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BIM-LCA Construction Project

Spanish Case Study Report: LCA of a Single-family house.

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1 - Aims

UPCT and CTCON developed the case study "Construction products life cycle analysis (LCA) using a Building Information Modelling (BIM) model of a single-family house".

Its main goal is to develop a didactic methodology for teaching and learning concepts related to the circular economy and the LCA in construction, through the study of several alternatives in the construction of a single-family home.

2 – Description of the case study

The Spanish case study of this Project has focused on studying several solutions to build a single-family house and perform a life cycle analysis (LCA) of each alternative using the BIM models created. The objective of this LCA assessment is to compare the sustainability of each solution.

• Solution 1: Single-family house with concrete structures and brick envelope.

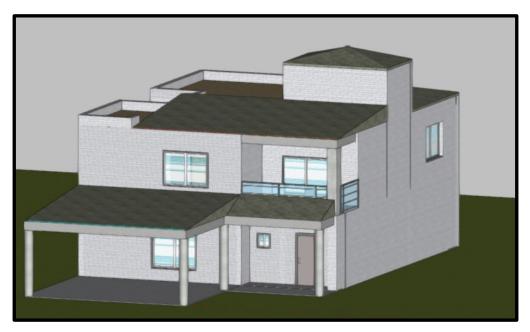


Figure 1. House with concrete structure.







Solution 2: Single family house with steel structure and brick envelope



Figure 2. House with steel structure.

Solution 3: Singel family house with structure and envelope in timber.

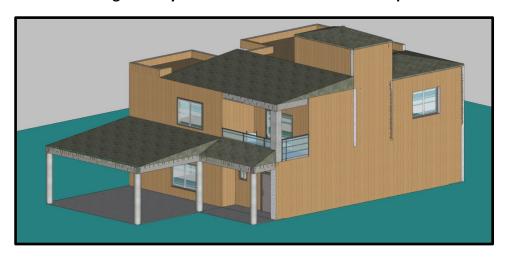


Figure 3. House with timber structure and timber envelope

2.1.- Starting data for the study:

2.1.1. Localization of the single-family house.

The single-family house is located in Cartagena municipality, in an area on the outskirts of this port city that belongs to the Province of Murcia in Spain. The construction zone of the project has been specifically defined as a normal accessibility zone, with minimum slopes.





Figure 4. Project Location.

The surface of the plot is estimated at an area close to 700 square meters, while the total built area is believed to be close to 360 m2.

2.1.2. Characteristics of the house

It is a detached house of two floors above ground, with two parking spaces on its main façade south of the location of the house, with large patio on the rear façade, common areas and a toilet on the lower floor, and three bedrooms and three bathrooms on the upper floor. With flat and sloping roof areas.



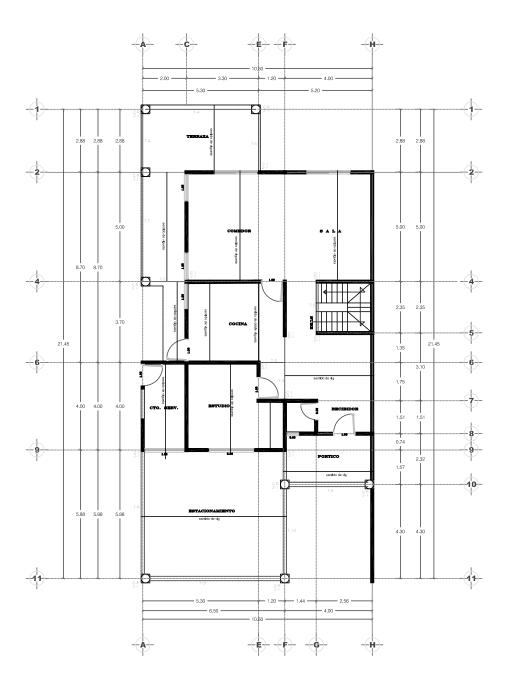


Figure 5. Plan of ground floor.



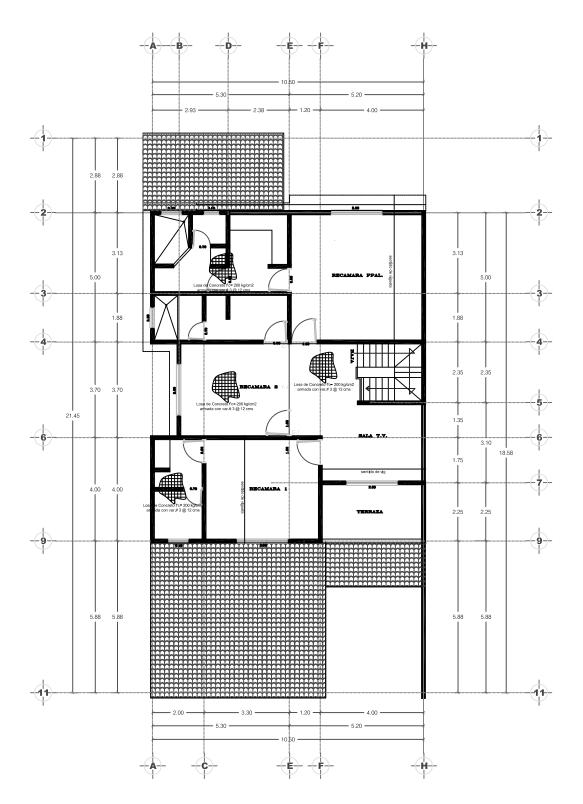


Figure 6. Plan of first floor.



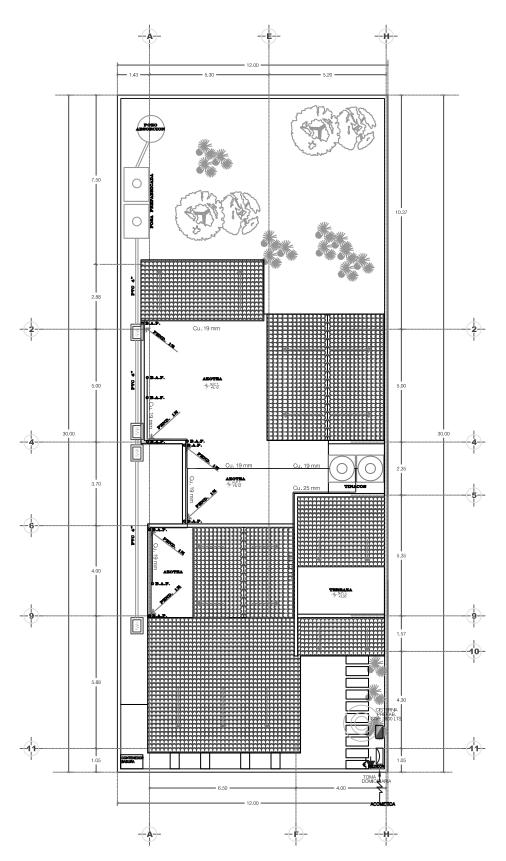


Figure 7. Overall plan

It is estimated that the construction area is 360 m^2 , The terrain on which the house sits is a semi-hard clay soil.





Each of the mentioned solutions to be studied in this case of study of the BIM-LCA Construction Project, has been offered as a master's thesis or final degree project to Civil Engineering students of the UPCT.

The following section shows one of the offers made to students.

2.2.- Example of Master Thesis offered

Title in English: Timber structure design and life cycle analysis of a single-family house using BIM and LCA tools.

