Environmental Product Declaration

of Bath Furniture by DROP MARTINIDIS S.A.

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

EPD of multiple products, based on the worst-case results of the product group

Bath furniture with plywood and closet-50 cm
Bath furniture with plywood and drawer-80 cm

EPD PROGRAM	The international EPD System, https://environdec.com/
PROGRAM OPERATOR	EPD INTERNATIONAL AB
CPC CODE	381, Furniture
EPD REGISTRATION NUMBER	EPD-IES-0019857
PUBLICATION DATE	2025-02-13
VALID UNTIL	2030-02-12
GEOGRAPHICAL SCOPE	Global

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

Program related information

Program: The International EPD® System
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Accountabilities for PCR, LCA and independent, third-party verification
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR) PCR 2019:14 Construction products, version 1.3.4, 2024-04-30 c-PCR 021 *''Furniture'',V.2.0.0* adopted from EPD Norway, 2024-11-26
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Life Cycle Assessment (LCA)

LCA accountability:	ENVIROMETRICS Climate | Environment | Energy	ENVIROMETRICS S.A Kodrou 3 str., 152 32, Chalandri, Greece info@envirometrics.gr www.envirometrics.gr

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third party verifier: Galatsanos Charalambos, EQA Hellas Approved by: The **International EPD System**
Procedure for follow-up of data during EPD validity involves third party verifier: ☐Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility of the EPD.

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison.

Company Information

Drop MARTINIDIS S.A. was founded in 1987. Since then, it has been constantly evolving both in production technology and furniture design, aiming to fully meet the needs of end users. The dedication to our work, the constant update on new technologies in our field, the modernization of our machinery and trust in our people, are the values that have made us to stand out, to innovate and thrive for so many years. And these values are the ones that will support us in the future and make us stronger with even more quality to offer to our customers and consumers.

35 years of experience and knowledge of our profession makes us even more responsible and committed to all who cooperate with us. Company certification according to ISO 9001:2015 extends quality control beyond the production process to product design and marketing procedures, ensuring particular attention to the customers' needs.

High-quality raw materials and components, highly skilled workers, certified and strictly controlled manufacturing procedures characterize our production process.

Our industrial plant, on a total surface of about 12,000 m², is designed to perform the following operations

- CUTTING
- PROCESSING
- SLEEKING
- COATING
- ASSEMBLYING
- PACKING

All operations are certified according to ISO 9001/2012, ensuring quality control to the whole manufacturing process of our bathroom furniture. Creating bathroom furniture means working with a wide range of disparate materials. All materials used in the production of our bathroom furniture are sourced from suppliers carefully selected for production, quality and reliability in accordance with the European regulations for safety and environmental responsibility.

Our aim is to create incomparable bathroom furniture at a reasonable price point, always adapting our assortment to the markets requirements, ensuring that customer receives a final product of superior functionality and quality. Use of wood panels certified by the highest European standards for safety and non toxicity (E1 Class emission of Law EN120). Coating products in compliance with the European 11216 regulations (scratch resistance, durability over time without deterioration or variation in color gloss, resistance to dry and wet heat, tendency to retain dirt). Lights certified for safe use in bathrooms according to IP44 standards and for ecological recycling according to RoHS standards. Ceramic washbasin in compliance with the European EN 14688 standards for the conditions of use and accessories corresponding to "CE" certification. All options above confirm the quality of both DROP entire production process and DROP bath furniture.

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Product Information

Plywood bath furniture combines durability, water resistance, and a sleek aesthetic. Crafted from layers of wood veneers bonded together, it is treated to resist moisture, making it ideal for humid environments like bathrooms. As stated in the cover page, this EPD covers a product group category of two furniture:

- Bath furniture with plywood and closet-50 cm
- Bath furniture with plywood and drawer-80 cm

Components (for Bath furniture with plywood and closet-50 cm)		***Weight (kg per unit of product)***	***Biogenic carbon content* (kg C biogenic/unit)***
Base wood material	*Plywood*	*12,681*	*6,34*
Hinges	*Stainless steel*	*0,240*	*-*
Handles	*Zinc*	*0,100*	*-*
Shim with plastic base	*Stainless steel*	*0,047*	*-*
	ABS	*0,005*	*-*
Shelf support	*Polyethylene*	*0,002*	*-*
Total mass of the furniture		***13,075***	*6,34*
Packaging	*Polyethylene foam (for edges protection)*	*0,024*	*-*
	Carton (for edges protection)	*0,860*	*0,43*
	Corrugated board box	*1,500*	*0,75*
	Polyethylene Film	*0,100*	*-*
	Pallet	*0,425*	*0,213*
	Total packaging	***2,909***	*1,393*

*The biogenic carbon content of wood and wood-based products is considered as 50% of the product, as stated in EN 16449.

