

Ecomobel/ZweitSinn - Reuse of furniture



ZWEITSINN

1. Summary

Country/Geographical Area	Germany / mainly North Rhine-Westphalia with some additional partners scattered all over Germany
Level implementation	Local
Scale	Roll out
Waste fraction / Specific Waste Type	Bulky - Furniture
Target Audience	Furniture users, waste management organizations, local authority associations, handicraftsmen (carpenters, restorers, glaziers, cushion makers, artists), furniture commerce, designers.
Objective	Ecomobel is a cooperation-network with many partners for the reconditioning and marketing of used furniture.
Initiator/coordinator	Institute of Environmental Research (INFU), TU Dortmund University
Other key actors involved	Entsorgung Dortmund GmbH (waste management organization), Fraunhofer-Institute for Material Flow and Logistics and others
Duration	2002 until present day
Number in PW Mapping	13
Drafted by	ACR+
Contacts	www.ecomobel.de ; www.zweitsinn.de Dr. Laura Faltz, ecomobel GmbH, Driburger Str. 4, 44143 Dortmund, Germany, Tel.: 0231-5169049, Fax: 0231-5169030, e-mail: info@zweitsinn.de

2. Context

Local context:

North-western Germany: - Ruhr area, 10,100,000 inhabitants, area 7,110 km²
- Ostwestfalen: 2,059,198 inhabitants, area 6,500 km²

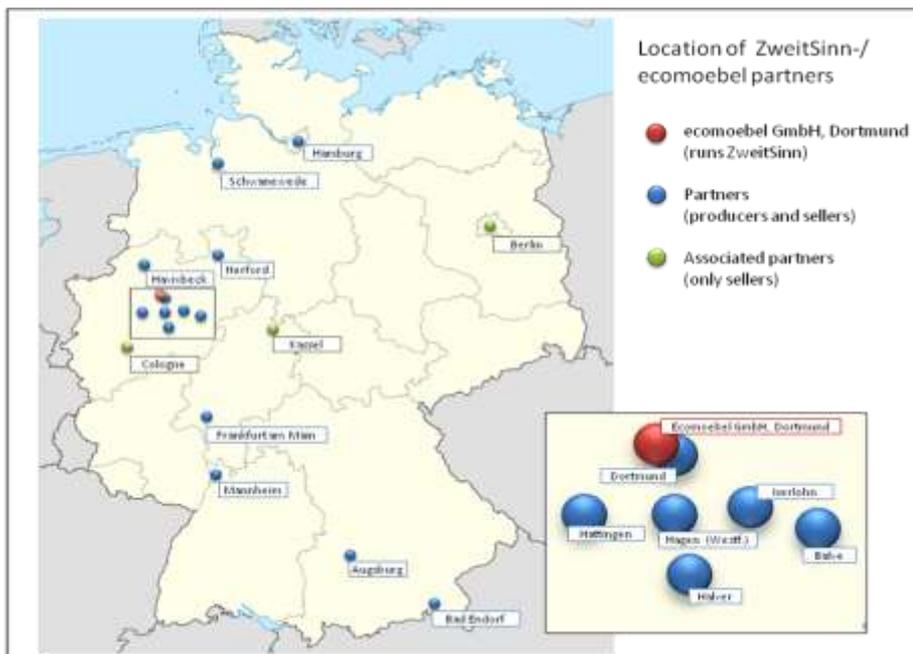


Fig 1: Location of ZweitSinn-/ecomoebel Partners
(Source: ZweitSinn-/ecomoebel)

Specific situation before/during action:

Every year about seven million tonnes of furniture are thrown away in Germany. Between 90 and 95 percent of these are disposed of usually as bulky waste in waste incineration facilities or landfills. Only 5 to 10 percent are reused (Baumann et al., 2003). These figures are similar for other European countries (INFU & Prognos, 2007). Thus, there is a large potential to reduce waste and to use old furniture as a secondary raw material for new furniture designs.

Today, there is no specific reuse/recycling regulation for wood at European level, although several directives influence wood derived from furniture. In particular, the Waste Framework Directive (Directive 2008/98/EC) states that effective and consistent rules on waste treatment should be applied to movable property which the holder discards, or intends/is required to discard. It also encourages the recovery of waste and the use of recovered materials as raw materials in order to conserve natural resources. In addition, the waste prevention article (Article 29) requires the creation by the Commission of a system for sharing information on best practice regarding waste prevention. Besides the Waste Directive, strategies exist for the sustainable use of natural resources. The Member States have to introduce legislation to comply with the objectives set in the directives.

The recycling design business “ZweitSinn” (meaning second purpose) uses old furniture as a resource for the production of unusual furniture. There is a large potential to extend this co-operation to the European level because (a) there is a growing demand to buy unique and “ecologically correct” products and (b) the involvement of the European design scene will have an additional quality effect on the products, resulting in additional incentives to buy. The reduction in CO₂ emissions (due to the substitution of new chipboards by used chipboards) and the use of raw materials are constantly monitored and are part of the marketing concept.

