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INTELLECTUAL OUTPUT 01

INNOVATIVE OPEN TRAINING MATERIAL ON
CIRCULAR ECONOMY AND DIGITISATION FOR VET
LEARNERS IN THE WOOD&FURNITURE SECTOR.

SECTION 1. CIRCULAR ECONOMY AND FURNITURE

Unit 2

CIRCULAR ECONOMY AND THE FURNITURE INDUSTRY

Coordinator





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1 STATUS OF EU FURNITURE SECTOR IN REGARDS TO CIRCULAR ECONOMY IN THE EU

1.1 European Furniture Production and Consumption

The furniture sector is labour-intensive sector which employs about 1 million workers in close to 118.000 companies. Most companies are SMEs and micro firms (99%). In 2017, the EU production reached about € 90 billion.

Of this, Italy (€17.5 billion), Germany (€14.5 billion), UK (€8.8 billion) and Poland (€7.1 billion) are the most significant furniture producers by value.

While the EU remains a competitive producing region, today 54% of world furniture is produced in Asian and Pacific regions, accounting for 211 billion € in 2017, mainly from China and Vietnam (Towards an EU Product Policy Framework contributing to the Circular Economy, EFIC, 2019).

The European furniture industry is highly export-oriented, with the main export share happening in the EU. Most significant exporters were Germany (€9.5 billion), Italy (€9.2 billion) and Poland (€8.7 billion), whilst the largest importers were Germany (€11.8 billion), UK (€6.6 billion) and France (€6.0 billion).

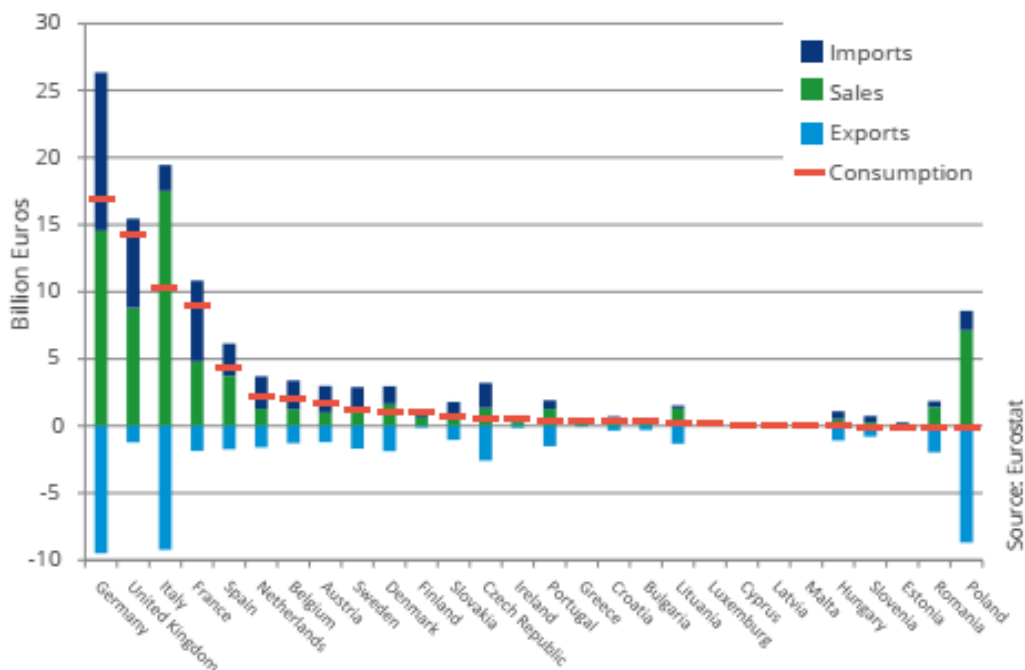


Figure 1. Furniture Production, import and export Values by Member State. Circular Economy Opportunities In The Furniture Sector, EEB, 2017



European Member States are major consumers of furniture, estimated at €68 billion per year, with the EU28 being a net exporter. The largest consumers by value being Germany (€16.8 billion), UK (€14.2 billion), Italy (€10.2 billion), France (€9.0 billion) and Spain (€4.4 billion).

This equates to a EU28 consumption of around 10.5 million tonnes of furniture per annum. Figure 2 summarises that in tonnage terms, a significant proportion of consumption includes wooden furniture, kitchen units and mattresses.

In terms of materials, the most common material used for furniture is wood (56% of the pieces of furniture) metal is the second most commonly used material (12% of items produced), followed by plastics (6% of items produced) (EEB, 2017).