Components (for Bath furniture with plywood and drawer-80 cm)		***Weight (kg per unit of product)***	***Biogenic carbon content* (kg C biogenic/unit)***
Base wood material	*Plywood*	*13,881*	*6,94*
Concealed soft-closed mechanism	*Stainless steel*	*5,240*	*-*
Handles	*Zinc*	*0,100*	*-*
Total mass of the furniture		***19,221***	
Packaging	*Polyethylene foam (for edges protection)*	*0,024*	*-*
	Carton (for edges protection)	*0,860*	*0,43*
	Corrugated board box	*2,500*	*1,25*
	Polyethylene Film	*0,100*	*-*
	Pallet	*0,425*	*0,213*
	Total packaging	***3,909***	*1,893*

*The biogenic carbon content of wood and wood-based products is considered as 50% of the product, as stated in EN 16449.

According to the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation, the product does not contain any substance included in the Candidate List of Substances of Very High Concern (SVHCs) for authorization with concentrations higher than 0.1% weight by weight (w/w).

System Boundaries

X= Included, ND= Module Not Declared																	
	Product stage			Construction stage		Use stage							End-of-life stage				Resource recovery stage
	Raw Materials Supply	**Transportation to manufacturing gate**	**Manufacturing**	**Transportation to customer**	**Construction installation**	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	**De-construction and demolition**	**Transport**	**Waste processing for reuse, recovery and/or recycling**	**Disposal**	**Reuse-Recovery-Recycling-potential**
Module	**A1**	**A2**	**A3**	**A4**	**A5**	B1	B2	B3	B4	B5	B6	B7	**C1**	**C2**	**C3**	**C4**	**D**
Module Declared	**X**	**X**	**X**	**X**	**X**	ND	ND	ND	ND	ND	ND	ND	**X**	**X**	**X**	**X**	**X**
Geography	**EU**	**EU**	**GR**	**FI**	**FI**	-	-	-	-	-	-	-	**FI**	**FI**	**FI**	**FI**	**FI**
GWP-GHG share of Specific data used	**16,62%**			-									-	-	-	-	**-**
Variation-products	**47,25% deviation in GWP-GHG**			-									-	-	-	-	**-**
Variation-sites	**0%**			-									-	-	-	-	**-**

Product stage (A1-A3)

Product stage (modules A1-A3) includes raw material supply, transportation, and manufacturing.

A1: Raw Material Supply

Production starts with the material supply. This module includes the production of components that are assembled for furniture manufacturing, along with all upstream activities related to the production of these components (mining and processing of raw materials, electricity production, casting of metals etc.). The basic components of furniture are:

- Plywood
- hinges made of stainless steel,
- shims made of steel and ABS
- concealed mechanisms made of stainless steel
- handles made of zinc
- shelf support made of polyethylene foam

A2: Transportation of raw materials to manufacturer

Transportation module includes the delivery of components from suppliers to the gate of manufacturing plant of DROP in Sindos, Thessaloniki, Greece. All components are supplied from Greek manufacturers, except for handles, that are supplied from a manufacturer located in another European country. The only transportation mean is truck.

A3: Manufacturing

This module includes all emissions derived from the production of electricity and fuels required during the manufacturing process. Furthermore, here are included impacts that may occur during the manufacturing process (direct emissions in water/air from fuels combustion and water treatment, manufacturing waste treatment). Personnel-related activities (e.g. transportation to work) and infrastructure/capital goods production are not included in the scope of this study. The manufacturing of furniture includes the following stages:

- **Wood Cutting**: Large sheets of plywood are cut into specific sizes for different components. CNC (Computer Numerical Control) machines are often used for precision cutting, ensuring minimal waste and consistency.
- **Frame Assembly**: The main frame of the furniture is assembled first, attaching side panels, back panels, and top/bottom pieces with screws, dowels, or fasteners.
- **Addition of Hardware**: Any additional hardware such as handles, hinges is installed.
- **Quality Control and Testing**
- **Packaging:** The furniture is packaged with polyethylene films, paper cores and boxes (for edges protection), polyethylene films and wooden pallets.

