of glues are used in the manufacturing of furniture.<sup>4</sup>

**TABLE 2**      **WOODBASED INDUSTRY AND FURNITURE MANUFACTURING INDUSTRY**  
(NACE 20 and 36)  
**EU-15, 1995**

	Firms	Shares	Employees	Shares	Turnover (Mio. ECU)	Shares
EU-15	355757	100%	3513371	100%	203467	100%
B	8281	2%	58209	2%	8346	4%
DK	4695	1%	50766	1%	5086	2%
D	48986	14%	1654996	47%	53929	27%
EL	4246	1%	17113	0%	2556	1%
E	50825	14%	265655	8%	14198	7%
F	32344	9%	272205	8%	25311	12%
IRL	933	0%	13890	0%	1146	1%
I	104429	29%	485048	14%	39730	20%
L	89	0%	593	0%	50	0%
NL	8293	2%	54571	2%	3443	2%
A	13482	4%	110069	3%	9688	5%
P	21600	6%	120162	3%	3734	2%
FIN	5084	1%	39890	1%	4382	2%
S	4284	1%	57550	2%	8090	4%
UK	48186	14%	312654	9%	23778	12%

Source: EUROSTAT: Statistik kurzgefasst 4 - 27/1999,

Looking at the different EU Member states (see Table 2) it appears that most firms in the furniture and woodbased industries are located in Italy (29%) followed by Germany, Spain, and the UK (all 14%).

<sup>4</sup> Data from UEA at <http://ueanet.com>, 11/2000

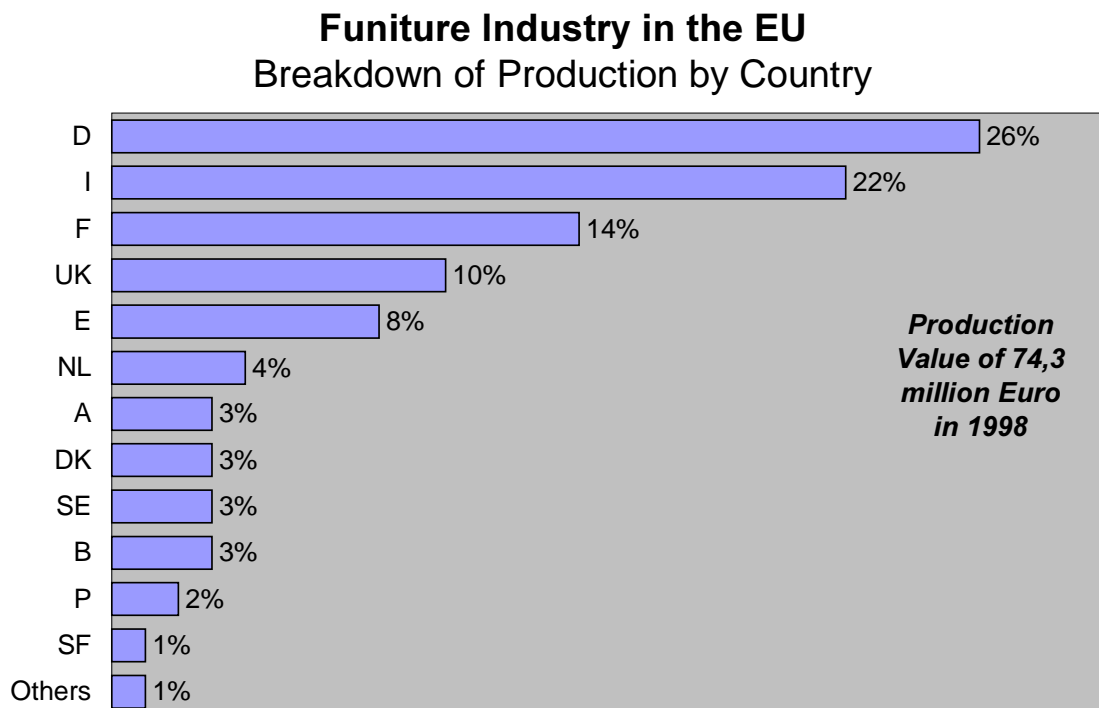
That picture changes if one examines the spatial distribution of employment. Almost half of the labour force (1.6 million, 47%) works in Germany, followed by Italy (14%) and the UK (9%). That ranking does not change fundamentally if one looks at the overall turnovers in these national markets. Germany has the biggest share (27%), before Italy (20%), the UK and France (12% each). Small companies, though present in large numbers, account for only 11% of turnover in the EU.

## 6.2 FURNITURE INDUSTRY

On average the furniture industry represents around 2% of the GDP and of the workforce of an EU member state. Currently about 950,000 people are employed in the furniture industry, and another 250,000 persons work in supplying industries directly for the furniture sector. The EU furniture industry accounts for about half of world furniture production. Nearly all businesses are family-owned. Few of them are quoted on the stock market, mainly in the U.K.

Following increased exports and a general economic recovery in almost all the European countries, 1998 was also a good year for the European furniture industry. Production value rose by 4% and reached EUR 74 bn (see figure 1). The furniture industry had a higher rate of growth than the rest of the economy that year (average rate: +3%).

FIGURE 1



Source: U.E.A.: The EU Furniture Industry, 2000

© Klaus Novy Institut

Germany and Italy account for almost half of the annual production value of all furniture produced within the EU (see figure 1). France and the UK follow, and together with Spain that group of 5 countries produces 80% of all furniture manufactured in the EU.<sup>5</sup>

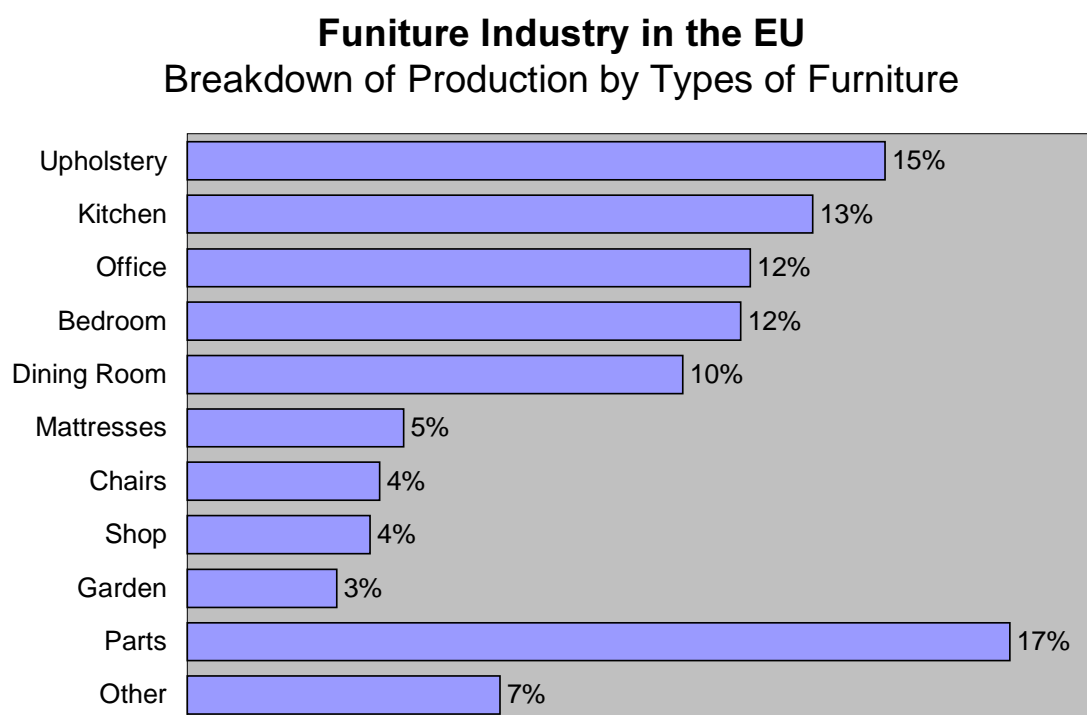
<sup>5</sup> Not all Member States of the EU are reflected in the U.E.A. figures. Greece for example is apparently missing.



Splitting furniture production down to its elements, upholstered furniture, one of the more complex products (see page 12), takes the largest share with 15% (see figure 2). Kitchen, bedroom and dining room furniture together amount to 35%, presumably sold to private households. Contract furniture on the other hand (office and shop furniture) comprises only 16% of production.

Altogether private households emerge as the major customer of the industry: In 1998 they purchased 73% of the sector's economic output of EUR 55bn. Upholstery represented another EUR 10 bn worth of production and office furniture EUR 7,8 bn.<sup>6</sup>

FIGURE 2



Source: U.E.A.: The EU Furniture Industry, 2000

© Klaus Novy Institut

### ***Upholstered Furniture***

According to the Association of the European Furniture Industry (U.E.A., Brussels), Austria has the highest per capita consumption of upholstered furniture in Europe, followed by Denmark, Germany, Finland and Great Britain. In 1997 Italy became Europe's most important producer: 30% of EUR 11bn. Germany followed with 27%. Net sales in Europe amount to EUR 10bn, 30% in Germany, 16% in Great Britain and 14% in Italy. More than 50% (EUR 848bn) of upholstered furniture imports to the European Union come from Poland.

### ***Material Inputs and Employment***

A piece of furniture can consist of up to 30 different materials. Wood and wood-based materials (like veneers, plywood and boards) are the most prominent, making up 28% of the value of all material inputs of about EUR 34 bn p.a. (see Table 3). Metal ranks second with 12% followed by plastics (9%) and textiles (6%). The value of all other single components is less than 3%.

<sup>6</sup> Data from U.E.A. at <http://www.ueanet.com/furniturewaste/english/chapter1a.htm>

Raw materials and semi-finished products for use in the furniture industry can represent large market shares of the different supplying industries. To illustrate the dependencies see row 4 in Table 3. The suppliers of wooden products are most closely connected, selling up to 90% (MDF) of their production value to the furniture industry.