Objectives: The aim of this study is to carry out the design of the timber structure of a single-family house following Eurocode 5, and an analysis of the environmental impact produced by this construction throughout its life cycle following the EN ISO 15978:2012 standard. In order to carry out the analysis of the life cycle of the single-family house, a BIM model will be built as a preliminary step, from which the measurements of the materials used and other parameters will be obtained. In the second part of this master thesis, a parametric study will be carried out to analyse the improvement for the environment caused by the use of other materials in the structure and thermal envelope and the change in the transport distances of the materials.

Phases: In this master's thesis the student will have to develop the following phases:

Phase 1: Choice of the type of foundation according to the geotechnical properties of the ground.

Phase 2: Choice of the enclosure and partitions of the dwelling. Several alternatives.

Phase 3: Determination of gravity loads (own weight, dead loads, service loads...) and horizontal loads (wind and earthquakes) acting on the building for its design.

Phase 4: Design of the structural system of the house. Pre-dimensioning of beams, columns and floors under gravity loads and service load.

Phase 5: Analysis to obtain internal forces and deformations in the structure after carrying out the appropriate combinations of actions.

Phase 7: Verification of the ultimate and serviceability limit states of both the foundation and the rest of the structural elements.

Phase 8: BIM modelling of the house with Cype Architecture.

Phase 9: Obtaining measurements of housing materials with Open BIM Quantities

Phase 10: Construction budget and Life Cycle Analysis of the building in stages A1-A5 with the Archimedes Cype tool. These stages are as follows:

- Product:A1-A3
 Extraction of raw materials (A1)
 Transport to factory (A2)
 Manufacturing (A3)
- Construction process: A4 A5
 Transport of the product (A4)





Product installation and construction process (A5)

Phase 11: Full life cycle analysis of the building with OneClick. Input: measurements and other parameters in Excel sheet. This analysis will be carried out according to the standard *UNE* 15978:2012. Sustainability in construction. Assessment of the environmental performance of buildings. Calculation methods.

In this analysis, in addition to steps A1-A5, the following steps will be considered:

- Stage of use, information modules related to the building structure.
 - B1: use or application of the installed product; B2: maintenance;
 - B3: repair; B4: replacement; B5: rehabilitation.
- Stage of use, information modules related to the operation of the building.
 - B6: in-service energy use (e.g. operation of the heating system and other installed services linked to the building;
 - B7: in-service water use.
- End-of-life stage. The stage includes the supply and transport of all materials and products, and the associated energy and water use.
 - C1: deconstruction, demolition;
 - C3: treatment of waste for reuse, recovery and/or recycling;
 - C4: elimination.
- Benefits and burdens beyond system boundaries. The stage includes:
 - D: potential for reuse, recovery and/or recycling, expressed as net loads and benefits.

Phase 12: Comparison of the results of the analysis with the results of other case studies, other Master's Thesis, of single-family houses with concrete or steel structure and brick envelopes. The results of the life cycle analysis to be compared will be the corresponding indicators of environmental impact, use of resources and other indicators relating to waste generated, reusable materials.

Phase 13: Drafting of a tutorial guide for the use of BIM and LCA tools in this case study.

Requirements: Student of the Master's Degree in Civil Engineering.

Abstract: The assessment of the environmental impact of a building throughout its life cycle is a very useful tool to quantify the sustainability of building materials. This Master's Thesis aims to develop a life cycle analysis for a case study and compare the results with other cases already analysed. The design of a single-family house with timber structure with BIM tools will be the first step to carry out the life cycle analysis.

Bibliography:

UNE-EN ISO 14040: 2006.Environmental Management. Life Cycle Analysis. Principles and reference framework.

UNE-EN ISO 14044: 2006. Environmental Management. Life Cycle Assessment. Requirements and guidelines.

UNE-EN 15978:2012 Sustainability in construction. Assessment of the environmental performance of buildings. Calculation methods.

UNE-EN 1995-1-1. Eurocode 5: Design of timber structures Part 1-1: General rules and building regulations.

Spanish Technical Building Code.





Competences: Those included in the MUICCP Master's Thesis Teaching Guide. In addition: ability to use BIM and LCA tools to assess the sustainability of the materials used in the construction of a single-family house.

3 – State of the art use of BIM and LCA to assess the sustainability of a building.

The high environmental impact of residential buildings throughout their lifecycle has aroused growing and notable interest within the scientific community in recent decades, utilizing the methodology of Life Cycle Assessment (LCA).

Over time, various methodologies have been devised to assess environmental impact. The most internationally recognized methodology is Life Cycle Assessment (LCA), applied to construction sector products through the UNE-EN 15804 standard (2012) and to buildings through the UNE-EN 15978 standard (2012). Additionally, the LCA methodology also serves as a decision-making tool in the design and construction stages of the building, particularly in the selection of construction materials with a lower associated environmental impact.

From the review of the literature on LCA studies applied to the environmental assessment of buildings, it is concluded that the buildings most frequently analyzed are residential ones in the European continent, with the ultimate goal of evaluating newly constructed buildings. Within the scope, the lifecycle stages most frequently analyzed are product and construction, followed by end-of-life. The most commonly used functional unit is the total building area, considering its expected service life, which is generally assumed to be 50 years.

On the other hand, despite articles specifically addressing LCA in buildings, it should be noted that both inventory databases and software tools used are not typically specific to buildings. Most authors employ generic databases and software that could also be used for LCA of other types of products or systems. This indicates that there is still progress to be made in the development and use of building-specific software and databases that adapt to the specific conditions of each region.

The potential of Building Information Modeling (BIM) tools in facilitating decision-making processes during Life Cycle Assessment (LCA) applications within the context of building construction has been widely acknowledged and documented in a number of academic review articles [1], [2]. For instance, Soust-Verdaguer et al. [3] conducted a comprehensive review of studies that explored the synergies between BIM and LCA, with a specific focus on how BIM can streamline data input and optimize the output of LCA tools. This review also put forth practical strategies for integrating BIM software and LCA tools, such as the development of templates and software plug-ins. It is





important to note, however, that this review predates 2018, and many recent publications on this subject have not been considered.

In particular, since 2018, a substantial number of research papers have emerged that investigate the integration of BIM and LCA through case studies. Eleftheriadis et al. [4], for instance, conducted an in-depth review that delved into the relationship between BIM and LCA in terms of enhancing energy efficiency (including embodied and operational energy) and engineering performance aspects (such as cost and safety) of structural systems. This review underscored the imperative of incorporating BIM in the decision-making process related to building structures and presented critical insights in both engineering and sustainable energy domains, along with proposing a set of research guidelines. However, it primarily emphasized a qualitative perspective, without thoroughly addressing the methodological barriers and quantitative aspects associated with BIM-integrated LCA.

Similarly, Llatas et al. [5] conducted a systematic literature review (SLR) with the aim of identifying opportunities for integrating LCA into the BIM process during the building design phase. Their review paper introduced an approach to assist in the implementation of BIM-integrated LCA; however, it analyzed only 36 case studies published in two specific journals.

Dalla Mora et al. [6], on the other hand, conducted an extensive review of BIM-integrated LCA studies published between 2007 and 2019, demonstrating how BIM could enhance data management in LCA applications. They also examined the influence of various parameters in this context and highlighted the notable absence of readily available LCA databases integrated into BIM tools as a significant challenge. Nevertheless, a systematic analysis of how these factors affect the BIM-integrated LCA application remains limited.