Construction/Installation stage (A4-A5)

A4: Downstream transportation

This module includes transportation of furniture to the place where it is to be used. This EPD concerns products that are exclusively exported to clients in Finland.

Scenario information	Unit (expressed per declared unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat etc.	EURO 5 truck, diesel
Distance	2.925 km
Capacity utilisation (including empty returns)	100%

Bulk density of transported products	Not applicable
***Volume* capacity utilisation factor (factor: =1 or <1 or ~1 for compressed or nestedpackaged products)**	Not applicable

A5: Installation

This module includes impacts related to the installation of bath furniture into customer's place. Installation is conducted manually, so electricity and water required during the installation process is zero. Impacts from screws required for furniture fastening are negligible and excluded from the scope of the study. So, in this module, only impacts from the treatment of waste packaging materials and the compensation of biogenic emissions from wooden pallets and paper cores are taken into account.

For all packaging materials, data from European Statistical Authority have been acquired. Based on the most recent data of 2022 (Packaging materials waste end-of-life), in Finland, 57,8% of packaging materials are recycled, 37,40% are incinerated with energy recovery and 4,80% are landfilled. Since the installation takes place in Finland, the rates that correspond to this country have been used.

Scenario information	Unit (expressed per declared unit)
Ancillary materials for installation (specified by material);	Screws, excludes as they are considered negligible
Water use	None
Other resource use	None
Quantitative description of energy type and consumption during the installation process	Manual installation, no energy used
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	Waste packaging materials Polyethylene foam (for edges protection): 0,024 kg/DU Carton (for edges protection): 0,860 kg/DU Corrugated board box: 1,500 kg/DU Polyethylene Film: 0,100 kg/DU Pallet: 0,425 kg/DU

End of life stage (C1-C4)

The end-of-life stages begin with the deconstruction and demolition from the installation site and then the waste is transferred for recycling and disposal of the product.

C1: De-construction and demolition

This module refers to the impact arising from the diesel consumption of the heavy vehicles during demolition process. The end-of-life stages begin with the deconstruction and demolition from the installation site and then they transferred for recycling and disposal. In this case, the results of this module as reported as zero, since the disassembly is conducted manually, according to c-PCR 021.

C2: Transportation to waste processing

This module includes the transportation of the discarded product either to the recycling site or to landfills for final disposal. A distance of 50 km by lorry 16-32 tonnes from construction/demolition sites to waste dealers and disposal sites has been chosen as a conservative assumption.

C3: Waste processing for reuse, recovery and/or recycling

This module encompasses the impacts related to the recycling of the discarded product. The following scenarios have been considered:

- For plywood, treatment rates are based on the report *''Screening study on end-of-life treatment of wood''* (End-of-life treatment of wood). According to this study, which reflects average Europe data 34% of wood products are recovered (energy recovery), 43% are recycled and 23% are disposed to landfills.
- For steel parts (hinges, etc.), data from World Steel Association are used. According to World Steel Association (Life cycle inventory (LCI) study, 2020 data release, May 2021 -Steel end of life treatment-), the average recycling rate of steel after its life cycle is 85%. The rest is assumed to be landfilled.
- For zinc parts (handles), data from International Zinc Association are used. According to indicators presented in their site (Zinc end of life treatment), the average recycling rate of zinc after its life cycle is 57%. The rest is assumed to be landfilled.