Though leather just amounts to 3% of overall material input, this in turn represents 18% of the tanneries' output. Producers of glues and coatings are in a similar situation. All these manufacturers depend much more on the furniture industry than vice versa. Changes in one element of the supply chain can have significant repercussions in others, depending on the quality of the flow of goods.

**TABLE 3 MATERIALS INPUT AND EMPLOYMENT IN THE SUPPLYING INDUSTRIES**

<b>Materials</b>	<b>Share</b>	<b>Value (in Mio EURO)</b>	<b>Outlet for the suppliers</b>	<b>Estimated Employment</b>
Energy	3%	951		5.000
Wood	28%	9.450		50.000
Veneers			75%	
Plywood			70%	
Particleboards			60%	
MDF			90%	
Parts of Furniture	16%	5.367		
Glass	2%	577	7%	5.000
Hardware	9%	3.159	25%	26.000
Marble & Stones	1%	170	1%	500
Textile	6%	2.106	3%	25.000
Leather	3%	951	18%	15.000
Plastics	9%	3.023		25.000
Rubber	1%	204	1%	3.000
Metal	12%	3.974	1%	30.000
Coatings	3%	1.053	10%	7.000
Glues	2%	543	16%	6.000
Others	7%	2.480		35.000
<b>TOTAL</b>	<b>100%</b>	<b>34.008</b>		<b>232.500</b>

*Source: U.E.A., The suppliers' industries and the consumption of raw materials, 2000*

### **Imports and Exports**

The EU has a deficit in foreign trade with the rest of the OECD members. Exports of furniture of USD 18bn compare with only USD 19bn of imports (see Table 4). Within the Community the member states display no homogenous picture at all. Italy has by far the highest surplus of all followed by Denmark, Sweden and Spain. The majority of countries have a clear trade deficit: Germany, The Netherlands and France have the largest. Imports of furniture from outside the EU amount to more than 10% of the market.

**TABLE 4 IMPORT AND EXPORT WITHIN THE OECD  
FOREIGN TRADE IN FURNITURE AND PARTS THEREOF**

	Exports	Imports	Deficits (-) Surplus (+)
	<i>(in 1 000 USD)</i> 1997		
EU-15	18.384.650	19.440.611	-1.055.961
I	5.373.018	503.965	+4.869.053
DK	1.475.415	402.812	+1.072.603
S	1.157.638	598.126	+559.512
E	837.135	633.269	+203.866
FIN	167.419	177.604	-10.185
P	255.479	289.096	-33.617
IRL	107.955	285.411	-177.456
EL	11.453	191.202	-179.749
B - L	1.116.225	1.636.440	-520.215
A	589.843	1.198.399	-608.556
UK	1.092.638	1.891.004	-798.366
F	1.486.492	2.652.253	-1.165.761
NL	773.603	2.090.656	-1.317.053
D	3.940.337	6.890.374	-2.950.037

Source: *Foreign Trade by Commodities 1992-1997*  
(Vol. 5), OECD 1998

### **Eastern Europe and the Competitiveness**

Currently some Eastern European countries (e.g. Poland and the Czech Republic) are developing into important producers of furniture. The imports from these emergent economies into the EU have been growing significantly over the last decade. The Eastern firms are seen as price competitors in the lower sections of the market. Some of the firms are owned by and managed from parent companies inside the EU who have outsourced parts of their production to reduce costs, taking advantage of lower labour costs in Eastern Europe.

Some analysts argue that the actors in the furniture market should establish an efficient supply chain management to further reduce unit costs. This strategy aims at more efficient co-operation of agents in the market and is considered one of the most demanding tasks in the struggle of the industry to retain its competitive capacity. This would involve reorganising and strengthening the co-operation of market actors ranging from the forestry and timber industry to the retail furniture dealer plus all the necessary accompanying logistics and information flows.

All relevant economic actors will need to be more closely inter-connected to harmonise standards of production and transportation and to react more quickly to changing market conditions. As a logical consequence a "chain of control/stewardship" with reference to product quality will have to be set up across national borders. An Eco-labelling scheme may be able to profit from such a development. Once an effective flow of information along the line of production is established the market will be in a position to produce, store and disseminate all necessary environmental data at all stages of production at reasonable cost.

### **Large Furniture Firms in the EU**

A list is provided below of the biggest EU furniture enterprises with turnover exceeding EUR 100m. The data provide no overall picture of the degree of specialisation of firms on single furniture types or on certain combinations of furniture types; instead all sort of combinations

are to be found. Single product firms are quite as common as ones which have a diverse product range.

**TABLE 5 LARGE ENTERPRISES IN THE EU**

Company	Turnover (in Million EURO)	Country	Types of Furniture
SCHIEDER	1368	D	B-D-U
STEINHOFF	950	D	U-D-S
SAMAS GROEP	884	NL	O
WELLE	868	D	B-D-U-K
HILLSDOWN FURN.	601	UK	U-M
NATUZZI	550	I	U
STEELCASE *	461	USA	O
ALNO	450	D	K
SLUMBERLAND *	450	CH	B-M
WELLMANN	430	D	K
SKANDINAVISK GROUP	400	DK	O-B-D
NOBILIA	390	D	K
HÜLSTA	360	D	B-D
PARISOT	310	F	B-D-U-K
KLAUSSNER	300	D	U
VOKO	300	D	O
SNAIDERO	295	I	K
POGGENPOHL	260	S	K
HYGENA-MFI	250	UK	K
AHREND	234	NL	O
KRUSE+MEINERT	235	D	K
RAUCH	220	D	B-D
NOLTE-KÜCHEN	220	D	K
ISKU	201	SF	B-D-K-O-U
KINNARPS	200	S	O
DAUPHIN	200	D	O
DUMESTE-CAUVAL	200	F	U-K
RECTICEL	168	B	B-M
KONIG&NEURATH	160	D	O
SIEMATIC	155	D	K
LICENTIA GROUP	150	DK	K-B-D-O
B=Bedroom; D=Dining Room; K=Kitchen; M=Mattresses; O=Office; U=Upholstery			
*= Turnover of units in the EU			

Source: UEA, *The EU Furniture Industry, 2000*

## 7 ENVIRONMENTAL IMPACT OF FURNITURE (TAUW)

In order to get insight in the over-all environmental impact of furniture one has to consider the whole life cycle of furniture. This life cycle starts with the winning of raw materials and ends with the disposal of the furniture.

The present feasibility study includes a global, qualitative overview of environmental aspects. In the possible next phase of the project a more detailed, quantitative study of the environmental impact of furniture will be given.

### 7.1 PRODUCTION

#### 7.1.1 GENERAL

This phase includes the winning and production of raw materials and other resources and the production of furniture itself. In general the environmental load related to the production of raw materials is dominant as compared to the production of the furniture.

Therefore the focus will be on the environmental aspects of the main materials (including surface treatment) that are being used in furniture:

- wood;
- wood-based panels;
- plastics;
- metals;
- textiles;
- leather;
- foam materials;
- glass.

According to the Swedish furniture industry the average, Swedish furniture consists of 70 w% wood(-based material), 15 w% padding materials (mainly polyurethane and polyester foam), 10 w% metals and 5 w% other materials (plastics, textiles, glass, etc.) [1]. It is to be expected that the average, European furniture will have a comparable material split-up.

#### 7.1.2 MATERIAL RELATED ENVIRONMENTAL ASPECTS

Below an overview is given of the possible environmental impact related to the materials that are commonly used in furniture.

##### Wood

- clear-cutting of forests
- emissions of toxic compounds (in case of impregnating or other treatment with fungicides etc.)

##### Wood based panels

- use of glues, air emissions (formaldehyde, .....)

##### Plastics

- energy use
- air emissions (Volatile Organic Components, VOC)
- in case of plastic foam emissions to air of blowing agents, such as HCFCs (ozone depleting) or pentane (VOC)
- toxic additives such as flame retardants and heavy metals (emissions during disposal)

##### Metals

- energy use
- waste related to production of raw material

- emissions of heavy metals and other compounds (in case of surface treatment, galvanic processing)

Lacquering, painting (mainly for wood and metals)

- air emission of VOC (in case of solvent-based lacquering)
- dangerous waste (spraying losses, etc.)
- emissions of heavy metals (at end-of-life of furniture)

Textiles

- use of pesticides (in case of natural fibres)
- use of brominated flame retardants
- VOC emissions to air (in case of plastic fibres)
- air emissions (formaldehyde, etc.)
- water emissions (dyes, pigments, fungicides)
- durability (during use-phase)

Leather

- air emission of VOC (in case of solvent-based lacquering)
- water emission of chromium compounds
- durability (during use-phase)

Glues

- air emission of VOC (in case of solvent-based glue)

### 7.1.3 ENERGY USE OF MATERIALS

Energy use is an important indicator for the environmental impact of a material or part. Energy consumption related to the production of materials means that fuels are being consumed and involves emissions of greenhouse gas (carbon dioxide) and eventually toxic or acidifying compounds, such as sulfur dioxide or nitrogen oxides. The table below indicates how much energy is needed to produce one kg of material. The calorific value of the material is not included in the numbers given, because this energy will not be recovered by the common European furniture waste disposal method, *i.e.* landfill. Please note that the energy values may vary considerably according to processing.