Seyis [7] conducted a comprehensive review that identified the advantages and disadvantages associated with BIM-based LCAs. The findings of this review pointed to laborious data input processes as a primary challenge in BIM-integrated LCA. A similar study was conducted by Obrecht et al. [8], which facilitated a comparative assessment of different types of BIM-integrated LCA methods, weighing their respective strengths and weaknesses.

Panteli et al. [9] focused their research on prior studies concerning the use of BIM for environmental assessments of buildings during the design phase. They emphasized the critical importance of data interoperability between BIM and LCA tools in this context.

In summary, while these previously published works have conducted reviews of the integration of BIM and LCA, there exists a compelling need for a more systematic and comprehensive review to provide a deeper understanding of these crucial aspects within the field of BIM-integrated LCA. In the work of Teng et al. [10] a systematic review of previous work on the integration of BIM and LCA is developed. The fig. 7 and table 1 show some results of this work.





Concerning the methodological aspects of software integration and data interchange, a pivotal undertaking revolves around the formulation of strategies for achieving seamless software integration and efficient data exchange between Building Information Modeling (BIM) software and Life Cycle Assessment (LCA) tools. Conventionally, LCA for buildings tends to be executed toward the latter stages of the design process, a juncture at which precise and comprehensive data become accessible. However, at this stage, influencing critical decisions may be impractical or too late in the development process. To ameliorate this challenge, various methodological approaches have been proposed with the aim of integrating BIM software and LCA tools more effectively.

Data exchange emerges as another significant hurdle when dealing with disparate data formats inherent to BIM software and specialized LCA tools. The paramount objectives in coupling BIM and LCA tools often encompass the exportation of Bill of Quantities (BoQ) and the establishment of building datasets, both of which represent intricate and time-intensive procedures. In this context, three distinct approaches have been identified by Teng et al. [10] to facilitate data transfer between BIM and LCA tools. These approaches encompass the integration of a process that amalgamates diverse data into a third-party application or tool (Type I), the importation of a BoQ report generated from the BIM model into a dedicated LCA tool (Type II), and the utilization of plug-ins that incorporate LCA data into BIM software (Type III) (as illustrated in Figure 7). A comparative analysis of these three categories of approaches is delineated in Table 1.

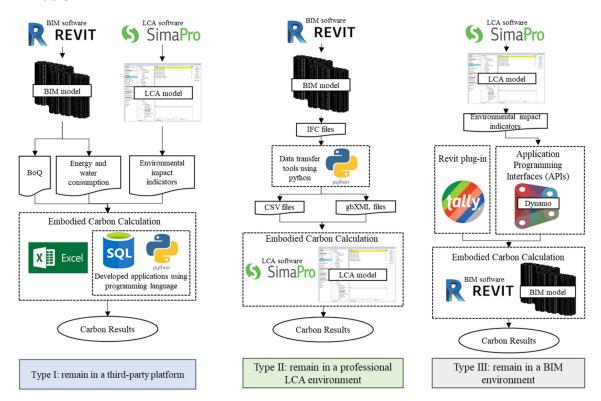


Figure 8. Three approaches for data exchange between BIM software and LCA tools. (Source: Tend et al. [10])



Table 1: Three types of data exchange approaches between BIM and LCA tools. (Source: Tend et al. [10])

Туре	Data exchange approach	Calculation platform	Description	Advantage	Disadvantage
I	From BIM and LCA to a third party	Excel	Importing a BoQ report generated from the BIM model and corresponding emission factors provided by LCA tools into Excel	Simple and time-saving	Inefficient to handle a more complex calculation
		Self-developed application	Using programming language to achieve automatic data extraction and calculation between BIM and LCA tools	Automatic and clear calculation	Only numerical results can be obtained
II	From BIM to LCA	Professional LCA tools	Importing a BoQ report generated from the BIM model or BIM model into dedicated LCA tools	Professional, detailed and visualized analysis	Inconsistent data formats of material databases; Manually data mapping is needed
Ш	From LCA to BIM	BIM platform	Using a Revit plug-in to conduct LCA Importing LCA data into BIM objects or an in-built database through application programming interfaces (APIs)	Flexible data modification, integrated data storage, quick feedback, and intuitive visualization	Inaccuracy of the results Manual data mapping is needed

4 - Regulations and standards

LCA regulations and standards:

- UNE-EN ISO 14040: 2006.Environmental Management. Life Cycle Analysis. Principles and reference framework.
- UNE-EN ISO 14044: 2006. Environmental Management. Life Cycle Assessment. Requirements and guidelines.
- UNE-EN 15978:2012 Sustainability in construction. Assessment of the environmental performance of buildings. Calculation methods.

BIM regulations and standards:

- UNE-EN ISO 16739-1: Data exchange in the construction industry and in property management using IFC (Industry Foundation Classes).
- UNE-EN ISO 19650-1: Organization and digitization of information in building and civil engineering works that use BIM (Building Information Modelling).

5 – Case study methodology.

In the Spanish Case Study of this BIM-LCA project, Cype's Open BIM software package has been used (see next Figure):





- With them we design the structure of the house (using CypeCad) and its corresponding Open BIM model, that is, its BIM model in IFC format. We upload this BIM model of the housing structure to a server (BIMServerCenter).
- Then we use another software (Cype Architecture) to create the BIM model of the architectural part of the house.
- Next, we enrich the BIM model of the house by incorporating information about the housing envelope with **Open BIM Construction Systems**.
- And finally, we use the Open BIM Quantities and Arquimedes software to build
 the Bill of Quantities of the construction, from the measurements that the
 software makes in the elements of the BIM model. Arquimedes is able to print
 the LCA report that has been made by adding impacts of each of the budget
 items using the Cype LCA database.

This LCA only contains stages A1 to A5. Next Figure shows the workflow and data exchange in the Spanish Case Study using Cype software and BIMServerCenter. In this workflow each software exchanges information with the OpenBIM model of the house that is stored in a BIMServerCenter Project.

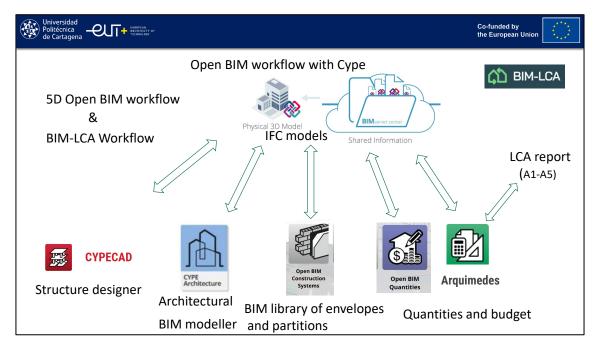


Figure 9. Workflow in the Spanish Case Study using OneClick LCA.

With the workflow followed to develop the Spanish case study, the integration between the BIM model and the LCA assessment is perfect since the same database that serves to build the Bill of Quantities serves to perform the Construction Life Cycle Analysis.





The Cype Architecture software is explained in a tutorial of this BIM-LCA Construction E+ Project.

Another way to use Archimedes to obtain the LCA of the construction is to use the excel sheet developed in this project.

As a result of this project (BIM-LCA Construction), a web application has been developed that, based on quantities of material used in the construction of a building (single-storey housing, multi-storey building or industrial warehouse), makes an LCA to show a series of environmental impacts of construction in phases A1-A3 (extraction and manufacture of construction products). This app is available on the BIM-LCA Construction Project website (https://bimlca.eu)

An LCA Excel App has also been developed with the aim of performing building LCAs and showing the cost and environmental impacts of building construction (A1-A5). This Excel app is also available on the Project's website, and includes the options to choose among various materials for the structure (concrete, steel or wood), and to choose various types of foundations, doors, windows, insulation materials, floors, partitions, facades and roofs.