3. Strategy

Objectives

The ecomoebel GmbH is a network involved in the reconditioning and marketing of used furniture. Under the brand “ZweitSinn” it has established a recycling design co-operation [business] that brings together waste managers and waste collectors, designers, furniture producers and sellers resulting in a successful co-operation of these agents.

The aim of the recycling design business ZweitSinn is to organise a platform where suppliers of used materials (old furniture, chipboards etc.), producers with the experience and ability to work with used materials, designers who have specialised in so-called recycling design, and sellers in areas where a demand for unusual but high quality furniture design exists can “meet” and design, produce and sell re-design furniture.

It is a cooperation-network with many partners, e.g. handicraftsmen, businesses, service providers and scientific organisations, in Dortmund, a city in the industrialized Ruhr area of Germany. Restorers, furniture customers, a waste management organization (Entsorgung Dortmund GmbH), scientific organisations, such as the Institute of Environmental Research (TU Dortmund University) and the Fraunhofer-Institute for Material Flow and Logistics, planners, marketing and computer specialists, artists and designers.

High quality standards for the refurbishment of used furniture are applied to guarantee the quality and environmental friendliness of the furniture.

Preconditions

Before the launch of the “ZweitSinn” project, a preparatory analysis had been conducted with the support of research- and implementation-oriented projects, financed by German funding institutions.

Procedure

Products are built in small-to medium-sized series. For their production network partners use second-hand "raw material", i.e. old furniture or parts of old furniture. These are usually made of wood (solid wood or particle board), but other materials such as steel, textiles, foams are also reused.

All furniture is analysed for harmful substances e.g. formaldehyde, and, if necessary, restored with environmentally sound products and substances like glue, oils, wax, lacquers. All results of the tests and all information concerning the restoration, e.g. type of wood or material used (derived timber material, textile, metal), type of fittings, type of wooden surface, is collected in the certificate which forms part of every ecomoebel.

All furniture repaired or restored through this system benefits from an ecomoebel quality certification.

Instruments

The certificate is the basis of the ecomobel quality signet, which guarantees a piece of furniture low in pollutants and with a high quality standards. A consumer who buys an ecomobel product will normally know more about his furniture than someone who buys new products in a large store. The potential buyer can either pre-select his ecomobel on the computer screen using the ecomobel internet platform or directly go to the ecomobel network partner.

4 .Resources

Financial Resources

The ecomobel GmbH has not received any Community funding so far. Preparatory research, however, was funded by national institutions. This project was supported by the Federal Ministry for Education and Research of Germany (funding approx. €1.5 million) as well as by the Deutsche Bundesstiftung Umwelt (German Environment Foundation; funding approx. €350,000).

The current production capacity of the co-operative business in Germany is about 250 re-use furniture elements per month: 30 large pieces of furniture and 220 elements of the “Frank” shelf elements (these element are 40cmx40x35cm and can be combined into larger shelf units), resulting in an annual turnover of approximately €250,000 (for of all ZweitSinn-/ecomobel partners combined).

Human Resources

Research:

- Initially, a research team of about 6 researchers for 3 years (some part-time; equivalent to approx. 3 full-time jobs; approx. €450,000 altogether at universities and research institutions)
- Later about 2 researchers for 2 years (part-time; equivalent to approx. 1 full-time job; approx. €100,000 altogether at university)

Production and qualification:

- Combination with qualification measures of young people; in the last 9 years about 500 young people were qualified in the different network partner workshops; qualification publicly funded
- Regular staff: about 5-10 full-time employees needed in production, administration etc.

Equipment

- Office for ecomobel administration (desk, telecommunication, mobility)
- approx. 5 fully equipped carpenter's workshops

Communication Tools

- Internet page: www.zweitsinn.de. Furniture is selected and sold on the web but mostly directly at the producers' shops
- Newsletters and articles are written to promote the initiative; recycling design is also a good story for TV productions (quite a few TV appearances)
- Stands at exhibitions and fairs

Allocation of resources over time

There has been an initial period of research followed by the implementation of the “ZweitSinn” Project.

5. Evaluation

Results

- Participation

Target audience:

- Network members: 100 persons directly/indirectly involved
- Customers: between 5,000 and 10,000 persons (growing)

Objectives: To reach approx. 1,000 persons (network members)

It is roughly estimated that the project has directly reached at least 5 to 10 times more people than initially expected; concerning the number of people that now know about the network, the numbers would be even higher.

Method used to keep track of the participation: estimation, customers in shops, internet hits, internet registered customers, interviews with network partners.

Participation can be increased by TV appearances and local newspapers.

- Avoided waste quantities (or toxicity)

35 tonnes of furniture is sold per year. It can be assumed that this reflects the amount of waste that is avoided because no new furniture is bought.