**TABLE 6 PROCESS ENERGY OF MATERIALS (INDICATIVE VALUES)**

Material	Energy, exclusive calorific value (MJ/kg)	Ref.
wood	5	[1] Draft report ecolabel chairs, Tebodin, June 1993 <i>Concept eindrapport Milieukeur stoelen, Tebodin, juni 1993</i>
wood-based panels	6	[2] Prospects for an European Environmental Label for Furniture, Cognis, June 1996
plastics	32 (PP) – 98 (PET)	[2]
PUR (polyether) foam	85	[2]
plastics recycled	10	[1]
steel	23	[1]
steel recycled	10	[1]
aluminium	198	[1]
aluminium recycled	10	[1]
textiles	57	[1]
leather	14	[1]
glass	8	[2]

The Table 6 shows that especially primary aluminium and some plastics (PUR, PET) require much energy per kg.

## 7.2 USE AND DISPOSAL OF FURNITURE

The amount and composition of waste originating from furniture depend among others on the following parameters:

1. Lifetime, which in turn is influenced by parameters such as durability, quality and ease of cleaning. The reason for disposal of furniture may vary from damage to faded colours or stains for textile part.
2. Ease of disassembly  
If furniture can be disassembled easily, this will facilitate the reuse or recycling of furniture parts and thus reduce the amount of waste to be incinerated or landfilled. Ease of disassembly can be achieved by avoiding that different materials are connected by techniques such as glueing or welding.
3. Composition of furniture  
The design and material selection determine whether parts of a piece of furniture can be reused or recycled. Parts which are not reused or recycled will be landfilled (or incinerated). If these materials contain toxic compounds, this waste treatment may lead to emissions of those compounds to air, bottom or water.
4. Possibility of take-back  
A manufacturer or retailer might offer consumers the possibility to lease furniture or to bring their old furniture back. This way old furniture is collected and is thus available for reuse/recycling. According to a study by a Dutch furniture manufacturer this could lead to a reduction of the environmental load of furniture by 50%.

## 7.3 ENVIRONMENTAL ASSESSMENTS OF ACTORS IN THE MARKET(KNI)

The ranking made by actors in the furniture market shows a high concern for components like foams, plastics and wooden boards (Table 7). Other causes of emissions during production, use or disposal - such as solvents, VOCs, flame retardants and adhesives - are also considered of importance for labelling. Only fittings and tissue are valued as less relevant items in the environmental context. The low ranking of wood and timber, the most important inputs in the furniture industry, is surprising. None of the listed components are seen as one posing no environmental harm at all.

**TABLE 7 ENVIRONMENTAL RELEVANCE OF FURNITURE COMPONENTS**

Components	very important	less important
foams	16	2
emissions (e.g. formaldehyde)	16	3
solvents	15	3
flame retardants	15	5
adhesives	14	4
VOC	14	4
plastics	13	4
wooden boards	11	4
leather	10	6
wood / timber	9	7
tissues, fabric	8	8
fittings	7	8

*Source: Assessments of Actors in the Furniture Market, KNI, 2000*

## 8 COMPARISON OF DIFFERENT ECOLABELS (TAUW)

### 8.1 DEFINITION OF THE PRODUCT GROUP

The definition of the product group varies between the different Eco-labels. There are labels which focus on special furniture (such as desk furniture) and labels which include a whole variety of furniture:

*Österreichisches Umweltzeichen UZ 06, Austria*

House-furnishing, including kitchen- and children-furniture (in accordance with ÖNORM A 1600, part 1):

- cupboards;
- seats (without foamed parts);
- tables;
- beds (excluding mattresses).

*Österreichisches Umweltzeichen UZ 34, Austria*

Desk-chairs and swivel-chairs.

*Marque NF Environnement Ameublement "Mobilier de Bureau", France*

Desk chairs, desks and desk-cupboards

*Allgemeine Güte- und Prüfbestimmungen für Möbel RAL-RG 430, Germany*

Included are:

- cupboards (used in living-room, kitchen and bath-room) ;
- tables;
- chairs, sofa's;
- beds;
- school furniture;
- outdoor-furniture.

Other furniture types, such as desk furniture will be included in the product-group in the future.

*Grundlage für Umweltzeichenvergabe, Emissionsarme Produkte aus Holz und Holzwerkstoffen, RAL-UZ 38, Germany*

Applies for end-products used in-house (e.g. furniture, in-house doors, parquet, wooden floors), and containing at least 50% wood or wood-based products (chipboard, MDF, etc.). Wooden window frames do not form a part off the product group.

*ÖkoControl, Gesellschaft für Qualitätsstandards ökologischer Einrichtungshäuser mbH, Germany (Ecolabel, Germany)*

Included are:

- furniture made of massive wood;
- furniture containing padding;
- mattresses.

*Milieukeur meubelen, The Netherlands*

The following types of furniture are included:

- chairs (included chairs intended for outdoor [gardens], office, dining, and cafe's), seats, sofa's and stools;
- tables and desks;
- cupboards, racks;
- beds, bedsteads (excluding mattresses);
- counters (e.g. used in kitchens).

Bathroom and medical furniture do not form part of the product group.



*Nordic Swan, Nordic countries*

Indoor furniture and fitments, i.e. products that are movable, portable or fixed to a wall and used to furnish rooms. Furniture intended for outdoor use does not form part of the product group.

Other existing Eco-labels are:

- TÜV Umweltsiegel Möbel (Ecolabel for furniture, TÜV, Germany);
- IBR Prüfsiegel, (Eco-label for furniture, Institut für Baubiologie, Germany).

These labels have not been included in the study because at the time no detailed data were available.

## **8.2 OVERVIEW OF CRITERIA**

The criteria which apply for the different labels are summarised in Table 8. If a label has a requirement for an environmental topic, this is indicated by a + sign in the corresponding field in the table. A more detailed overview of the labels is given in annex 11.3.

A manufacturer has to prove that his furniture complies with the criteria of an Eco-label, before he is allowed to carry the label on his products. Compliance with criteria can be guaranteed by actual testing/analysing or by a declaration of the manufacturer and eventually his supplier(s). The decision whether a declaration will suffice or whether tests are necessary will depend on the reliability of a declaration and on the costs for testing. Furthermore some aspects can -technically spoken- easily be covered by a declaration (e.g. brominated flame retardants are not used), whereas other aspects may require actual tests/analyses (e.g. emission to air of toxic compounds during use of the furniture).

**TABLE 8 OVERVIEW OF DIFFERENT EUROPEAN ECO-LABELS FOR FURNITURE.**

+ = env. aspect covered by label (+) = env. aspect partly covered by label

ASPECT	LABEL/ORGANISATION/COUNTRY						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
<b>Wood</b>							
Forresting	+	+	+	+	+	+	+
Use of fungicides, etc.	+			+	+		(+)
Heavy metals in coatings	+	+	+	+	+	+	+
Coating (VOC emissions, overspray losses)	+	(+)	+	(+)	+	+	(+)
Formaldehyde emission (chip-board)	+	+	+	+	+	+	+
<b>Plastics</b>							
Material choice	+		+	+	+		+
CFCs	+	+		+			+
Flame retardants							
Heavy metals	+						
Marking/ Recycling	+	(+)			(+)		(+)
<b>Metals</b>							
Raw material/recycling	(+)				(+)		(+)
Galvanic processing; emissions	+	+					
Coating (VOC emissions, overspray losses)	+	(+)	(+)	(+)	+		(+)
Heavy metals	+	+	+	+	+		+

ASPECT	LABEL/ORGANISATION/COUNTRY						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
<b>Textiles</b>							
Pesticides, etc.	+		+		+		
Chlorinated fibres	+				+		+
Flame retardants	+		+		+		+
Azo dyes	+		+		+		+
Heavy metals		+	+		+		+
VOC/ formaldehyde emissions	+						
<b>Leather</b>							
Chromium	+						+
Azo dyes	+						+
Heavy metals	+						+
<b>Glues</b>							
VOC emissions	+						
<b>Energy use</b>							
max. energy defined		+			(+)		
<b>Functional aspects</b>							
Quality				+	+		+
Health, safety			+		+		+
(Dis)assembly	+		+	+	+		+
(Artificial) Leather, quality	+						
Textile, quality	+				+		
Packaging	+				+	+	+
Take back guarantee							+

### 8.3 PRODUCT GROUPS

As already mentioned the definition of the product group differs between the labels. Roughly speaking, three types of product groups can be distinguished:

1. Product group including many types of furniture  
Some labels within this group include special furniture like outdoor furniture or kitchen furniture, others exclude these types.
2. Product group focussed on one material.  
There are several labels for wooden furniture.
3. Product group focussed on one type of furniture.  
In France and Germany there exist labels for desk-furniture.

The labels of group 1 and 3 in general include criteria for a variety of materials. The labels of group 2 refer mainly to one material. Additional requirements, e.g. for metal parts used to fix wooden parts, might be included. Labels of group 3 sometimes include criteria based on the maximum amount of material or energy to be used per product. This is not the case for labels of the other groups, because the size and construction of the furniture covered by such a label vary widely.

In the first Ad Hoc Working Group meeting for this product group (Brussels, 28 September 2000) the different possibilities for the definition of the product group have been discussed. Most participants appeared to be in favour of a product group that covers a wide range of furniture. The problem of defining criteria that fit to the different types of furniture belonging to this product group, could be overcome by using subgroups within the product group.