The LCA Excel project app, has a user guide, in tutorial format, that is part of the results of the BIM-LCA Construction project in the work package 3. This user guide is also available on the Project website.

6 – Development of the case study.

6.1.- BIM models.

The BIM model of the three alternatives studied begins with the modelling and design of the structure of the single-family house in CypeCAD. Figs. 10 and 11 show the model of the structure in reinforced concrete and structural steel in CypeCAD.



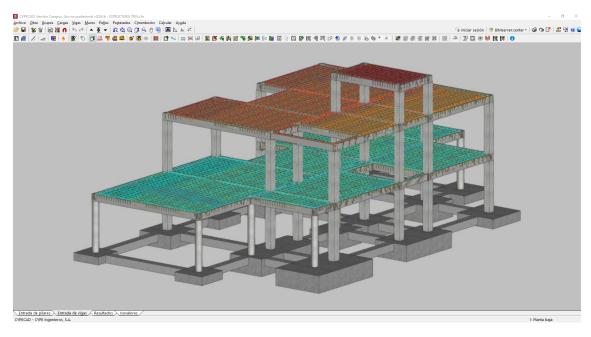


Figure 10. Reinforced concrete structure of the single-family house in CypeCAD

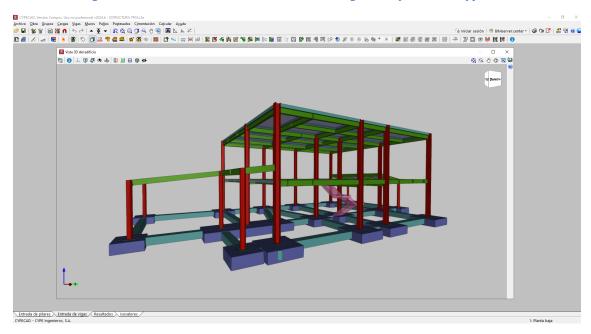


Figure 11. Steel structure in CypeCAD.

The next step in the construction of the BIM model has been to model the architectural elements of the house using Cype Architecture. Fig. 12 and 13 show this model in the aforementioned software.



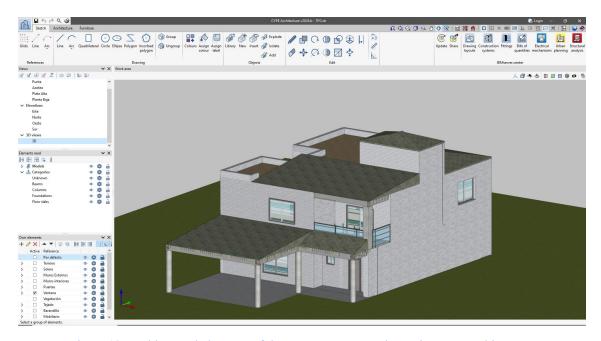


Figure 12. Architectural elements of the concrete structure house in Cype Architecture.

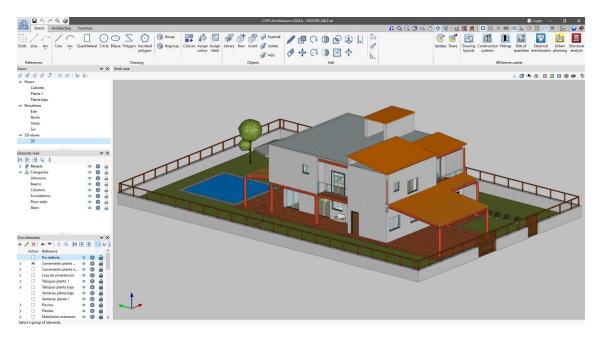


Figure 13. Architectural elements of the steel structure house in Cype Architecture

The amount of materials used in the design of the three alternatives studied has been calculated with OpenBIM Quaitities, as well as their construction budget.

Figs. 14 and 15 show the models in OpenBIM Quantities.

A cost data base has been built for each model using Arquimedes. These databases with prices and description of the work units of the single-family house have been imported into OpenBIM Quantities for the calculation of the Bill of Quantities.



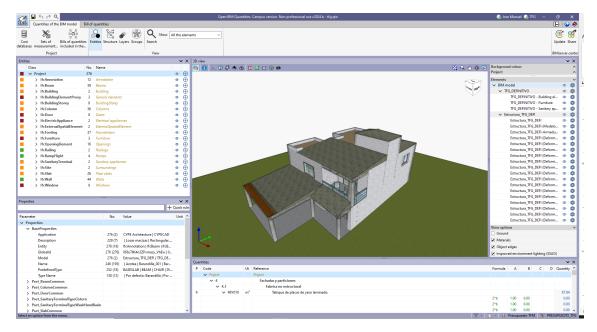


Figure 14. Architectural elements of the steel structure house in Cype Architecture

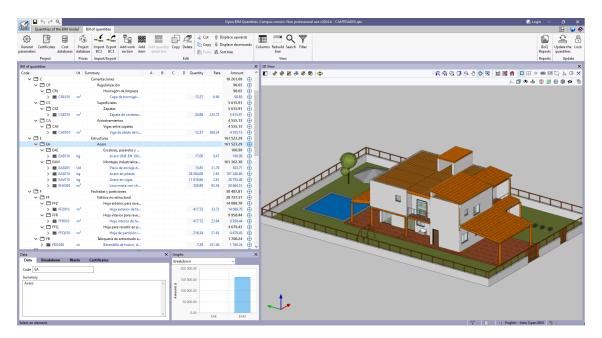


Figure 15. Architectural elements of the steel structure house in Cype Architecture

6.2.- LCA Analysis.

The SETAC (Society of Environmental Toxicology And Chemistry) defines Life Cycle Assessment as:

"An objective process for assessing the environmental burdens associated with a product, process or activity, identifying and quantifying the use of matter and energy, as well as emissions or discharges into the environment, to determine the impact of





that use of resources and those emissions or discharges, in order to evaluate and implement environmental improvement strategies. The study includes the complete cycle of the product, process or activity, taking into account the stages of: extraction and processing of raw materials, production, transport and distribution, use, reuse and maintenance, recycling and final disposal."

In accordance with the UNE-EN ISO 14040 standard, the development of a Life Cycle Assessment must include the following methodological stages:

- Stage 1: Definition of objectives and scope (Functional Unit)
- Stage 2: General Inventory Analysis
- Stage 3: Impact Assessment
- Stage 4: Interpretation of the results.

6.2.1. Objectives and scope of the LCA in the case study.

The main objective of the Life Cycle Analysis of this case study is to evaluate the environmental impacts of the construction of a single-family house considering several alternatives in the use of construction materials (concrete, bricks, structural steel and timber) during the following phases of its life cycle:

- Product: A1 A3
 - Extraction of raw materials (A1)
 - Transport to factory (A2)
 - Manufacturing (A3)
- Construction process: A4 A5
 - Transport of the product (A4)
 - Product Installation and Construction Process (A5)

So the scope of this LCA includes the construction of the single-family home but not the use of it.

6.2.2. General inventory Analysis.

The life cycle inventory analysis is the estimation of raw material and energy requirement, solid wastes, environmental emissions, water pollutants, and other emissions for the life of a process or product.