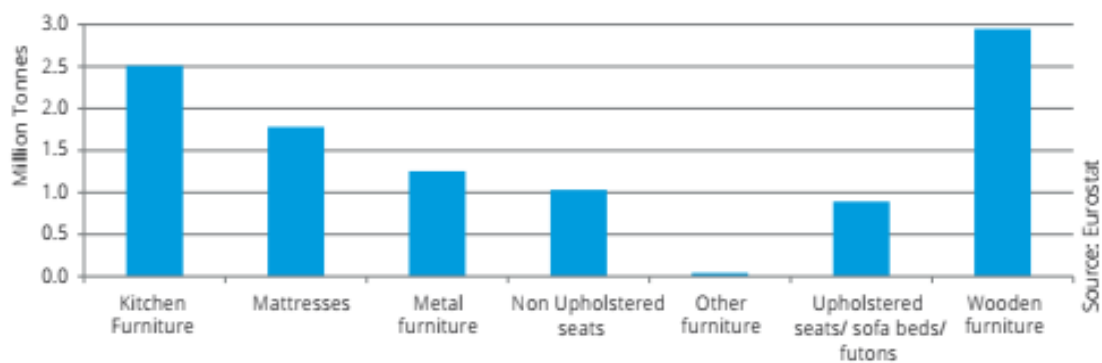


Figure 2. EU28 Furniture Consumption by category. *Circular Economy Opportunities In The Furniture Sector*, EEB, 2017

From a “circularity” point of view, furniture products are a complex type due to the wide range of materials used e.g. wood, plastics, textile, steel, glass, composites. Use of chemicals is a key issue to consider also.

1.2 How much furniture goes to waste or is treated in the EU?

According to European Federation of Furniture Manufacturers statistics, furniture waste in the EU accounts for more than 4% of the total municipal solid waste stream (EEB, 2017).

There is limited information on end of life treatment of furniture. Evidence suggests that on reaching its end of life, most furniture is destined for landfill. According to European Federation of Furniture Manufacturers statistics, 80% to 90% of the EU furniture waste in municipal solid waste is incinerated or sent to landfill, with about 10% recycled (EEB, 2017).

Reuse activity in the sector is also low. Where reuse does occur, it is mostly through commercial second-hand shops, social enterprise companies or charities. Some furniture items are also exchanged via free and paid exchange platforms, such as eBay and Freecycle, though the number of items traded in this way is difficult to quantify.



Furniture products can cause very different environmental impacts depending on the type of furniture considered (office, kitchen, etc.), the materials and processes used in the manufacturing, the energy source (fossil fuels, or renewable) and origin of the wood (local, from sustainable forest, etc.).

1.3 Challenges Towards More Circularity

What are some of the barriers that hinder the transition towards a more circular economy in the furniture sector?

One challenge faced by the furniture sector is to find a sustainable balance between implementing circular solutions and satisfying consumer's needs.

- Lower quality materials and poor design – the move away from solid wood and metal furniture to cheaper plastic, chipboard, and medium-density fibreboard (MDF), particularly in flat-pack furniture, restricts the potential for a successful second life since products are often insufficiently robust to be moved easily. In addition, products are often not designed for disassembly and reassembly, or reconfiguration.
- Weak product design and specification drivers – in relation to recycled content, reuse of components, product durability, and design for disassembly/reassembly, repair, reuse, remanufacture and recycling, the drivers for improvement are weak or absent. Durability, and facilitating repair and life extension, are not necessarily in the best commercial interests of the OEMs or retailers, unless they operate in a market niche that trades on high quality/longevity or lease, for example. In addition, short product warranties do not incentivise manufacturers to design for longevity. In the public sector where there is great potential to procure and lease better products, Green Public Procurement (GPP) criteria is not mandatory.
- Poor consumer information and availability of spares – assembly information for flat pack furniture can be challenging for some consumers, and they are rarely given guidance on how to maintain and repair furniture, to prolong and extend the product lifespan. Availability of spares is also important, e.g. to replace a broken hinge or damaged cupboard door for example, however a lack of availability of spare parts encourages the purchase of new furniture over circular consumption patterns.
- Limited collection and reverse logistics infrastructure – currently there are weak drivers and underinvestment in the collection and logistics for furniture takeback, and increased investment are required to cover the cost of transport, labour and wider infrastructure associated with the collection and storage of furniture. Certain waste streams, including mattresses, pose particular issues for municipalities, with no incentives to collect these items separately, and high reprocessing costs.