C4: Disposal

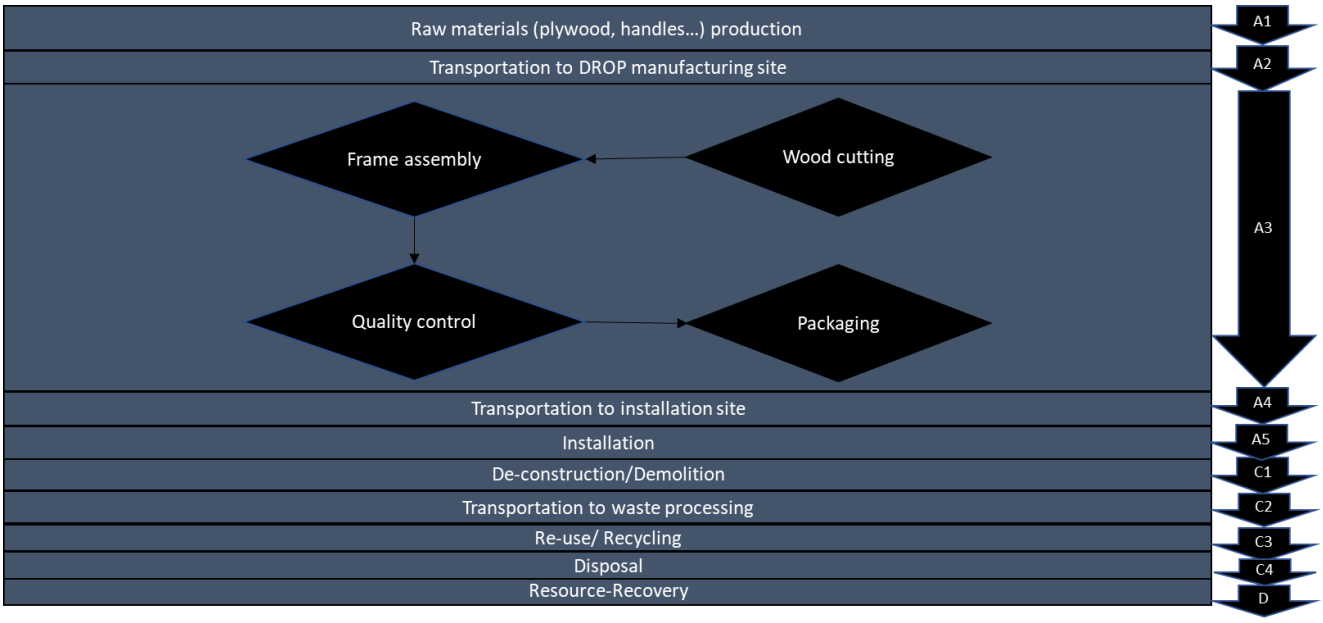
The disposal rates of components after their life cycle are presented above.

Resource and recovery stage (D)

D: Reuse-Recovery-Recycling-potential

Module D is related to benefits beyond system boundaries, containing environmental credits coming from modules A5 and C3. The following were included in the assessment:

- The part of recycling for packaging materials (pallets, paper, polyethylene) and product (wood, steel) instead of production from primary sources.
- The energy recovered from incineration of part of packaging (pallets, paper, polyethylene) and product (wood) instead of production from primary sources.



LCA Information

Declared unit

The declared unit of the study is 1 piece (Pc) of bath furniture with specific weights per piece:

- 13,075 kg/Pc for Plywood bath furniture with closet-50 cm, plus its packaging of 2,909 kg
- 19,221 kg/Pc for Plywood bath furniture with drawer-80 cm, plus its packaging of 3,909 kg

manufactured in **DROP MARTINIDIS** plant located in **Sindos, Thessaloniki, Greece**. These products will be grouped into one category, and the worst-case results for every impact indicator will be presented (more specifically, the results of Plywood bath furniture with drawer-80 cm, since these are the worst for every impact indicator).

Goal and Scope

This EPD evaluates the environmental impacts of the production of 1 piece of plywood furniture, from cradle to gate (modules A1-A3), along with construction/installation stage (modules A4-A5) end-of-life modules (C1-C4) end module D.

Cut-off rules

The cut-off criteria adopted is as stated in *"EN 15804:2012+A2:2019".* Where there is insufficient data for a unit process, the cut-off criteria are 1% of the total mass of input of that process. In this case, cut-off was applied in screws for assembling and municipal solid waste during the manufacturing process. The percentage of the cut-off materials is 0,50% of the total production.

Allocations

Allocation rules have been performed in accordance with the requirements of ISO 14044:2006. Where allocation cannot be avoided, the inputs and outputs of the system were partitioned between its different products or functions in a way that reflects the underlying physical or economic relationships between them. In this case, allocation based on the production volumes of the studied products and the total production volumes of furniture was applied in the following streams.