In the LCA of the single-family house developed in this project, this analysis can be consulted by unit of product, in the Environmental Product Declarations (EPD) of each material or product used in the construction of the house. Links to these





Environmental Product Declarations can be found in the "Materials" tab of the LCA Excel App developed in the project (https://bimlca.eu).

6.2.3. Impact Assessment.

The environmental impacts measured in this study are as follows:

Table 2: Environmental impacts considered

Enviromental Impacts	Units
Abiotic depletion potential for fossil resources (ADPF)	MJ
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb-eq.
Acidification potential (AP)	kg SO2-eq.
Global warming potential (GWP)	kg CO2-eq.
Eutrophication potential (EP)	kg Phosphat-eq.
Photochemical Ozone Creation Potential (POCP)	kg Ethen-eq
Ozone Depletion Potential (ODP)	kq CFC 11-eq

Table 3: Use of resources considered

Energy consumption	Units
Total use of renewable primary energy resources (PERT)	MJ
Total use of non renewable primary energy resource	
(PENRT)	MJ

The list of impacts of each single-family house alternative studied is included in annexes 1, 2 and 3 of this document.

Below are the PERT, PENRT and GWP impacts of the three alternatives studied

6.2.3.1 Single-family house in concrete and bricks

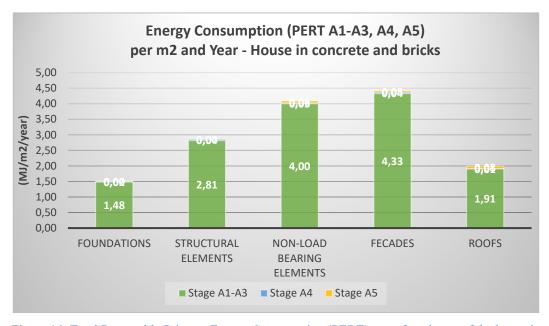


Figure 16. Total Renewable Primary Energy Consumption (PERT) per m2 and year of the house in concrete and bricks





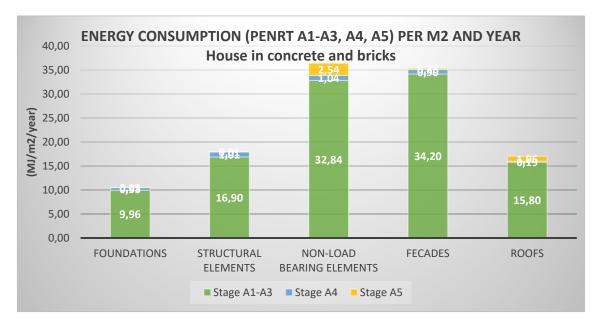


Figure 17. Total non-renewable Primary Energy Consumption (PENRT) per m2 and year of the house in concrete and bricks

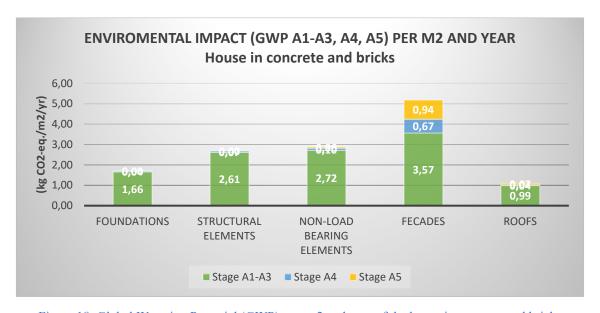


Figure 18. Global Warming Potential (GWP) per m2 and year of the house in concrete and bricks





6.2.3.2 Single-family house in steel and bricks

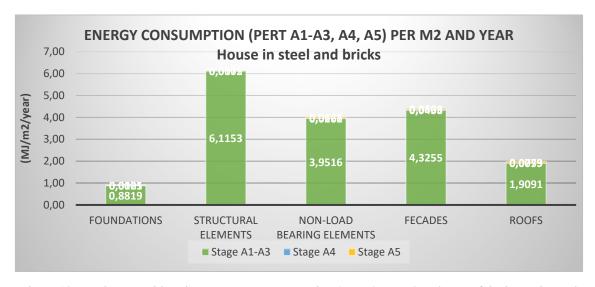


Figure 19. Total Renewable Primary Energy Consumption (PERT) per m2 and year of the house in steel and bricks

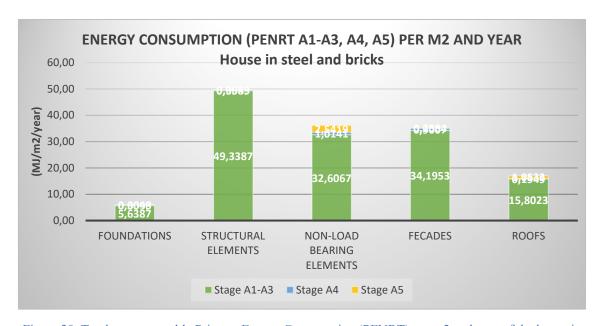


Figure 20. Total non-renewable Primary Energy Consumption (PENRT) per m2 and year of the house in steel and bricks



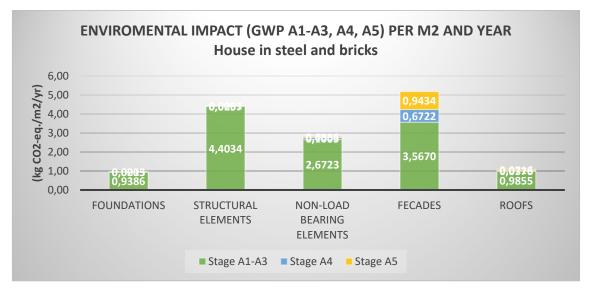


Figure 21. Global Warming Potential (GWP) per m2 and year of the house in steel and bricks

6.2.3.2 Single-family house in timber

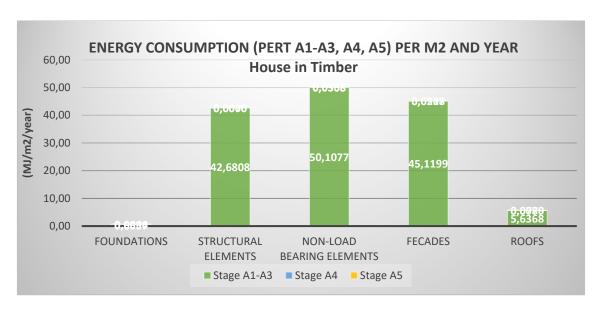


Figure 22. Total Renewable Primary Energy Consumption (PERT) per m2 and year of the house in timber.



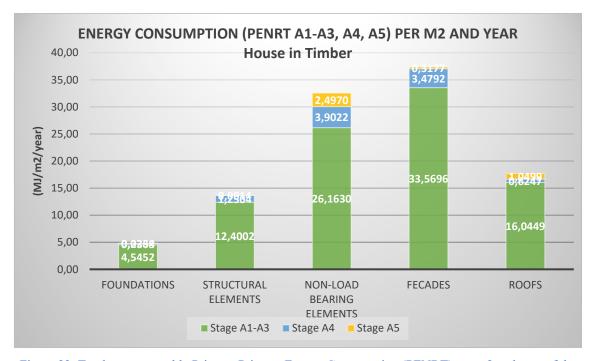


Figure 23. Total non-renewable Primary Primary Energy Consumption (PENRT) per m2 and year of the house in timber

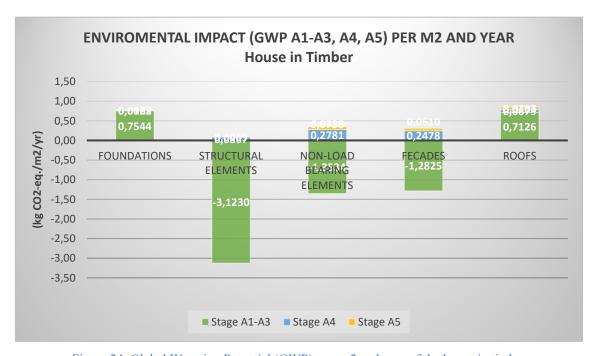


Figure 24. Global Warming Potential (GWP) per m2 and year of the house in timber

6.2.4. Interpretation of the results.

The interpretation of the results of the LCAs carried out is included in the next section of this document (Section 7), where a comparison is made among the results obtained in each alternative studied.