### 8.4 CRITERIA OF THE LABELS

The existing labels address most of the relevant environmental topics:

1. Wood  
All labels have criteria for wood and wood-based material. The criteria cover sustainable forresting and toxic or environmentally relevant compounds, such as heavy metals, formaldehyde and volatile organic compounds (VOC). VOC is covered in different ways, e.g. by a maximum concentration of VOC in coatings or by limiting VOC emission during coating by appropriate equipment.
2. Metal  
The labels for furniture (general) and desk-furniture all contain criteria for metal parts. Ökocontrol does not allow use of major metal parts.  
The criteria refer to use of recycled metals (Al especially), galvanic processing (restriction of emissions of metals to water) and coating (restricting VOC emission).
3. Plastics  
Some labels allow only specified materials, one label excludes PVC. Further requirements focus on CFCs, additives (metals, flame retardants,...) and on marking and recycling.  
Ökocontrol does not allow use of plastics.
4. Textile  
The number of requirements for this material varies strongly per label. Criteria refer to material, additives, pigments and emission of formaldehyde and VOC. Two labels exclude chlorinated fibers.
5. Leather  
Only two labels have criteria for leather. Topics are the use of chromium, azo dyes and heavy metals.
6. Stone-like material  
Only the Dutch Milieukeur has criteria for this material, due to the fact that kitchen furniture (worktop) is included.
7. Energy consumption  
The French label defines a maximum energy consumption for chairs and cupboards. This is to be calculated on basis of the energy content of raw materials. The Nordic Swan la-

bel has a criterion regarding the maximum energy consumption for the manufacturing of wood-based panels.

8. Functional aspects

The labels contain a lot of criteria, for the product itself as well as for the materials which are being used. Reference is made to a number of standards (ISO, BS, RAL, ...).

9. Assembly/disassembly/durability

Most labels require that the product can be disassembled easily at the end-of-life. This way recycling of the different materials used in the furniture is facilitated.

It is not clear which percentage of current European furniture would comply with the different Eco-labels. Information about the number of applications for the different labels is also lacking.

The potential environmental improvement related to the above-mentioned criteria is not known. This potential improvement depends on several factors such as:

- interest of manufacturers, retailers and consumers in a European Eco-label for furniture;
- present environmental performance of European furniture. If for example almost all current furniture is free of foams produced with CFCs, a criterion about CFC-free foams will not lead to environmental improvement;
- exact definition of criteria. A criterion for VOC for example could lead to more or less reduction of VOC emissions, depending on among others the severeness of the criterion.

## 9 EXAMPLES OF BEST PRACTICE (KNI & TAUW)

This section gives some examples of best practice firms and projects in Europe. The sample is in no way representative, neither does it claim to cover all relevant projects in all EU member states. The examples are not intended as models for replication, but rather to serve as inspiring examples and to encourage innovation. The heterogeneity of ideas and approaches listed reflects the diversity of the market. All of the firms shown have a long and successful business tradition characterised by a proven capability to tackle environmental problems and create marketable and innovative solutions.

### **Jesper Office S/A, Holstebro, (DK)**

Products: office furniture

Personnel: 160

The office furniture line "Cabale" was introduced in 1996 and the firm chose to apply for the Swan label for all parts of the line from the start. The company wanted to be the first in the Danish market to introduce a labelled series. They are still unique in Scandinavia. It took 2 years of paperwork to get the entitlement. Because of the innovations implemented the labelled products now fulfil not only all present but also foreseeable future environmental state regulations.

The company did not have to change much of its own production process when adopting the criteria set by the Swan label. The firm's activities are mainly component assembly and product sales. More than 800 different components had to be documented and some substituted. All suppliers had to be carefully checked and selected to comply with the new rules.

Most purchasers in the public and private sector in Denmark favour green procurement. Purchasing decisions rely heavily on the Swan label. Without such a market demand the Eco-label would hardly be profitable. Public awareness of environmental and health issues has been consistently high in Denmark. Almost every furniture manufacturer aspires to a "green" image. But barriers to access to the Nordic Swan label are high for all firms that have to change substantial parts of their production process.

### **HÅG asa, Oslo (NO)**

[www.hag.no](http://www.hag.no)

Products: office and conference seating

Personnel: about 250 in Norway, 500 worldwide

HÅG is one of the leading manufacturer of seating solutions for offices and conferences in Europe, and the largest in Norway. HÅG export about 75% of their products, mainly to European markets. "HÅG's objective is to be a sustainable company" (Environmental Report 1999) and to be ahead of governmental regulations in the environmental fields.

Among the objectives realised in 1999 are: 77% reuse of packaging for purchased goods, 25% of suppliers have been EMAS or ISO 14001 approved. The challenge for the years to come is the design of "chairs in a cycle": a closed cycle of materials using recycled material in products, and producer responsibility for reuse and recycling of products after disposal.

For 5 years now HÅG has provided take-back systems for used chairs in Scandinavia and Germany, and is well known for using recycled plastic bottle caps in their chairs. (HÅG also participates in developing Nordic guidelines for Environmental Performance Declarations Type 3, based upon LCA.) The firm is ISO 14001 certified and, in 1996, HÅG Røros was the first furniture manufacturer in Scandinavia to be EMAS registered. HÅG has not applied for the Nordic Swan because the label is only well known in Scandinavia. The annual environmental report is directly available on the internet.

**Kambium Möbelwerkstätten, Lindlar (D)**

Products: kitchen and office furniture

Personnel: 35

Kambium's procurement strategy concentrates on natural input materials such as wood and stone originating from locations in the close vicinity, which reduces transportation costs. The managers state that in general it is no longer a real difficulty to obtain environmentally sound input materials. The energy for the production process comes from a windmill located on the grounds and is run by Kambium itself. The rotor blades of the power station are a visible landmark for all visiting customers and demonstrate the corporate image visually. The firm's products in the two market sections aim at a very high functional quality standard.

Kambium is one of the known pioneers that very early concentrated on environmentally friendly product qualities. The firm has struggled hard over the years to get established in a highly competitive market. It has always used its own firm name as a brand name and has never considered applying for any of the existing Eco-labels to profile its environmental commitment. The managers are now very reluctant to accept any other label, fearing this might water down the firm's reputation in the market as tough on ecological matters. The second reason is the apparently shrinking ecological awareness of clients that they experienced over the last year.

**Wilkhahn, Wilkening und Hahne, Bad Münden (D)**[www.wilkhahn.com](http://www.wilkhahn.com)

Products: Office furniture, 50% of the production is exported.

Personnel: 500 in Bad Münden, 615 worldwide

Since 1990 principles of ecological design (materials, construction, packing and transport, energy, maintenance, recycling etc.) have been implemented and regularly monitored. A sustainability report has been published covering current environmental, social and economic issues from the corporate perspective.

The delivery of environmental information on all raw materials, products and production processes is a precondition for every supplier seeking stable consumer relations. Procurement of environmentally acceptable materials has a high priority. Most supplying firms work in close connection with Wilkhahn on new designs ("simultaneous engineering"). Outsourcing and close co-operation with market partners are two sides of the same coin.

Wilkhahn is a holder of one German product label from TÜV and has been certified by EMAS/ISO 14001.

**Team 7, Natürlich Wohnen, Ried, (A)**[www.team7.at](http://www.team7.at)

Products: kitchen furniture, domestic furniture (children's, dining room, bedroom furniture) and contract furniture for hotels and offices

Personnel: 260

Team 7 is one of the pioneering manufacturers of environmentally sound furniture in the Austrian market. The focus is on the use of ecologically responsible input materials such as sustainable timber. Characteristics such as solvent-free surfaces (e.g. oil finish), metal-free beds and wardrobes and the exclusive use of "higher quality materials" are emphasised. "Natural Living" is the firm's slogan, standing for its identity and philosophy.

Team 7 is holder of different labels (IBR, Austrian Eco-label "Hundertwasserzeichen" UZ 06/07) and certified by EMAS. The firm never makes extensive use of the acquired labels. Instead, these are only disclosed when customers ask about environmental side effects or hazards associated with the production or use of the company's furniture. Clients from overseas have more trust in "official" labels than in the reputation of a remote (often unknown)

firm. Team 7 therefore is very interested in the development of a new EU Eco-label and will probably apply for it.

### **Bene Büromöbel, Waidhofen (A)**

www.bene.com

Products: contract furniture for offices, schools, hotels, private dwellings

Personnel: 735

The firm is active in 12 countries, many of them in Eastern Europe

Bene is strongly oriented towards the development of new design concepts. In 1996 the firm received an Eco-design award from the Austrian Federal Ministry for the Environment, Youth and Family for its seating furniture.

Recently Bene has been assigned the Ecology Award of Lower Austrian Industry (Umweltpreis der NÖ Industrie) for the development and implementation of an environmentally friendly lacquering process for furniture. In addition, the manufacturer is certified by EMAS. The Environmental Report 1998 is available on the internet. Therein another environmental aim is described: waste reduction. "The reduction of harmful waste from 50.6 tons in 1997 to 37.8 tons in 1998 is especially worth mentioning. It corresponds to a decrease of 34.7%".

Substitutions have been made for harmful materials. "Because PVC can produce dioxin at the incineration stage or hydrochloric acid when water is used for fire protection, all plastic components are made from ABS and polypropylene (PP)."

The firm is one of the few holders of the Austrian Eco-label for furniture (office seating and office swivel chairs, UZ 34).

Labels and brand names are seen as an essential feature of a successful marketing strategy. Existing labels are evaluated pragmatically. If the expected added value is promising the firm applies for the scheme. If, for example, important client groups come to adopt green procurement strategies, Bene would not hesitate to apply for the new Eco-label. Currently they are experiencing a decline in consumer awareness on ecological issues.

### **Best Practice<sup>7</sup>: Design Furniture (NL)<sup>8</sup>**

The products in question are chairs, sofas and tables. The manufacturer has been working on internal environmental management. As a next step chain management<sup>9</sup> was initiated. Several companies were willing to participate in this process. Among them a supplier of cowhides, a supplier of padding material and a combination of furniture retailers. In 1996 several environmental topics were tackled, i.e. leather, padding material and take-back.

After eighteen months of discussion, experiments and evaluation, several improvements were achieved. The leather tannery had achieved an environmental improvement of 11% by cutting the hides into pieces appropriate for the furniture manufacturer before tanning. In this way those parts of the hides which are not suitable for furniture are not tanned. The proteins of these parts are used, e.g., for glue production. The leather tannery has reduced its dangerous waste by 50% because fewer hides are tanned.