- Electricity
- Diesel oil
- Natural gas
- Manufacturing wastes

End-of-Life allocation generally follows the requirements of ISO 14044 & EN 15804. The allocation of waste shall follow the polluter-pays principle that is made operational according to the following rules. Processes of waste processing shall be assigned to the product system that generates the waste until the end-of-waste state is reached. The system boundary to the subsequent product system is set where the waste (e.g., the discarded product) reaches the end-of-waste state, i.e., when the material has become a usable flow (e.g., for reuse, energy recovery and/or recycling). The following rules indicate that for all waste that require disposal in modules A5, & C4, impacts from the whole disposal activity will be assigned in this product system. For waste (or parts thereof) that require recycling, only the sorting and transportation of waste will be assigned to this product system. Impacts from incineration with energy recovery are not taken into account, based on the assumption that the incinerator pays for the material or receives it or picks it up for free, so environmental

burden is assigned to the product system using the energy. Only manually added as *Materials for Energy Recovery (MER)* in A5 & C3 module.

Data quality

ISO 14044 was applied in terms of data collection and quality requirements. The impact of the production of raw materials recovered from *Ecoinvent database v.3.10.1+EN 15804 add-on*. The data concerning the modules A2 (Transportation) and A3 (Product manufacturing) were provided by DROP MARTINIDIS and concerns the full year 2023. These data were the quantities of all input and output materials extracted from the company's SAP system and predetermined Bill of Materials, the consumed utilities (energy, natural gas and diesel) from bills and invoices. Regarding electricity mix, the latest (2023) national residual electricity mix as published in DAPEEP S.A. was utilized. The climate impact (GWP-GHG) of this electricity, as calculated from a manually created dataset in openLCA is 0,7068 kg CO_2 eq./kWh. The CO_2 emissions from diesel and natural gas combustion data were calculated from the National Inventory Report (NIR) of Greece (NIR Greece) The end-of-life are based on the most representative scenarios for this product. Background data for this stage are retrieved from *Ecoinvent v.3.10.1+EN 15804 add-on.*

Time representativeness

Data obtained refer to the year 2023

Software used

OpenLCA v.2.3

Characterization factors (JRC)

Based on Reference package EF 3.1

Environmental Performance

The results of the studied category of bath furniture, based on the worst-case results, are presented. The results shown below, correspond to the *bath furniture with plywood and drawer-80 cm,* since they are the worst case result for every impact indicator. The appropriate convention factors from the declared worst-case product to the other product *(bath furniture with plywood and closet-50 cm)* are presented in ***Appendix***. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The use of the results of modules A1-A3 is discouraged without considering the results of module C. For Primary Energy Use indicators, option B of PCR 2019:14 v.1.3.4 has been followed.

IMPACTS	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	**kg CO2 eq**	1.98E+00	9.62E+00	2.41E+00	0.00E+00	1.64E-01	2.97E+01	1.52E+00	-1.16E+01
GWP-fossil	**kg CO2 eq**	3.50E+01	9.13E+00	1.62E-01	0.00E+00	1.56E-01	2.91E-01	4.12E-02	-1.16E+01
GWP-biogenic	**kg CO2 eq**	-3.31E+01	1.33E-01	2.25E+00	0.00E+00	2.27E-03	2.94E+01	1.48E+00	0.00E+00
GWP-luluc	**kg CO2 eq**	9.26E-02	3.51E-01	8.83E-05	0.00E+00	5.99E-03	7.76E-04	2.27E-05	-1.60E-03
GWP-GHG[1]	**kg CO2 eq**	3.52E+01	9.49E+00	4.15E-01	0.00E+00	1.62E-01	2.92E-01	2.37E-01	-1.16E+01
ODP	**kg CFC-11 eq**	7.88E-07	3.48E-07	1.95E-09	0.00E+00	5.94E-09	3.89E-09	1.06E-09	-1.75E-07
AP	**mol H+ eq**	2.03E-01	2.96E-02	7.33E-04	0.00E+00	5.06E-04	1.51E-03	2.88E-04	-4.57E-02
EP-freshwater	**kg P eq**	1.96E-02	7.18E-04	2.14E-05	0.00E+00	1.23E-05	5.91E-05	2.81E-05	-6.64E-03
EP-marine	**kg N eq**	6.20E-02	1.30E-02	5.13E-04	0.00E+00	2.22E-04	5.06E-04	1.19E-03	-9.85E-03
EP-terrestrial	**mol N eq**	6.47E-01	1.10E-01	2.81E-03	0.00E+00	1.88E-03	5.41E-03	1.18E-03	-1.00E-01
POCP	**kg NMVOC eq**	2.08E-01	4.21E-02	1.13E-03	0.00E+00	7.20E-04	1.75E-03	4.75E-04	-3.55E-02
ADPe[2]	**kg Sb eq**	3.40E-04	3.42E-05	6.65E-07	0.00E+00	5.84E-07	7.72E-07	8.84E-08	-6.85E-05
ADPf[2]	**MJ**	5.56E+02	1.31E+02	1.81E+00	0.00E+00	2.24E+00	4.04E+00	9.13E-01	-1.23E+02
WDP[2]	**m³ eq**	2.97E+01	8.56E-01	1.96E-02	0.00E+00	1.46E-02	3.78E-02	4.01E-03	-1.47E+00