- REACH Regulation (on Registration, Evaluation, Authorisation and Restriction of Chemicals) – obligations to deal with legacy hazardous substances introduces challenges and additional costs for recyclers, with producers often failing to disclose hazardous substances contained in materials or products. Information on how to remove hazardous parts/components safely is often not disclosed.

The furniture sector is covered by EU regulation on e.g. safety, consumer rights, waste and chemicals for packaging and products. A good overview of the European Regulatory framework for the furniture sector is shown on the Figure 3.



Figure 3. EU regulation in the furniture sector (KATCH_e, 2020)

- High cost of repair and refurbishment. In many parts of the EU, transport and labour costs are high, making any significant repair and refurbishment costly. Often, it is not economically viable to change the upholstery patterns, for example, unless the item itself is of particularly high value. Weak demand for second-hand furniture - the price differential between new furniture against the cost of second-life furniture, is not significant enough to drive more sustainable purchasing behaviour. This is coupled with poor awareness of the availability and benefits of sustainable furniture options, for both domestic and commercial purposes, and a consumer desire for new products.



1.4 Main trends in the forestry sector in regards to circularity

What kinds of trends in the lifestyles related to use of furniture have you spotted in your surroundings?

Here are some described by KATCH_e project:

- Changing in the work conditions and increase of home-based work leads to a higher demand for home office furniture
- The need for home offices increased during the financial crisis in 2008-2009 and the European debt crisis in 2011-2012, and the changes in home-based work habits is increasing the demand for new, office furniture.
- Multi-functionality and versatile furniture are gaining popularity
- Transition to e-commerce - Changes in market to online retail stores
- Online retailing has been around for some time, but it will continue to grow, especially for millennials. With instant access to catalogues and price lists, customers have a clearer idea of what they want, and they can use online software to design and experience the use of products
- Increase in demand for luxury and quality furniture
- Linked to the evolution and growth of the economy, more consumers are willing to buy luxury items for their living and work environments. The global luxury furniture market is expected to grow. Europe has the largest market for luxury furniture.
- Sustainability concern in increasing
- A trend which is positively impacting the market is the rising demand for eco-friendly furnishings. Growing environmental consciousness and concern for a healthy and green environment have led to the increased demand for eco-friendly furniture and other furnishings. Awareness of the effect of deforestation on climate change and the effects of toxic finishes in the air inside homes has led to many furniture manufacturers going green.
- Increase in renting of homes
- Ever rising prices of home, and the delay of millennials to start their own families are some of the reasons owning a home is not a priority currently. A growing trend is leading toward consumers to choose smaller furniture to fit their rental homes or apartments where space may be limited.
- Single-person households are increasing
- Single-person households are expected to increase over the next years, and smaller households are opting to live in apartments or smaller homes. This demands for more modular, space-saving and multifunctional furniture, and furniture for storage.
- Home improving/renovation market is increasing

The growth of the home improvement and renovation market is likely to play a major role in market growth. The home improvement market is highly diversified, providing many opportunities for manufacturers to explore the market with new products and services (KATCH_e, 2020).



2 HOW CAN FURNITURE INDUSTRY CONTRIBUTE TO THE CIRCULAR ECONOMY ?

There are several ways the furniture industry can contribute to the circular economy.

In the production phase, one can support incentives aiming at increasing resource efficiency through increased product lifetime, repairability, recyclability, efficient use of material.

Use phase: measures to promote information and awareness to support consumer choices towards more responsible products, with a focus on materials sustainability information.

Disposal phase: harmonization of Extended Producers Responsibility schemes that promote incentives for producers to take into account environmental considerations along the products' life, from the design phase to their end-of-life

Circular procurement: Public authorities at the National and European can boost circular economy principle in practice through public tendering.

Circular economy interventions have the potential to help counter these trends, with repair, refurbishment and remanufacture allowing value recovery, economic growth and job creation within the European furniture industry, while saving on resources and the environment.

There are various initiatives, which aim to move in the direction of a circular economy. Still, environmental policies in the furniture sector are mainly concerned with energy efficiency in production and during usage, recycling and human health. The more innovative CE approaches that promote a holistic economic system with efficient resource cycles (furniture leasing, product service systems, etc.) are in the early stages.

Reuse of furniture is common, but it tends to be on a small scale and with local, social goals in mind rather than larger scale environmental and economic ones. Reuse mostly takes place through commercial second-hand shops, social enterprise companies or charities.

The environmental benefits associated with the reuse are not necessarily higher than the recycling benefits, even where the latter can be properly calculated. Much depends on whether the reused article results in the avoided purchase of a new manufactured article. Where this is the case, the environmental benefits of reusing that article are likely to be more substantial than those of recycling. This is because the impacts associated with producing the constituent materials contained in furniture are typically higher than the impacts associated with recycling the constituent components. However, where reused articles are purchased by lower income households who would otherwise not have purchased anything, the benefit associated with avoided production does not occur.