- Other results

Table 1: Qualitative Estimation of Environmental Benefits from a Life-Cycle Perspective

Life cycle phase	Explanation
Resource extraction and processing	Resources from bulky waste, clearing of apartments or others are collected locally or regionally. Large share of resources are processed manually, often in sheltered workshops.
Design	The design of products is focused on the use of secondary raw material, mainly chipboards. All newly designed furniture consists of 80-90 % used materials. These are tested for formaldehyde and the presence of other harmful substances. Materials without harmful substances receive a label, in accordance with the design principles of the business.
Manufacturing and retail	Manufacturing happens mainly manually or by use of small machinery. Most of the producers are sellers at the same time so there are only very low transportation costs from the production site to the shops - if any at all.
Distribution	The distribution of furniture covers a larger area than the one for resource extraction although about 75 % of the furniture is sold within 300 km of the producer.
Use	The uniqueness of the newly designed piece of furniture as well as a certain degree of identification with the product (customers' wishes are often followed before production starts) leads to a longer average use of the piece of furniture.
Collection	At the end of its useful life, the collection of redesigned furniture is not significantly different from that of conventional furniture.
Re-use, recycling, energy, recovery, disposal	Also in this section there is no significant difference in comparison to conventional furniture.

Source: based on ZweitSinn 2008: Factor 4 application

Impacts

- Avoided Costs

Furniture is subject to the regulations of the European Ordinance on the Management of Waste Wood, i.e. furniture manufacturers, traders and customers will have to bear the cost of normal disposal. If it is possible to make this furniture available again on the market within a high-quality reuse system, costs can be reduced by all involved parties.

- Avoided CO₂ equivalents

By reusing old furniture, the production of new material for furniture is avoided as well as the related CO₂ emissions. For example, are the production of one kilogram of new chipboard generates almost 350 grams of CO₂.

By purchasing a piece of ecomöbel furniture that weighs 15 kg and consists of chipboard, you save - compared to the corresponding purchase of a new piece of furniture: 5.2 kg of CO₂.

Within one year of the project (by February 2009) following CO₂ equivalents were saved: 32 850 kg CO₂ equivalents, representing 52 810 kWh of electricity, 10 530 liters of heating oil, 13 220 m³ of natural gas or 11 270 liters of gasoline.

The following Figure 2 provides an example of how natural resources are used in a better way, in which absolute reductions can be achieved.

Fig 2: Example of Reduction of Environmental Impact in Absolute Numbers

Absolute impact (by the example of an average furniture)		Balance of assets for production of 1 average Zweitsinn furniture	
<ul style="list-style-type: none"> Assumption 1: For each Zweitsinn furniture that is produced the production of a conventional furniture can be avoided Assumption 2: For each Zweitsinn furniture almost only used materials (mainly chipboards from old furniture) are used Result: Environmental impact reduction to the amount of the avoided impacts of chipboard production (see table on the right) Sources for impact reduction calculation: <ul style="list-style-type: none"> Informations über Holz (1997): Ökobilanz zum Holz. Fakten lesen, verstehen und handeln. Deutscher Gewerkschaft zur Holzforschung u. V. (Hrsg.) Frühwald, A.; Schöral-Hal, M. & Hach, J. (2008): Ökologische Bewertung von Holzwerkstoffen, Hamburg 	Weight of 1 average furniture in kg		57,4
	Share of used chipboard		90%
	Weight of chipboard in 1 average furniture in kg		51,7
	Input wood in kg		90,44
	Input electricity (primary) in kWh		24,97
	Input thermic energy (fossil) in kWh		6,98
	Input thermic energy (wood) in kWh		20,96
	Input water in l		10,28
	Input glues in kg		4,36
	Input oils and greases in kg		0,07
	Input others in kg		0,00
	Input packaging materials in kg		0,14
	Input metals in kg		0,35
Output waste water in l		6,19	
Output CO ₂ emissions in kg		17,77	

Concerning relative benefits the below chart gives an idea about the potential for resource reduction by the example of electricity consumption. Figure 3 compares two flowcharts - conventional furniture production and recycling design furniture production. It shows that considerable improvements in terms of environmental performance (relative impact for energy demand) can be achieved. This is about 63 % lower compared with conventional production.

6. Lesson learnt & recommendations

Opportunities & Challenges

This Project allowed the creation of new jobs with a good qualification level. The certification and the “take-back” system create confidence from the consumer’s point of view. On the other hand, a channel allowing to take care of the non-reusable furniture is necessary.

Key factors of success

- Competence of the staff
- Certification and take-back
- Visibility of the network and the label
- Fancy design of refurbished furniture

Recommended improvements/adaptations

Looking to improve an international designers network; investment in transferring prototypes into market-mature products (from design to production); furthermore to improve the principle of “universal design and local/regional marketing”.

Recommended indicators & monitoring

If possible, a monitoring system per type of material composing the furniture should be implemented (what type of material, how much of each material is present, what is their environmental impact, etc.). It should also contribute to the correct implementation of the CO₂ assessment tool.

7. Comparison with similar actions

In different location/context

Can be compared to other good practices about reuse.

Pre waste Factsheets:

- Repair and Service Center R.U.S.Z. (Pre-waste Factsheet 10)
- Alelyckan Re-use Park in Sweden (Pre-waste Factsheet 30)
- Reuse Centre L'Alligatore in Italy (Pre-waste Factsheet 38)
- Guide for repairing, selling & reusing goods in Rennes, France (Pre-waste factsheet 50)