[1] GWP-GHG indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product, with characterization factors (CFs) based on IPCC (2013).

[2] The results of this environmental impact indicators of ADPf, ADPe and WDP shall be used with care as the uncertainties of these results are high or as there is limited experienced with the indicator.

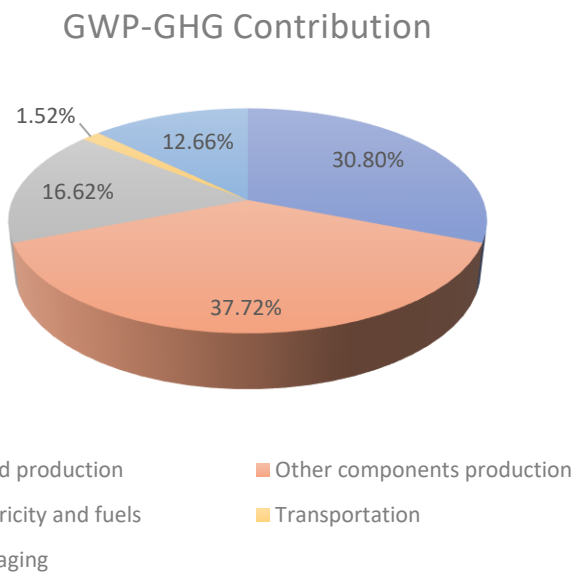
RESOURCE USE	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	**MJ**	5.72E+01	2.36E+00	6.82E-02	0.00E+00	4.04E-02	1.95E-01	1.09E-02	-5.87E+00
PERM	**MJ**	7.77E+02	3.28E-01	-4.32E+01	0.00E+00	5.61E-03	-6.96E+02	-3.51E+01	0.00E+00
PERT	**MJ**	8.34E+02	2.69E+00	-4.31E+01	0.00E+00	4.60E-02	-6.96E+02	-3.51E+01	-5.87E+00
PENRE	**MJ**	5.35E+02	1.21E+02	1.66E+00	0.00E+00	2.07E+00	3.76E+00	8.28E-01	-1.22E+02
PENRM	**MJ**	2.16E+01	1.22E+01	-2.74E+00	0.00E+00	2.09E-01	-1.03E+01	-5.20E-01	0.00E+00
PENRT	**MJ**	5.56E+02	1.34E+02	-1.07E+00	0.00E+00	2.28E+00	-6.55E+00	3.09E-01	-1.22E+02
SM	**kg**	8.33E+00	1.50E-01	2.32E+00	0.00E+00	2.56E-03	5.98E+00	6.81E-04	-5.83E+00
RSF	**MJ**	1.34E+00	1.47E-02	2.80E-03	0.00E+00	2.51E-04	3.38E-03	1.21E-04	1.04E-01
NRSF	**MJ**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	**m³**	6.83E-01	3.42E-02	-2.79E-04	0.00E+00	5.85E-04	1.06E-03	-1.17E-02	-2.48E-02

WASTE CATEGORIES	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	4.84E+00	2.12E-01	6.12E-03	0.00E+00	3.62E-03	8.84E-03	1.07E-03	-1.90E+00
NHWD	kg	1.91E+01	1.33E+00	1.88E-01	0.00E+00	2.28E-02	0.00E+00	3.98E+00	-2.93E+00
RWD	kg	1.32E-03	2.90E-05	1.71E-06	0.00E+00	4.96E-07	4.48E-06	2.12E-07	5.19E-05
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-19
MFR	kg	4.16E+00	9.42E-02	2.26E+00	0.00E+00	1.61E-03	1.04E+01	0.00E+00	-1.09E+00
MER	kg	6.02E-04	6.60E-06	1.46E+00	0.00E+00	1.13E-07	4.72E+00	0.00E+00	4.66E-05
EE,e	MJ	6.97E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.10E-02
EE,t	MJ	4.55E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.90E-02