7 – Analysis of the different alternatives studied.

This section compares the results, in terms of costs, primary energies consumed and CO2 emissions or equivalent, of the three solutions studied for single-family housing (concrete and bricks; structural steel and bricks; and wood).

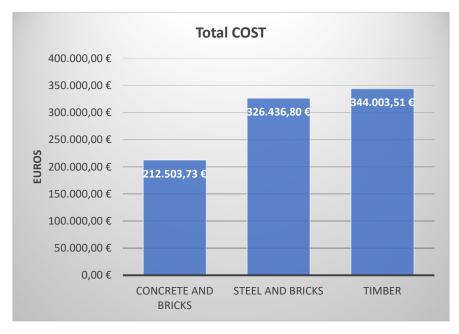


Figure 25. Total cost of the three studied alternatives

Fig. 25 shows the total construction cost of the three solutions. We can see that the most expensive solution is the house in timber. The second most expensive is the single-family house with a steel structure and brick walls. And the cheapest is the house with a reinforced concrete structure and brick walls.

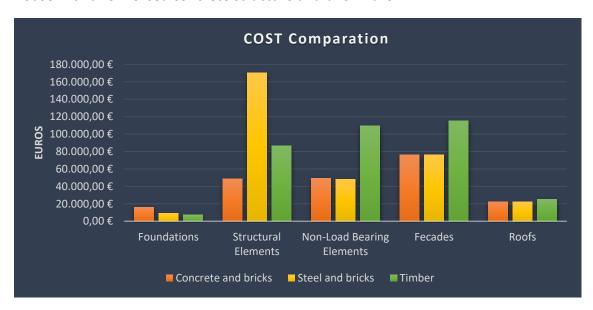


Figure 26. Cost comparation of parts of the building in the three studied alterlatives





Fig. 26 shows the cost of each chapter of the construction budget of the house: foundations, structural elements, non-load bearing elements, facades and roofs, for the three different solutions. In this figure 26 we can see that:

- The most expensive foundation is for the house with a reinforced concrete structure, as it weighs more and needs a larger foundation.
- The most expensive structure (beams, columns and slabs) corresponds to the steel structure, followed by the wooden structure. And finally, the cheapest structure for the house studied is the one with reinforced concrete.
- The most expensive interior walls and facades correspond to those built in wood.
- The cost of roofing is similar in all three solutions.

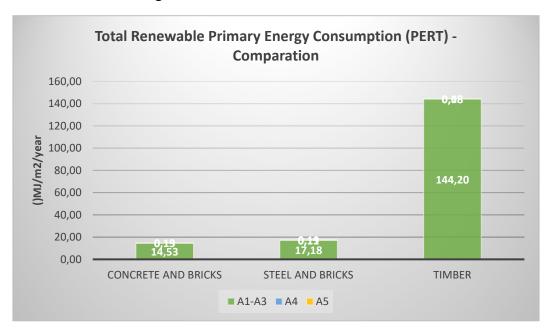


Figure 27. Total Renewable Primary Energy Consumption (PERT) - Comparation

Fig 27 and 28 shows the renewable and non-renewable primary energy consumed in the construction of the house for each solution studied (concrete, steel and wood) in MJ per square metre and year. The graph of Fig. 27 shows that the highest consumption of renewable energy occurs in the construction of the wooden house. The wooden house consumes a greater amount of energy because the process of manufacturing technical wood, such as cross-laminated timber (CLT) panels and glued laminated timber (Glulam) beams and pillars, consumes a large amount of energy per volume of material. The aim is to ensure that this energy comes from renewable sources to minimise the impact on the environment.







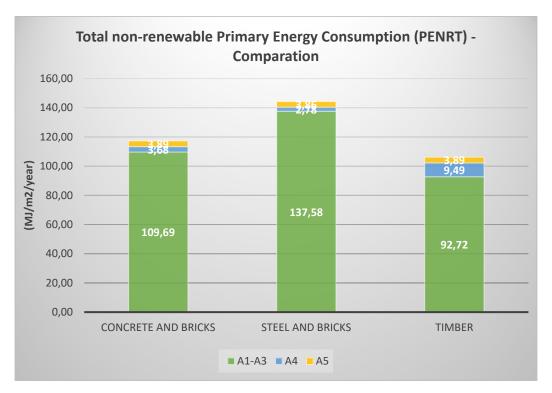


Figure 28. Total non-renewable Primary Energy Consumption (PERT) – Comparation.

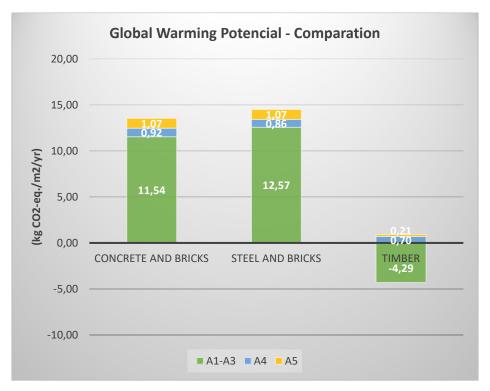


Figure 29. Global Warming Potencial Comparation

Fig. 29 shows the greenhouse gas emissions in Kg of CO2 eq. per square meter of construction and per year for the three alternatives studied. We can observe that the emissions produced in stages A1 to A5 of the house life cycle in the wood solution are negative. This means that the wood, while in the tree, absorbs more CO2 than it is





emitted by the extraction of raw materials, transport, manufacture and installation of the construction products in this wooden house solution. The CO2 emissions due to the steel-framed house are slightly higher than those produced in the construction of the reinforced concrete framed house.

8 - Conclusions and recommendations.

Conclusions:

The life cycle assessment is a useful tool for making decisions in design stages about the choice of more sustainable materials and solutions in building construction.

The BIM methodology allows you to build 3D models and obtain the quantities of materials to be used in the construction of buildings to subsequently perform an LCA, saving time in the analysis.

Of the three solutions studied for the construction of a single-family home, the one that uses timber in the structure and in the interior walls and façade is the slightly more expensive but environmentally more sustainable solution.

It has been proven that the single-family house solution in wood is the one that consumes the most primary energy. If the energy consumed during the manufacture of the technical wood elements is renewable energy, the environmental impact of this solution is considerably reduced.

Recommendations:

Optimisation in the design of buildings, either through parametric studies or through numerical optimisation, would make it possible to save material and therefore obtain more sustainable solutions, which produce lower environmental impacts.

The use of timber framing for the interior walls in the wooden house instead of CLT panels would save material and make the wood solution cheaper.