The supplier of padding material reduced foam waste by 26%, mainly by changing the form of the seat and back of the chairs and sofas.

---

<sup>7</sup> The examples collected by TAUW in the Netherlands are illustrated without displaying the firm's name and address

<sup>8</sup> Cleaner production, Internet [www.schonerproduceren.nl](http://www.schonerproduceren.nl)

<sup>9</sup> chain management: integral management of a product chain, i.e. environmentally, socially and economically sound management of the production-, consumption-, distribution- and end-of-life phase of a product



The biggest potential environmental improvement turned out to be related to recycling and reuse of discarded furniture. This could lead to a reduction of the environmental load by 50%. At present the furniture manufacturer is working on this idea together with the combination of furniture retailers. Lease of furniture could be an option. The lack of interest of consumers regarding leasing appears to be the major bottleneck.

#### **Best Practice: Office Furniture<sup>10</sup> (NL)**

The manufacturer designs, produces and sells office furniture, such as cupboards, desks and chairs. A new, environment-friendly chair has been developed in 1994. The following results have been achieved:

- reduction of waste by recycling of the nylon foot and increase of recycling of steel;
- reduction of raw material use by use of recycled plastics for black, plastic parts of a chair;
- lower energy content of the chair;
- reduction of VOC emissions by 80%;
- reduction of greenhouse gases by 37%;
- reduction of acidifying emissions by 20%;
- reduction of life-cycle environmental costs from EU 5 to EU 2 per chair.

The manufacturer has worked together with several suppliers to realise the above-mentioned improvements. Take-back of wheels and gas-filled springs was also discussed with the suppliers.

The manufacturer is certified for environmental management (ISO 14001) and is at present working on the implementation of product-oriented environmental management.

#### **Best Practice: Wooden Furniture<sup>11</sup> (NL)**

The manufacturer produces pinewood furniture, such as cupboards, cabinets, tables, etc. A consultant has investigated in 1996 the environmental impact related to the whole life cycle of the products of this manufacturer. This LCA (Life Cycle Assessment) study resulted in an overview of environmental bottlenecks. However, no new improvement options were discovered.

#### **Best Practice: Knock Down Sofa's<sup>12</sup> (NL)**

This manufacturer has developed in 1998 a range of sofas which have to be assembled by the customer. The sofas can be disassembled easily at any time. The concept has several advantages from an environmental point of view:

- Production: the body of the sofa is made out of recycled plastics.
- Distribution: less space needed for storage and showing (factor 4 to 10). Less transport volume (factor 2) and packaging.
- Use: better reparability, parts of the sofa can be replaced.
- End-of-life: because of take-back guarantee recycling of sofas is possible. The ease of disassembly facilitates reuse or recycling of parts

---

<sup>10</sup> Promise, manual for ecodesign, TME e.a., 1994; *Promise, Handleiding voor milieugerichte productontwikkeling*, TME e.a., 1994

<sup>11</sup> Overview of environmental and energy-conscious projects, 7th edition, Novem, 1996; Milieu- en energiebewuste productontwikkeling en ketenbeheer. Overzicht van onderzoek- en demonstratieprojecten, 7<sup>e</sup> editie, Novem, 1996

<sup>12</sup> Environmental scan Novi Seats, Syntens, July 1998; *Milieu inovatiescan VOF Novi Seats, Syntens, July 1998*

## 10 MAIN OBSTACLES AND OPPORTUNITIES FOR A NEW EU ECO-LABEL (KNI)

Many of the following issues were raised by actors in the market in the course of the written questionnaire and the best practice interviews. The quotations are from these sources. Some of the presented strategies were developed by the research team. It should be stressed that no representative data were collected from the survey. Instead, general assessments and views among European actors and experts active in the furniture market are drawn upon<sup>13</sup>. It is expected that in this way the ongoing discussion of the labelling project for furniture will get some valuable incentives and new arguments.

### 10.1 NATIONAL CHARACTERISTICS TO BE CONSIDERED

It is not thought that national legislation might cause problems for the introduction of a new labelling scheme at the European level. On the contrary, the opportunities of a possible harmonisation of different labels are frequently welcomed. *“There is a need to harmonise all the national Eco-labels in Europe.”*

National rules and criteria applying to sustainable forest management (e.g. NL) should be considered or incorporated in the design for a new Eco-label. The Austrian labelling scheme is not thought to present any possible conflicts with the new EU scheme.

One serious problem put forward is that of UK's flame retardancy legislation. It is underlined that the idea of enhanced consumer (fire) protection need not be compromised by new criteria aiming at the reduction or even elimination of certain flame retardant chemicals. That conflict is already known from the experience of other EU Eco-labels. The trading company IKEA for example in general does not employ brominated flame retardants in tissues, except for furniture sold in the UK.<sup>14</sup>

### 10.2 OBSTACLES AND STRATEGIES

The main concern raised by the actors is the perceived lack of consumer preference for Eco-labelled products: *“Purchasers ... have shown themselves to be profoundly uninterested in Eco-labels.”* *“We know there is no real demand for an EU Eco-label on furniture.”* Such statements are supported by the very small market shares of labelled furniture in the EU. Without convincing a substantial proportion of manufacturers and the trading sector that there is real added value to be expected, the label will not succeed in the market.

There is an obvious need for complementary and supportive actions, some of which are similar to those recently described elsewhere<sup>15</sup>, others are more directly inspired by the statements of actors in the survey. Some of the proposals put forward are already part of the new revision of the Regulation 1980/2000 (see chapter 2). They are reiterated below to emphasise the urgency of the Regulation's implementation.

#### **Need for Policy Information**

The nature of an EU product label and its relation to other environmental policy instruments is still not well understood. An information campaign addressing key actors seems necessary to set out the differences between a state regulation with mandatory technical standards and a label with criteria that every firm is free to conform to or not. Very often the arguments raised by the actors in favour or against a label overlook these fundamental distinctions (e.g. cost arguments, compliance with new compulsory technical standards). One may take in illustration the objection of one actor: *“The cost of labelling works as an extra ‘tax’.”*

<sup>13</sup> For some more details see appendix 11.1

<sup>14</sup> See IKEA's web-site at [http://www.ikea.de/4\\_index\\_f2.htm](http://www.ikea.de/4_index_f2.htm) (December 2000)

<sup>15</sup> Allison, Ch., Carter, A. (2000) Study on different types of Environmental Labelling (ISO Type II and III Labels): Proposals for an Environmental Labelling Strategy.

### **Need for Integration of the Labelling Instrument**

The credibility and effectiveness of an Eco-label is often doubted. This scepticism can be countered by putting labelling into an explicit framework of different policy instruments (mandatory regulations, self regulation, environmental taxation, information policies, environmental targets, consumer protection etc.) and relevant environmental concepts (i.e. integrated product policy, IPP, life cycle assessment, LCA).

### **Need for Integration of Other Labels**

Other labels in the supply chain (e.g. for wood, wooden boards or textiles) should be checked and if possible openly referred to or even integrated in the criteria of the new EU Eco-label. *“For consumers it is best if this label includes international standards like PEFC.”* This could reduce confusion among consumers, streamline public policy and ease the application process for the label. A combined strategy could even generate synergies for the enhancement of public awareness for the labelling idea.

Some actors even argue that national Eco-labels for furniture should be given up in favour of a European scheme.

### **Need for Stepping up EU Marketing Efforts**

It is not clear for many actors in the furniture market whether a new label will generate added value and if so whether it will outweigh the costs. The benefits depend very much on the reputation of the Eco-label which is currently seen as ambiguous at best. Past experience in the furniture market (e.g. the Nordic Swan) is not considered successful. *“Check the number of products covered by existing labels – virtually non-existent”.*

It was especially firms that have already heavily invested in their image in the past who expressed fears of endangering their good will capital by accepting a less valued but very visible new label. In addition, the value of the EU Eco-label depends to a minor extent on the real behaviour of the single applying firm but also on the credibility of the environmental policy of the EU, which is often felt to be unconvincing.

### **Prepare the Label for a Range of Private Marketing Options**

Only about 20% of all furniture in the EU is sold under a brand name, the rest are no-name products.<sup>16</sup> Brand names have a high attractiveness in the market and generate higher revenues. Thus the new EU label will compete with all existing brand names of big retailers or manufacturers. If there are prospects of substantial benefits, these firms will nevertheless have a strong incentive to join. *“An Eco-label can be a success if associated with a brand or a high-developed environmental policy and communication (EMAS, ISO 14000, ...).”*

It seems as if it is mainly office furniture companies which have taken up ISO 14000f as a means of quality management. Other sectors are still far behind. It is above all this section that wants additional LCA-analysis to perform better in the market. *“Especially office furniture producers have expressed their need for LCAs.”*

The overwhelming majority of furniture products have no label or brand at all; it should be investigated what proportion is eligible for an Eco-label. From other experience (in the food sector) it is doubtful whether a no-name product can be more successfully sold with an attached Eco-label. Substantial additional marketing efforts are necessary in these circumstances to promote the new image and quality. Raising funds to cover these costs may present severe problems for firms. This is the segment in which cost arguments and price com-

---

<sup>16</sup> “Furniture is a no-brand product, only 20% of furniture sold is sold under a specific brand with high visibility”, (see <http://www.ueanet.com/furniturewaste/english/chapter6b.htm>). Report from the UEA project “Recovery of end-of cycle furniture and recycling of its materials. Furniture Waste and its treatment”

petition are most acute. The manufacturing firms remain anonymous and the products only sell on price and very obvious quality aspects. It should be studied in depth what the potential is for trading and wholesale companies in these segments of the furniture market to introduce and maintain an Eco-label.