ADDITIONAL	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	3.90E-06	8.67E-07	1.44E-08	0.00E+00	1.48E-08	2.57E-08	6.54E-09	-5.45E-07
IR[3]	kBq U235 eq	5.18E+00	1.19E-01	6.72E-03	0.00E+00	2.04E-03	1.79E-02	8.64E-04	1.93E-01
EF	CTUe	8.37E+02	3.79E+02	7.84E+00	0.00E+00	6.49E+00	1.76E+00	4.51E-01	-5.92E+02
HT-c	CTUh	5.18E+00	1.19E-01	6.72E-03	0.00E+00	2.04E-03	1.79E-02	8.64E-04	1.93E-01
HT-nc	CTUh	2.11E-06	1.26E-07	2.56E-09	0.00E+00	2.15E-09	2.70E-09	8.78E-10	-1.04E-07
LU	Dimensionless	3.87E+03	1.13E+02	7.88E-01	0.00E+00	1.94E+00	2.62E+00	2.09E+00	-2.59E+01

[3]Ionizing radiation potential (IRP) impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Interpretation



As presented above, production of components other than wood (metal mechanisms and handles) contributes the most for the production of furniture, accounting for 37,72%, while production of wood is responsible for

30,80% of GWP-GHG impact. Next most significant stream is electricity and fuels required for the manufacturing process, contributing 16,62%. Production of packaging materials contribute 12,66% of the total GWP-GHG impact. Finally, transportation of raw and packaging materials is of minor importance, with a contribution reaching 1,52%.

Additional information

The EPD does not give information on release of dangerous substances to soil, water and indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.

Abbreviations

LCA	Life Cycle assessment
EPD	Environmental Product Declaration
PCR	Product category rules
GWP-total	Global Warming Potential total
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Ozone Depletion Potential
AP	Acidification Potential
EP-freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment
EP-marine	Eutrophication Potential fraction of nutrients reaching marine end compartment
EP- terrestrial	Eutrophication potential, Accumulated Exceedance
POCP	Formation potential of tropospheric ozone photochemical oxidants
ADPe	Abiotic depletion potential for non-fossil resources
ADPf	Abiotic depletion potential for fossil resources
WDP	Water use
PERE	Use of renewable primary energy excluding resources used as raw materials
PERM	Use of renewable primary energy resources used as raw materials
PERT	Total use of renewable primary energy resources
PENRE	Use of non-renewable primary energy excluding resources used as raw materials
PENRM	Use of non-renewable primary energy resources used as raw materials
PENRT	Total use of non-renewable primary energy resources
SM	Use of secondary material
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Use of net fresh water
HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for re-use
MFR	Materials for recycling
MER	Materials for energy recovery
EE	Exported Energy
PM	Particulate matter emissions
IR	Ionizing radiation, human health
ETP-FW	Ecotoxicity, freshwater

HTP-c	Human toxicity, cancer
HTP-nc	Human toxicity, non-cancer
SQP	Land use related impacts/Soil quality

References

- ***General Programme Instructions*** *for the International EPD® System. Version 4.0, 2021-03-29*
- ***PCR 2019:14*** *v.1.3.4 Construction products. EPD System. (2024-04-30)*
- ***c-PCR 021 ''Furniture''****, v.2.0.0 (2024-11-26)*
- ***EN 15804:2012+A2:2019/AC,*** *Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products*
- ***ISO 14020:2000*** *Environmental labels and declarations — General principles*
- ***ISO 14025:2006*** *Environmental labels and declarations - Type III environmental declarations — Principles and procedures*
- ***ISO 14040:2006*** *Environmental management - Life cycle assessment-Principles and framework*
- ***ISO 14044:2006*** *Environmental management - Life cycle assessment - Requirements and guidelines*
- ***Ecoinvent / Ecoinvent Centre****, www.Eco-invent.org*
- ***TACKLING RECYCLING ASPECTS IN EN15804*** *- Christian Leroy, Jean-Sebastien Thomas, Nick Avery, Jan Bollen, Ladji Tikana*
- ***World Steel Association, Seventh Global study***
- ***International Zinc Association***
- ***European Statistical Authority***
- ***National Inventory Report for Greece for 2023***