9 -References

- [1] J. Basbagill, F. Flager, M. Lepech, and M. Fischer, 'Application of life-cycle assessment to early stage building design for reduced embodied environmental impacts', *Building and Environment*, vol. 60, pp. 81–92, Feb. 2013, doi: 10.1016/j.buildenv.2012.11.009.
- [2] S. Eleftheriadis, P. Duffour, and D. Mumovic, 'BIM-embedded life cycle carbon assessment of RC buildings using optimised structural design alternatives', *Energy and Buildings*, vol. 173, pp. 587–600, Aug. 2018, doi: 10.1016/j.enbuild.2018.05.042.
- [3] B. Soust-Verdaguer, C. Llatas, and A. García-Martínez, 'Critical review of bim-based LCA method to buildings', *Energy and Buildings*, vol. 136, pp. 110–120, Feb. 2017, doi: 10.1016/j.enbuild.2016.12.009.
- [4] S. Eleftheriadis, D. Mumovic, and P. Greening, 'Life cycle energy efficiency in building structures: A review of current developments and future outlooks based on BIM capabilities', *Renewable and Sustainable Energy Reviews*, vol. 67, pp. 811–825, Jan. 2017, doi: 10.1016/j.rser.2016.09.028.
- [5] C. Llatas, B. Soust-Verdaguer, and A. Passer, 'Implementing Life Cycle Sustainability Assessment during design stages in Building Information Modelling: From systematic literature review to a methodological approach', *Building and Environment*, vol. 182, p. 107164, Sep. 2020, doi: 10.1016/j.buildenv.2020.107164.
- [6] T. Dalla Mora, E. Bolzonello, C. Cavalliere, and F. Peron, 'Key Parameters Featuring BIM-LCA Integration in Buildings: A Practical Review of the Current Trends', *Sustainability*, vol. 12, no. 17, Art. no. 17, Jan. 2020, doi: 10.3390/su12177182.
- [7] S. Seyis, 'Mixed method review for integrating building information modeling and life-cycle assessments', *Building and Environment*, vol. 173, p. 106703, Apr. 2020, doi: 10.1016/j.buildenv.2020.106703.
- [8] T. Potrč Obrecht, M. Röck, E. Hoxha, and A. Passer, 'BIM and LCA Integration: A Systematic Literature Review', Sustainability, vol. 12, no. 14, Art. no. 14, Jan. 2020, doi: 10.3390/su12145534.
- [9] C. Panteli, A. Kylili, and P. A. Fokaides, 'Building information modelling applications in smart buildings: From design to commissioning and beyond A critical review', *Journal of Cleaner Production*, vol. 265, p. 121766, Aug. 2020, doi: 10.1016/j.jclepro.2020.121766.
- [10] Y. Teng, J. Xu, W. Pan, and Y. Zhang, 'A systematic review of the integration of building information modeling into life cycle assessment', *Building and Environment*, vol. 221, p. 109260, Aug. 2022, doi: 10.1016/j.buildenv.2022.109260.





Annex 1. LCA with Excel app of a single-family house concrete and bricks





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BIM-LCA Construction Project

Inputs

1- Data of the building

Project Name:	Single-family house in concrete and bricks							
Building type	Residential							
Address	Street 1	_						
IndoorFloor area	257.52	m2						
Analysed service life	50	year						
City	Cartagena	-						
Country	Spain							

Excel Legend

10.80	User input (or parameter readed from IFC file)
23.87	Parameter calculated by app and not editable

2- Areas and volumes in elements of the building - User inputs

Footing volume (m3):	53.89
Volume of Foundation beams (m3):	9.53
Footing plant area (m2):	73.81
Foundation beam plant area (m2):	23.87
Volume of piles (m3):	0.00
Volumen of pile caps (m3):	0.00
Pile cap plant area (m2):	0.00
Foundation slab volume (m3):	0.00
Foundation slab plant area (m2):	0.00
Cal	10.00
Column volume (m3):	10.89
beam volume (m3):	19.68
Retaining wall volume (m3):	0.00
Area of slabs (including beams) (m2):	351.13 221.66
Partition area (m2): Facade area (m2):	374.42
Exterior party wall (m2):	0.00
Stairs (m2):	10.80
Ramps (m2):	0.00
Steel volume in stiffening elements (m3):	0.00
Concrete volume in stiffening walls (m3):	0.00
concrete volume in stiffering wans (ms).	0.00
Interior door surface (m2):	7.64
Main door surface (m2):	4.00
Exterior glazed door surface (m2):	4.00
Windows surface (m2):	21.54
Flat roof area (m2):	134.33
Inclinated roof area (horizontal projection) (m2):	86.22
roof inclination angle (deg):	20.00
parapets (m2):	26.40
Railing (m):	5.50

Note: IMPORTANT - If any of the previus element is missing in the project enter $\boldsymbol{0}$

Floor Areas (m2)	Indoor	outdoor	total		
Ground floor:	116.52	80.37	196.89		
Intermediate floors:	141				
roof type 1:		128.48			
roof tape 2:		5.85			



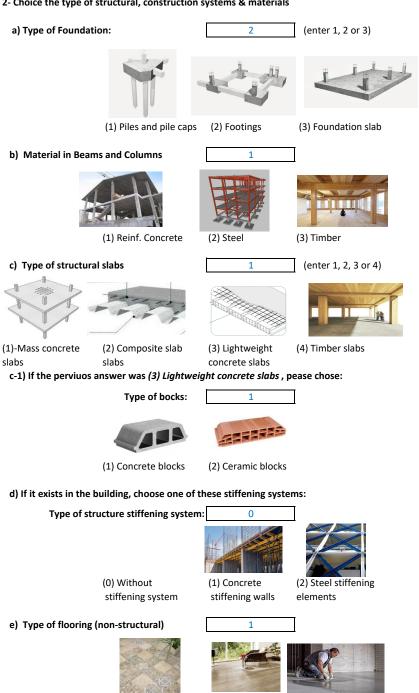


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BIM-LCA Construction Project

Inputs

2- Choice the type of structural, construction systems & materials



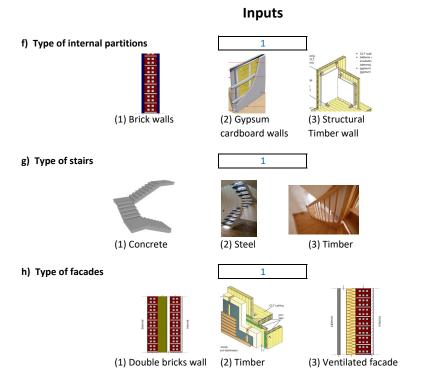
(1) Ceramic flooring



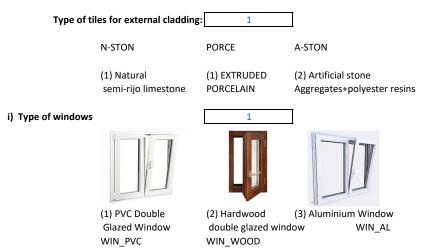


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BIM-LCA Construction Project



h-1) If the perviuos answer was (3) $Ventilated\ facade\$, pease chose:



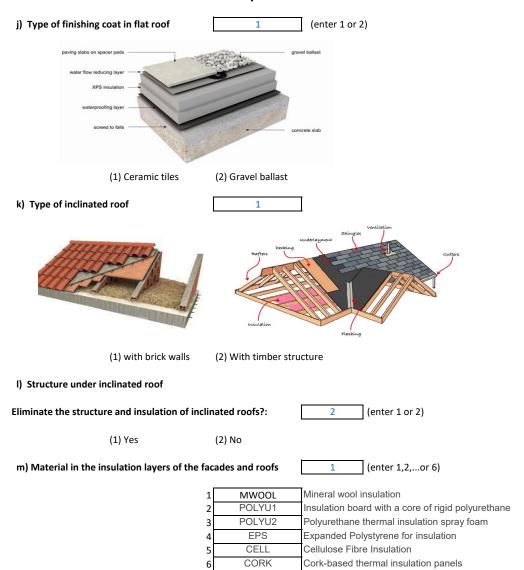




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BIM-LCA Construction Project

Inputs





BIM-LCA Construction Project



Project name: Single-family house in concrete and bricks

Erasmus+ Project 2022-1-NO01-KA220-HED-000087893

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Building Material Quantities

Excel Legend

10.80 User input (or parameter readed from IFC file)

23.87 Parameter calculated by app and not editable

30 Parameter loaded by default by app and editable by user

846.26 kg Quantity calculated by the program based on the user inputs and parameters of each material. Not user-editable

MWOOL A type of material or construction element from which one material can be chosen from several alternatives. See note 3, 4 and 5.