Some of the above mentioned uncertainties can be countered by investing in the promotion and development of marketing strategies at EU level. That step should be elaborated with stakeholders in the market. To compensate for some of the reported weaknesses of an Eco-label it seems necessary to prepare the scheme for specific economic settings. A few examples may illustrate this:

1. The Eco-label as a premium: firms display the Eco-label on a product or product line and thereby indicate their responsibility and contribution in the environmental field. This strategy may be useful when attracting new, or retaining and reassuring existing, "green" consumers. The Eco-label does not conflict with the general image of the company, but rather the environmental profile of the firm is thought to be of permanent importance in the market.
2. The firm applies for the Eco-label and "hides" it afterwards: The label is only disclosed when customers ask for environmental details or express concerns. This helps avoid conflicts and trade-offs between the Eco-label and a well established brand name or even a company image that is positioned far away from "green". The label thus becomes an auxiliary but valuable instrument to approach new customers of a different orientation without endangering the prior market position. The label serves as a signal for a basic environmental quality of a product but other functional aspects are considered as more relevant.

This "hiding"-strategy is also interesting for green frontrunners that have a high reputation in the market and do not want to risk a watering down of the corporate criteria by adopting an EU Eco-label<sup>17</sup>. Clients from outside the traditional markets and ignorant of the firms' reputation at home may nevertheless ask for that label. Labels economise on information costs and signal a certain level of reliability in expanding markets where it is difficult to communicate the firms' specific message and image to customers.

3. In the no-name market segments presumably only a very popular EU Eco-label can persuade manufacturers and trading companies to attach the Eco-label to their products. That desirable status of popularity seems far off yet.

More of these strategies at business level should be developed. They could be part of an information policy of the EU or the national bodies to give support for practitioners on how to successfully handle an Eco-label. To strengthen incentives it might be useful to consider a structure in which the labelling institution is more independent, with its main revenues stemming from the purchase of entitlements and corresponding royalties.

### **Need for Green Procurement**

Quite a few actors claim that the market share of labelled furniture will be extremely small. Average estimates range from about 5% to 16% in the respective market segments. The feeling of shrinking public and private awareness on ecological issues is widespread, even among some of the pioneering firms. Many express the hope that the EU and the member states strengthen credibility by changing their own purchasing behaviour, giving absolute priority to Eco-labelled products. That would give the market a clear signal and at the same time raise the credibility of policy claims put forward against the industry. *"Alternatively, if [private] demand does not exist, it can be created through awareness activities or through procurement requirements in the case of public procurements."* Denmark seems to be an

<sup>17</sup> The described "hiding"-strategy, though probably not widespread in the market, is not just a theoretical concept but was used by one of the interviewed best practice-firms.

excellent example, where the Nordic Swan is seen by private firms as an attractive prerequisite for successful sales to public administrations.

### **Need for Stakeholder Participation**

The criteria for the new EU Eco-label should be developed together with potentially interested stakeholders. It seems important to call for the participation of these firms and organisations because in the past labels have not found an adequate response in the market. It is important to work on the label with those parties in particular which are subsequently to apply for it. Apparently the large firms are not among these and many of the European associations are quite sceptical as well.

### **Role of Fashions**

*“The furniture industry is a “fashion” industry, where fashion will never be governed by a label.”* The market shares of furniture that are clearly identifiable as fashionable goods should be identified in a market study. Ecological design can to a certain degree pick up changing trends and adopt to them. At least one of the documented best practice-examples indicates that new design and environmental product qualities are compatible aims.

### **Changing Market Prospects**

Consumption patterns are closely connected with incomes. In some markets more "intangible" benefits like ecological values become more dominant in phases of growing prosperity. *“With the end of the economic crisis and the return to higher employment, we can expect a change in consumers’ attitudes when they purchase goods, e.g. fitness for use linked to ethical values.”* Price competition from outside the EU can be offset by strategies that closely couple product and image value of furniture. *“Differentiate from non EU imports, particularly those from low wage rate economies”.*

## 11 APPENDIX

### 11.1 QUESTIONNAIRE FOR ACTORS AND EXPERTS IN THE FURNITURE MARKET IN THE EU MEMBER STATES

The following questionnaire was disseminated throughout the EU to associations in the furniture and the corresponding supplying industries, consumer organisations, environmental organisations, trade unions, firms, labelling organisations and single experts. The addresses were collected through a snowball system starting at EU level with the Competent Body and the Consultation Forum who gave their expertise and knowledge to fill that mailing list. Some of the contacted organisations spread the questionnaire to their members. That makes it difficult to calculate the resulting response rate accurately.

Origin of Responses	Sum of Returned Questionnaires	Response Rate
A (1x), B (2x), D (3x), DK (3x), EU (6x), F (1x), FIN (2x), I (2x), NL (2x), UK (6x)	28	22% (maximum)

Dear Sir / Madam

As you probably already know the Commission of the EU has given us the task of carrying out a *FEASIBILITY STUDY* on the introduction of a new Eco-label for furniture. This research is currently in progress. All actors that have expressed an interest to participate in the discussion on the implementation of the new labelling are now kindly asked to express their views and expectations in more detail by completing this short questionnaire.

Assessing the acceptance of the new label in the market is a crucial precondition for the design of adequate strategies to support its future introduction. In the process of the *FEASIBILITY STUDY* this is seen as a central step towards a better understanding of the different views, the opportunities and barriers associated with setting up this new labelling scheme. If you want to add further comments or material to be considered in the *FEASIBILITY STUDY*, please feel free to do so.

The results of this inquiry will be part of a report to the Commission of the EU in November. Please send us your replies not later than 17 November 2000.

*For your convenience it should be easiest to fill out the document, save it under a different name to your hard drive and email it as a file attachment back to: [juergen.baersch@kni.de](mailto:juergen.baersch@kni.de). It is also possible to fax the pages to ++49.221.931.207.20*

Sincerely yours  
Juergen Baersch

Country Name	
Organisation/Firm Address	
Phone FAX	
Email	
www	

1. Which market side do you think has the most explicit or obvious interest in (or demand for) a new EU Eco-label for furniture? (please mark with "X")

low interest	high interest	
		consumers
		public administrations (federal, state, municipality etc.)
		procurement departments of enterprises
		retailers
		furniture manufacturers
		timber and woodbased industry
		other supplying industry (leather, tissues, fittings, etc.)
		financing institutions
		environmental organisations
		NGOs in general
		other (please specify):

2. What kind of furniture should be the subject of a new EU Eco-label? Do you have any priorities to suggest? (please mark with "X")

high priority	low priority	
		outdoor furniture in general
		indoor furniture in general
		domestic furniture in general
		living room furniture
		bathroom furniture
		kitchen furniture
		other (please specify):
		contract furniture in general
		office furniture
		shop furniture
		school furniture
		other (please specify):
		furniture for children
		wooden furniture
		upholstered furniture
		furniture for special uses (e.g. seats for aeroplanes, motor vehicles and/or medical, surgical, dental or veterinary f.)
		all kinds of furniture
		other (please specify):

3. What particular components of furniture pose the most serious *environmental problems* and should therefore be tackled by a new EU labelling scheme? (please mark with "X")

less important	very important	
		foams
		wooden boards
		adhesives
		solvents
		VOC
		emissions (e.g. formaldehyde)
		wood / timber
		plastics
		fittings
		leather
		tissues, fabric
		flame retardants
		other (please specify):

4. Are there any important national and individual characteristics to be considered when designing a labelling scheme that will be introduced in all EU Member States (e.g. existing national labels, legal restrictions, consumerism, new technologies, import-export relations, etc.)?

5. What market share are you expecting in your country for a new EU Eco-label in the near future?

A minimum share of ...

	%
--	---

up to a maximum of ...

	%
--	---

in the furniture market for ...

--

seems realistic.

(indicate kind of market section, see above 2)

6. What are in your view the main hurdles to be surmounted to successfully launch a new EU Eco-label?

7. What do you think are the main opportunities and added value to be expected by the insertion of a new EU Eco-label?



Would you like to add a further comment (e.g. examples of best practice in the furniture industry, or any other remarks on the project)?

*WE WOULD LIKE TO THANK YOU FOR YOUR COOPERATION AND THE TIME YOU HAVE DEDICATED TO THIS QUESTIONNAIRE. ALL THOSE RESPONDING WILL OF COURSE BE KEPT INFORMED ON THE PROGRESS OF THE FEASIBILITY STUDY VIA OUR MAILING LIST.*

Date	
------	--

If you have any questions please contact one of the persons listed below.

Klaus Novy Institut (KNI) Mr Jürgen Bärsch ( <a href="mailto:juergen.baersch@kni.de">juergen.baersch@kni.de</a> ) Mr Herbert Klemisch ( <a href="mailto:herbert.klemisch@kni.de">herbert.klemisch@kni.de</a> ) fon ++49.221.931.207.0 fax ++49.221.931.207.20 internet <a href="http://www.kni.de">www.kni.de</a>	Federal Environmental Agency, FEA (CB) Mr Christian Löwe ( <a href="mailto:christian.loewe@uba.de">christian.loewe@uba.de</a> ) Mr Uwe Thurner ( <a href="mailto:joern-uwe.thurner@uba.de">joern-uwe.thurner@uba.de</a> ) fon ++49.30.8903.3025 fax ++49.30.8903.3099 internet <a href="http://www.uba.de">www.uba.de</a>
--	--

Further details on the Eco-label scheme, the relevant procedures and the legal context can be obtained at <http://europa.eu.int/comm/environment/ecolabel/> or by email from [ecolabel@dg11.cec.be](mailto:ecolabel@dg11.cec.be) (DG XI-E.4, European Commission).

## **11.2 FIRST INFORMATION LEAFLET DISTRIBUTED ON THE FEASIBILITY STUDY**

The following information leaflet was distributed at an early stage to everybody on the mailing list of the project.