Transport impacts may also be higher for the reuse scenario, and there may also be additional energy associated with the preparation for reuse, although the latter typically results in only a relatively small impact.

Below are some illustrative examples of the circular economy in the furniture industry.



Examples



KATCH_e, 2020

[Arcadia Design](#) is an Italian innovative start up based in Central Italy. The company designs EASYDiA + EASYoLo a set of **modular chairs and tables** for children from 18 months up to 10 years, which offer space to customization and are designed under **circular economy principles**. Their modular structure stimulate reuse, transformation, customisation and imagination, that adults and children can share: assembling the pieces when they get the pack, customising or replacing modules over time, disassembling their chair or table when no longer needed and giving them a new beginning, making one new suggested products or invent new ones.

“Rather than fix interiors, we prefer to conceive objects that you can modify and make of them exactly what you want. So a chair and a table become a toy for children, a photo frame for the family, an armchair for young people”.

The product is entirely made in Central Italy and based on a careful research on sustainability criteria, partly in collaboration with University Milan Bicocca: all solid wood, a limited edition in local chestnut again from Central Italy, to cut transports and support the maintenance of local woods, finishings that are totally water-based, non-toxic and certified for food contact.



KATCH_e, 2020

[Bruhl](#) intends to make furniture “more resource-friendly” in terms of overall resource consumption and wants to make sure that it “can be used for longer and in a better way”. All manufacturing steps throughout the entire product life-cycle take ecological, sustainability and health-related aspects into account. For example, values lie far below the legally permitted employee exposure values for adhesives; in fact, they are almost below the detection threshold.

All of the materials used are also carefully examined with regard to their environmental compatibility and durability to ensure that the furniture has a particularly long life-span. Some of the designs are fully recyclable, and leftover materials are recycled. Brühl sources the renewable resource wood from certified sustainably managed forests (FSC), and wherever possible locally.

Leather suppliers use salt-free preservation techniques that save water. Oliva leather, for example, consists of hides that have been tanned with the aid of plant-based methods and therefore almost completely without the use of chemical substances. Textiles is sourced from sustainability-focused suppliers. All of the fabrics used comply with the Oeko-Tex® standard or bear the EU-Flower eco-certificate. Due to the high quality of the fabrics and the careful and precise finishing of the covers, the seating furniture is exceptionally durable and has a particularly long life-cycle. Much of the furniture also features removable covers, which more or less doubles its life-span.



KATCH_e, 2020

Nnof stands for 'nearly new office facilities': office furniture that is almost new. [The Vilvoorde](#) company design offices with mostly recycled material, which usually comes from the customer's previous interior. Chairs are re-upholstered, tables are given a new top layer, cupboards are disassembled and transformed into new furniture. The end result does not look like a thrift store, but simply as a new interior. How did they get there? "Around the turn of the century I started to read a lot about climate change, our handling of raw materials and all the problems that awaited us", explains managing director Didier Pierre. We knew very well how much office furniture was simply thrown away. Often we had to dispose of a whole interior for the same customer with our moving company, and then to install brand new furniture with our furniture management company. It was absurd. We decided to invest much more in repairs. In the last two years we have also committed ourselves to re-working: we now use tablets from old tables to make seating furniture, for example, or we design a rack system made from used table bases. If customers leave us somewhat free, we can reuse a very large part of their interior. Why is it working so well? None is more sustainable and cheaper. "That is surprising, but actually it makes sense, because we do not buy raw materials, only for the final layer. And I have no illusions: our customers choose us mainly because of the price advantage. But they do agree that they choose sustainably. And that is good."



3 ACTIVITY

Get familiar with the furniture best practices in the circular economy and how they are implemented in the companies.

This is an exercises to explore how circular economy gets done in real life, aiming to inspire your future practice and to showcase opportunities.

In groups of two :

1. Select a case study. You can use the publications listed in the section 4 Additional Resources.
2. Try to find other sources of information on those cases and explore if they are prototype or are implemented and to which extent.
3. Discuss the accomplishments and limitations of those cases with regard to circular economy.

4 ADDITIONAL RESOURCES

Circular economy furniture cases:

https://knowledge-hub.circle-lab.com/search?search=furniture&_start=40

<https://sforsustainable.style/search?categories%5B%5D=Furniture&values%5B%5D=circular+economy&values%5B%5D=biophilic+design>

<https://www.efic.eu/best-practices>

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