Appendix

Deviations from the declared worst case (Conversion factors from the declared to the other product)

IMPACTS	Unit	A1-A3	A4	A5	C1	C2	C3	C4
GWP-total	kg CO2 eq	-5.942	0.691	0.882	0.000	0.691	0.914	0.911
GWP-fossil	kg CO2 eq	0.526	0.691	0.766	0.000	0.691	0.945	0.654
GWP-biogenic	kg CO2 eq	0.913	0.691	0.890	0.000	0.691	0.914	0.914
GWP-luluc	kg CO2 eq	0.786	0.691	0.865	0.000	0.691	0.930	0.667
GWP-GHG	kg CO2 eq	0.527	0.691	0.730	0.000	0.691	0.945	0.859
ODP	kg CFC-11 eq	0.708	0.691	0.780	0.000	0.691	0.946	0.629
AP	mol H+ eq	0.645	0.691	0.759	0.000	0.691	0.981	0.650
EP-freshwater	kg P eq	0.567	0.691	0.795	0.000	0.691	1.000	0.875
EP-marine	kg N eq	0.708	0.691	0.735	0.000	0.691	0.960	0.883
EP-terrestrial	mol N eq	0.714	0.691	0.753	0.000	0.691	0.963	0.648
POCP	kg NMVOC eq	0.701	0.691	0.748	0.000	0.691	0.959	0.671
ADPe	kg Sb eq	0.695	0.691	0.770	0.000	0.691	1.000	0.709
ADPf	MJ	0.622	0.691	0.779	0.000	0.691	0.944	0.632
WDP	m^{3} eq	0.773	0.691	0.806	0.000	0.691	0.967	0.718

RESOURCE USE	Unit	A1-A3	A4	A5	C1	C2	C3	C4
PERE	MJ	0.655	0.691	0.792	0.000	0.691	0.966	0.712
PERM	MJ	0.909	0.691	0.861	0.000	0.691	0.914	0.914
PERT	MJ	0.891	0.691	0.861	0.000	0.691	0.914	0.914
PENRE	MJ	0.618	0.691	0.780	0.000	0.691	0.945	0.633
PENRM	MJ	0.724	0.691	0.708	0.000	0.691	0.914	0.914
PENRT	MJ	0.622	0.691	0.597	0.000	0.691	0.903	1.000
SM	kg	0.669	0.691	0.744	0.000	0.691	0.973	0.721
RSF	MJ	0.845	0.691	0.745	0.000	0.691	0.992	0.695
NRSF	MJ	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FW	m^{3}	0.800	0.691	0.638	0.000	0.691	0.970	0.944

WASTE CATEGORIES	Unit	A1-A3	A4	A5	C1	C2	C3	C4
HWD	kg	0.157	0.691	0.791	0.000	0.691	0.978	0.718
NHWD	kg	0.530	0.691	0.744	0.000	0.691	0.000	0.535
RWD	kg	0.733	0.691	0.781	0.000	0.691	0.967	0.709
CRU	kg	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MFR	kg	0.532	0.691	0.744	0.000	0.691	0.471	0.000
MER	kg	0.845	0.691	0.744	0.000	0.691	0.914	0.000
EE,e	MJ	0.853	0.000	0.000	0.000	0.000	0.000	0.000
EE,t	MJ	0.734	0.000	0.000	0.000	0.000	0.000	0.000

ADDITIONAL	Unit	A1-A3	A4	A5	C1	C2	C3	C4
PM	Disease incidence	0.651	0.691	0.757	0.000	0.691	0.969	0.650
IR	kBq U235 eq	0.732	0.691	0.782	0.000	0.691	0.966	0.709
EF	CTUe	0.192	0.691	0.712	0.000	0.691	0.965	0.820
HT-c	CTUh	0.732	0.691	0.782	0.000	0.691	0.966	0.709
HT-nc	CTUh	0.196	0.691	0.746	0.000	0.691	1.000	0.849
LU	Dimensionless	0.899	0.691	0.833	0.000	0.691	0.998	0.663