### **Feasibility Study EU Eco-Label Furniture**

In 1992 the Council of the EU adopted Regulation 880/92 establishing a Community Eco-label award scheme. Meanwhile 55 "licences" for the use of the logo have been granted for 240 products. The range of eligible products will be expanded further. The Regulation is to be revised by the Council in 2000.

The Commission of the EU has now decided to carry out a new feasibility study on the introduction of an Eco-label for furniture. This is the first step in the process of establishing a label for a new product group. The institutes listed below in Germany (KNI) and the Netherlands (TAUW) were commissioned to investigate the matter and report their findings to the Commission at the end of the year.



**EU Eco-Label**

The Community Eco-label scheme is one element of a wide strategy aimed at promoting sustainable production and consumption. The main objectives of the scheme are 1) to promote the design, production, marketing and use of products which have a reduced environ-

mental impact during their entire life cycle, and 2) to provide consumers with better information on the environmental impact of products.

The feasibility study will collect data on the following aspects: the market structure, the interests of the parties concerned, the relevance and potential benefits of the label for the environment, the risks of distortion between the various national segments of the internal market and, finally, international issues. An ad hoc working group (AHWG) composed of experts from the Member States and representatives of all the parties concerned will review the central results of the feasibility study.

**A first fact finding paper will be presented at an AHWG meeting in Brussels 28 September 2000. Organisations wishing to attend this workshop are requested to state their interest as soon as possible by referring to the KNI and/or FEA (see below).**

On the basis of the results of the feasibility study, an analysis of the lifecycle of the group of products is to be made. This comprises an inventory and evaluation of the environmental impact of the group of products, a market study and a set of criteria for the Eco-label.

The feasibility study consists of seven modules:

	<i>deadlines</i>
1) Analyses of the structure of the European furniture market	August/September
2) An inventory of existing Eco-labels in the EU Member States	August/September
3) Workshop of the AHWG in Brussels	28 September
4) Analyses of best practices in the furniture industry	October
5) Survey of statements and assessments from key actors regarding the acceptability of a new Eco-label in the respective market sectors	October/November
6) Identification of main hurdles and opportunities for the introduction of an Eco-label	November
7) Final report to the EU	November/December

### Role of key actors

It is crucial for the success of a new Eco-label that the scheme finds acceptance in the market. To research this is one of the main reasons for launching a feasibility study at an early stage. All interested parties are therefore asked to participate in this process by bringing in their expertise. The different groups range from representatives of industry, commerce (both groups including trade unions as appropriate) to consumer and environmental organisations.

The team of researchers is especially grateful for any material, data and information given to them that will contribute to a successful investigation. Please send any material preferably to the KNI. Anybody who wishes to participate should be aware of the deadlines of the above mentioned modules.

CALL FOR DATA

Currently the research team is looking for **data on existing national labels** for furniture (domestic, outdoor, bedroom, kitchen, office and play furniture etc.) and related products in the supply chain (chipboard, wood, textiles, leather, ...) within the EU. We plan to build up a synopsis of eco-labels with references to technical details and standards used.

*Please contact Mr Eric Deliege or Mr Pieter Luiten at TAUW*

CALL FOR DATA

Secondly we are gathering **market data** on the relevant sectors. For that purpose we are looking for data on import and export statistics of the different national furniture industries inside the EU. These data should ideally detail different kinds of furniture products (domestic, outdoor, bedroom, office etc.) and be available as time series. We are also interested in related industries delivering products and services to the furniture industry (timber, forestry, panels, chipboard etc.). In addition, we are looking for figures illustrating the market shares of big suppliers, producers, manufacturers and traders.

*Please contact Dr. Jürgen Bärsch at KNI*

**!!! Please Note !!!**

Any of the above data should reach us not later than end of August.

CONTACTS	
Klaus Novy Institut (KNI) Mr Jürgen Bärsch ( <a href="mailto:juergen.baersch@kni.de">juergen.baersch@kni.de</a> ) Mr Herbert Klemisch ( <a href="mailto:herbert.klemisch@kni.de">herbert.klemisch@kni.de</a> ) fon ++49.221.931.207.0 fax ++49.221.931.207.20 internet <a href="http://www.kni.de">www.kni.de</a>	Federal Environmental Agency, FEA (CB) Mr Christian Löwe ( <a href="mailto:christian.loewe@uba.de">christian.loewe@uba.de</a> ) Mr Uwe Thurner ( <a href="mailto:joern-uwe.thurner@uba.de">joern-uwe.thurner@uba.de</a> ) fon ++49.30.8903.3025 fax ++49.30.8903.3099 internet <a href="http://www.uba.de">www.uba.de</a>
IN COOPERATION WITH	
Stichting Milieukeur (CB) Mrs Ineke Vlot ( <a href="mailto:ivlot@milieukeur.nl">ivlot@milieukeur.nl</a> ) fon ++31.70.358.63.00 fax ++31.70.350.25.17 internet <a href="http://www.milieukeur.nl">www.milieukeur.nl</a>	TAUW Mr Eric Deliege ( <a href="mailto:ejd@tauw.nl">ejd@tauw.nl</a> ) fon ++31.570.699.911 Mr Pieter Luiten ( <a href="mailto:pwl@tauw.nl">pwl@tauw.nl</a> ) fon ++31.570.699.891 fax ++31.570.699.666 internet <a href="http://www.tauw.nl">www.tauw.nl</a>
EU	
European Commission DG "Environment" - E.4 Mr Simon Goss ( <a href="mailto:Simon.Goss@cec.eu.int">Simon.Goss@cec.eu.int</a> ) fon ++32.2.299.1200 fax ++32.2.295.5684 internet: <a href="http://europa.eu.int/ecolabel">http://europa.eu.int/ecolabel</a>	

Further details on the Eco-label scheme, the relevant procedures and the legal background can be obtained at <http://europa.eu.int/comm/environment/ecolabel/> or by email from [ecolabel@dg11.cec.be](mailto:ecolabel@dg11.cec.be) (DG XI-E.4, European Commission).

### 11.3 OVERVIEW OF ECO-LABELS FOR FURNITURE

The tables cover the requirements for different materials which are used in furniture and more general requirements regarding functional aspects, durability and disassembly at end-of-life. In the tables for each criterion reference is made to the chapter or paragraph of the original text of the label (e.g. 2.1.1). **The tables should be looked upon as a rough overview of the different requirements only.** It proved to be impossible to fit all exact requirements in the chosen, condensed format.

**TABLE 9 WOOD, BAMBOO, ROTAN, WOOD BASED PANELS**

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Forresting	Only wood from sustainable forresting. To be proved by FSC or similar certificate, or by manufacturers statement (2.1.1)	No wood for which use is forbidden by local laws or international agreements. (c 2)	FSC, Naturland/BUND [1.3]	FSC or similar (0.6.8)	Wood must be certified by a third party ( 5.3.1; § 4)	FSC, or similar certificate; (RAL-UZ 38)	The used wood should comply with the Washington species protection document (2.1.1)
Use of chemicals	Impregnating and other treatment with fungicides or bleaches and some specific chemicals are not allowed (2.1.2)			PCP < 3mg/kg lindane<0,5 mg/kg (0.6.3)	Wood may be treated with approved fungicides and insecticides. Impregnated wood is not allowed.	Not specifically mentioned, see 3.1.3	Impregnating with flame retardants is not allowed. (2.1.2)
Heavy metals in coatings	Concentration of the metals As, Cd, Pb, Cu, Hg and Zn < BAGA-limits [Dutch hazardous waste limits](2.1.3)	Pb, Cd, Cr(VI), As, Hg or their compounds are not allowed (c9)	Max. conc. for As,Pb,Sb,Cd,Cr,Co, Cu,Ni,Hg,Se.	Requirements for emission of heavy metals apply for lacquered surfaces of children-furniture (0.6.7)	Pb, Cd, Cr(VI), Ni, Sn, Hg or their compounds are not allowed. (5.9.1/2)	Not specifically mentioned; referring to guidelines (e.g. MAC, GeffStoffV) (3.1.3.1)	Coatings containing Pb, Cd, Cr(VI) or other toxic heavy metals are not allowed. (2.1.2)
VOC emissions (by coating process)	Air-emissions in accordance with Dutch guidelines or VOC-concentration in coating<15%, (2.1.4) VOC-concentration in glue< 10%	Net use of solvent (kg)/deposit of dry matter (kg)<4 (c 10)		Either cleaning of flue gases of lacquering, or VOC < 42% in coating material, or <25% for coatings used on furniture without 3D surfaces	Maximum concentration organic solvent 5%. (5.9.1)	Emissions in accordance with TA-Luft/EU-solvent guideline or maximum concentration 250/420 g/l VOC (3.1.3.1)	Concentration VOC<10%, emissions according to Austrian-guidelines (§ 77&81 GewO, LRG-K) (3.1)

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
				(c 0.6.8)			
Coating	Overspray < 30% if surface area $\geq 25 \text{ cm}^2$ (2.1.5). Emission to water is not allowed (2.1.6)		Only natural products allowed (wax, oils etc.) [1.7]		Organic solvent<1%, toxic substances, halogenated organic Compounds phthalates, (poly)azidirin are forbidden (5.9.1/2)	See Use of chemicals	Guidelines spray installations, BGBL 873/1995 (3.1) Austrian guidelines §33a/b WRG
Formaldehyde emission	Emissions < 0,1 ppm (2.1.8)	Emissions acc. to class 1 (E1) chipboard. For MDI chipboard no detectable MDI emission allowed.(c 5)	Emissions < 0,01 ppm [-]	Emission < 0,05 ppm (0.6.1)	Emissions < 0,1 ppm (5.9.1)	Emission < 0,05 ppm after 28 days (3.2.1)	Emission <0,05 ppm measured in accordance with BGBL 194/1990 (2.2.1)
Other	-		Wood chip panels forbidden, only massive wood allowed. (1.5)	Emission of VOC < 700 $\mu\text{g}/\text{m}^3$ for sample in test chamber (0.6.1)	-	Water based flame retardants allowed.	Toxic substances (classified as T(+), R45,49,60,61,62,63) are forbidden.

TABLE 10 METALS

Aspect Metals	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Raw materials	allowed: Fe, stainless steel, Al ( 2.2.1)				at least is 30% recycled;		Iron and steel
Aluminium	min. concentration recycled Al in Al parts 70% (2.2.2)						Al and Al-products min. concentration recycled Al 20%, preferably 50% (3.1.1)
Galvanic processing	allowed, with a maximum of 200 cm <sup>2</sup> , otherwise specific criteria	Σ (Zn+Cu+Ni +Al+Fe+Cr+Cd+Pb+Sn ) < 15 mg/ l in effluent before treatment. Additional criteria for individual components. Requirements reg. storage and use of toxic compounds (c 11)					
VOC emissions (by coating process)	VOC-concentration in coating < 15%, (2.2.4)	Net use of solvent (kg)/deposit of dry matter (kg) < 4 (c 10)			Organic solvent conc. < 5%; aromatic conc < 0,05%;		max. conc. organic solvent 10% (3.1.6)
Coating (process)	overspray < 30% (wet coating), < 10% (powder coating) if surface area ≥ 25 cm <sup>2</sup> (2.2.5). Emission to water is not allowed (2.2.7)		Only natural products allowed (wax, oils etc.) [1.7]	Either cleaning of flue gases of lacquering, or VOC < 42% in coating material, or < 25% for coatings used on furniture without 3D surfaces (c 0.6.8)	toxic substances, halogenated organic compounds Phthalates, (poly)azidirin are forbidden (5.9.1/2)		
(Heavy) metals in coating	Concentration of the metals As, Cd, Pb, Cu, Hg and Zn < BAGA-limits [Haz.waste limits], (2.2.6)	Pb, Cd, Cr(VI), As, Hg or their compounds are not allowed (c9)	Max. conc. for As,Pb,Sb,Cd,Cr,Co, Cu,Ni,Hg,Se.	Requirements for emission of heavy metals apply for lacquered surfaces of children-furniture (0.6.7)	Pb, Cd, Cr Ni, Sn, Hg or their compounds are not allowed, (5.9.1/2)		No toxic (heavy) metals and there compounds (3.1.6)
Other				Emission of VOC < 700 µg/m <sup>3</sup> for sample in test chamber (0.6.1)	-	No regards concerning metals found	

TABLE 11 PLASTICS

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany <sup>1)</sup>	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Material	Allowed plastics and rubbers are specified (1.)		Plastics not allowed.	PVC only allowed for coating if no alternatives. (0.6)	Pb, Cd, Hg and their compounds, halogenated organic compounds or phthalates not allowed (5.6.1/2)		Allowed plastics and rubbers are specified. Max. 4 kg plastics used, calculated as virgin plastics. (3.1.2)
CFCs	CFCs, HCFCs, HFCs not allowed in manufacturing (2.3.3)	Not allowed in manufacturing (c 7)		Not allowed in manufacturing (0.6.5)			Not allowed in manufacturing (3.1.2)
Flame retardants	No halogenated flame retardants allowed. (2.3.2)			In (PU) foam no halogenated organic flame retardants allowed. (0.6.6)			No halogenated plastics used (3.1.2)
Heavy metals	Conc. As,Cd,Hg,Pb, Zn in plastic < BAGA limits (2.31)						
Marking	Plastic parts > 50 g must be marked acc. to ISO 1043 (2.3.5)	Plastic parts > 50 g must be marked acc. to ISO 1043 (c 6)			Parts >50g must be marked for recycling acc. to ISO 11469 (5.6.1/2)		Parts >50g must be marked for recycling acc. to ISO 11469 (5.6.1/2)
Recycling	If furniture > 50w% plastics (excl. soft foams), at least 10% post-consumer recycled plastics used.				>10w% plastics, <40w% in the furniture: the plastic must consist of >30w% recycled material		

1) plastics not mentioned

TABLE 12 TEXTILE

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungen-häuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Toxic compounds	Allowed without additional criteria: Skal, ökotex standard100, Milieukeur "Clothing/Textile, Ecolabel T-Shirts and Bedlinen. Otherwise below-mentioned criteria apply.(2.4.1)		Free of pesticides/herbicides and hazardous substances use "green cotton"		Carcinogenic, harmful or mutagenic chemicals during fibre production forbidden. Specified for individual components (5.2.6/5.8)		
Chlorinated (synthetic) fibers/chemicals	Use not allowed (2.4.2)				Use of chloro-organic compounds is forbidden (5.2.6)		Use not allowed (3.1.4)
Halogenated flame retardants	Use not allowed (2.4.3)		Flame retardants forbidden		Not allowed (5.2.6)		Use not allowed (3.1.4)
Pigments	Benzidine or similar based pigments not allowed (2.4.4)		AZO-based pigments forbidden		Specified AZO dyes not allowed (5.2.6)		Use not allowed (3.1.4)
Heavy metals	-	Pb, Cd, Cr(VI), As, Hg or their compounds are not allowed (c9)	Minimized		Concentration As, Pb, Cd, Co, Cu, Cr, Hg, Ni, Sn, Zn limit(5.8)		Use not allowed (3.1.4)
Emission VOC during textile preparation	In accordance with Dutch regulations						
Formaldehyde emission	< 75 mg/kg						
Others					COD/TOC decreased by 90% in sewage treatment plant (5.8)		



**TABLE 13 LEATHER**

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Cr	Emission to water during preparation < 0,33 g/kg leather (2.5.1)						Cr treated leather not allowed.(3.1.4)
Finish	Waterbased (2.5.2)						
Pigments	Benzidine or similar based pigments not allowed (2.5.3)						Specified azo dyes not allowed (3.1.4)
Heavy metals	Below BAGA limits (2.5.4)						Not allowed (3.1.4)

**TABLE 14 STONE-LIKE MATERIALS**

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungshäuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Winning	In accordance with EU-directive 85/337 (2.6.1)						
Heavy metals	Below BAGA-limits (2.6.2)						

**TABLE 15 ENERGY CONSUMPTION**

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En-vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökologischer Einrichtungen-häuser, Germany	RAL-RG 430, Deutsche Güte Gemeinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Umweltzeichen, Austria
Max. energy use for manufacturing (incl. production of raw materials)	-	Desk –chair< 750 MJ other chairs<500MJ; desk<800 MJ; cupboard<55MJ.	-	-	Max. energy defined for manufacturing of wood-based panels	-	-

**TABLE 16 FUNCTIONAL ASPECTS**

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En- vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökolo- gischer Einrichtungs- häuser, Germany	RAL-RG 430, Deutsche Güte Ge- meinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Um- weltzeichen, Austria
Quality (durability, strength, safety and stability), testing and control				Acc. to RAL-RG 430	According international/ European standards (7)		In accordance with national regulations (5)
Working security, health and envi- ronment, eco- nomics			Specific ergonomic demands (ch.4)		All prevailing working environment provi- sions, legalisations and licenses have to be fulfilled (6.1,6.2)		in accordance with national regulations (5) ergonomic demands see chapter 8
Assembly, disas- sembling, durabil- ity	Specific requirements (2.7)				Specific requirements (5.14)		
Artificial leather	ISO 5081, 105 B02, 9290 (3.1)				-		
Leather	IUF/450, 470, 131, 132, ILS-F64, ILS-F65, ISO 105 B02, 9290 (3.3)				Will be assessed in the future (11)		
Textile	ISO 105-serie, 6330, 5081, BS 5811 (3.2)				Specific requirements (5.8)		
Packaging mate- rial	Made of recyclable mate- rials (4.1)				Plastic packaging material containing chlorine is not permit- ted (5.12)	should be breathable	should be breathable; made wood, paper, cardboard; national regulations (4)
Waste					Waste generated during production must be reduced and recy- cled as far as possible (5.11)		Waste plan should be present, in accordance with national regula- tions (3.3)
Product informa- tion/ instruction for use				Consumer should be informed about main- tenance and durability (5)	Should be present (8)	Should be present (3.4)	Should be present (6)
Control visits				Once a year (6)			
Certification			Acc. EU 1836/93 re- commended (1)	One piece of the col- lection will be tested, unless the manufac- turer can show infor- mation (6)			

**TABLE 17 ASSEMBLY / DISASSEMBLY / DURABILITY**

Aspect	Label/Organisation/Country						
	Milieukeur, Stichting Milieukeur, The Netherlands	Marque NF En- vironnement, AFNOR, France	ÖkoControl, Gesellschaft für Qual.Standards ökolo- gischer Einrichtungs- häuser, Germany	RAL-RG 430, Deutsche Güte Ge- meinschaft Möbel, Germany	Nordic Ecolabelling, Nordic Ecolabelling board, Nordic countries	RAL-UZ 38, Blaue Engel/RAL, Germany	UZ 06, UZ 34 Österreichische Um- weltzeichen, Austria
Solvents in glues	Only waterbased glues with < 10% organic solvents						
<i>Durability</i>	At least 5 years indoor and 3 years outdoor				In accordance with ISO requirements [5.13]		
<i>Maintenance</i>	Cleaning with organic based <i>reïnigingsmid- delen</i>						
Repairability	Spare parts should be deliverable for at least 5 years						Spare parts should be deliverable for at least 5 years after end of production (4)
Disassembly	Should be simple, at least 90% should be recyclable		Easy disassembly of different materials.	Easy disassembly, construction acc. to VDI 2243 (0.6.8)			Easy disassembly of different materials. (4)
Take-back							Manufacturer or retailer must guarantee take- back. (5)