										Auxiliary quantiites			1			
						nr.	thickness	density	F	Parameter 1	1	Parameter 2	Mate	rial	7	
Building part	Building elen	nent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula	
				la .						1 (0)						
		1.A - Piles	1.A.1 1.A.2	Concrete Rebar	CON1 REB	. 0			0.00	vol (m3) Kg Rebar/m3 Con				0 m3	Q=nr*Par1 Q=nr*Par1*Qcon	
		T	1.A.2 1.B.1.1	Concrete	CON1	0			0.00	vol (m3)				0 m3	Q=nr*Par1*Qcon Q=nr*Par1	
		1.B.1-Pile Caps	1.B.1.1	Rebar	REB	0			0.00	- ' - '				0 kg	Q=III Pal1 Q=Par1*Ocon	
		1.B.1-Pile Caps	1.B.1.2	Blinding concrete	CON0	0	0.10		0.00	Kg Rebar/m3 Con pile cap area (m2)				0 m3	Q=nr*e*Par1	
			1.B.1.3	Concrete	CON1	1	0.10		53.89	footing vol (m3)				9 m3	Q=nr*Par1	
		1.B.2-Footings	1.B.2.1	Rebar	REB	1			63.3	Kg Rebar/m3 Con			3411.2		Q=NrPar1 Q=Par1*Ocon	
		1.B.2-FOOLINGS	1.B.2.2	Blinding concrete	CON0	1	0.10		73.81	Footing area (m2)				8 m3	Q=Par1*Qcon Q=nr*e*Par1	
1- Foundations	1.B-Basement		1.B.3.1	Concrete	CON1	1	0.10		9.53	beam vol (m3)				3 m3	Q=nr*Par1	
		1.B.3-Foundation beams	1.B.3.2	Rebar	REB	1			88.8	Kg Rebar/m3 Con			846.2		Q=nr*Par1*Qcon	
		1.B.3-Foundation beams	1.B.3.3	Blinding concrete	CON0	1	0.10		23.87	Beam area (m2)				9 m3	Q=nr*e*Par1	
			1.B.4.1	Concrete	CON1	1	0.10		0.00	slab vol (m3)				0 m3	Q=nr*Par1	
		1.B.4-Foundation slab	1.B.4.1		REB	0			0.00	Kg Rebar/m3 Con	+			0 kg	Q=III · Par 1	
		1.B.4-Foundation Stab	1.B.4.2	Blinding concrete	CON0	0	0.10		0.00	Slab area (m2)				0 m3	O=e*Par1	
			1.B.4.3	•	CON0	- 0	0.10		0.00	wall vol (m3)	-			0 m3	Q=e-Par1 Q=nr*Par1	
	1	.C - Retaining walls	1.C.1	Concrete Rebar	REB	1			0.00	Kg Rebar/m3 Con	+			0 kg	Q=Par1*Qcon	
			1.C.Z	Rebai	KED				90	ng Rebar/III3 Con	+		0.0	∪ Kg	Q=Par1 Qcon	
<u> </u>		T	2 1 1 1	Gulam Timber	GLT	0			10.00	beam volume (m3)			0.0	0 m3	Q=nr*Par1	
			2.A.1.1		ST-G	0			19.00	kg Steel/m3 timber	-		0.0		Q=nr*Par1*Q CLT	
		2.A.1-Beams (Timber, steel or	2.A.1.2	Structural steel	ST ST	0		7850	19.68	beam volume (m3)	1.1	due to connections		0 kg	Q=nr*Par1*d*Par2	
		concrete)	concrete)	2.A.1.4		CON3	1		7630	19.68	beam volume (m3)	1.1	due to connections		8 m3	Q=nr*Par1
			2.A.1.4		REB	1			137.6	Kg Rebar/m3 Con	1		2707.9		Q=Par1*Q Con	
		2.A.2-Columns (Timber, steel or concrete		Gulam Timber	GLT	1			10.89	column vol (m3)				0 m3	Q=par1*Q con Q=nr*Par1	
			2.A.2.1	Steel in timber connect. (galvanized)	ST-G	0			10.65	kg Steel/m3 timber	-			0 kg	Q=nr*Par1*Q CLT	
			2.A.2.3		31-G	0		7850	10.00			des to consistent		0 kg	Q=nr*Par1*d*Par2	
			2.A.2.4	Structural steel Concrete	CON3	1		7850	10.89	column vol (m3) column vol (m3)	1.1	due to connections		9 m3	Q=nr*Par1 Q=nr*Par1	
			2.A.2.5	Rebar	REB	1			202.3	Kg Rebar/m3 Con	1		2203.0		Q=III · Par I	
			2.A.2.3	Concrete	CON2	1	0.25		272.41	Slab area (m2)				0 m3	Q=nr*e*Par1	
	2.A-Frames	2.A.3-Mass concrete slabs or	2.A.3.1		REB	1	0.25		272.41		-		6129.2		Q=III · E · Pal I	
2 - Load bearing			2.A.3.2	Rebar Concrete	CON2	1	0.16		351.13	Kg Rebar/m3 Con Slab area (m2)				0 m3	O=nr*e*Par1	
structural frame		2.A.4-Composite slabs or	2.A.4.1	Rebar	REB	0	0.10		331.13	Kg Rebar/m3 Con	-			0 kg	Q=Par1*Q Con	
			2.A.4.2	Galvanized steel plates	ST-G	0	0.001	7850	351.13	Slab area (m2)	1 200	m2 plates/m2 slab		0 kg	Q=nr*e*Par1*Par2*d	
			2.A.5.1	Concrete blocks or	CONB	0	0.001	7650	272.41	Slab area (m2)	0.820	m3 block/m2 slab		0 m3	Q=nr*e*Par1*Par2	
			2.A.5.1	Ceramic blocks	CERB	0	0.25	320	272.41	Slab area (m2)	0.820	m3 block/m2 slab		0 kg	Q=nr*e*Par1*Par2*d	
		2.A.5-Lightweight concrete slabs or	2.A.5.3	Precast concrete beams	CONBEAM	0	0.25	2500	272.41	Slab area (m2)		m2 beam cross sec		0 kg	Q=nr*(Par1/0.8)*Par2*d	
		2.A.3-Light weight concrete slabs of	2.A.5.4		CONBLAIVI	0	0.05	2300	272.41	Slab area (m2)	0.038	IIIZ Dealii Closs sec		0 m3	Q=nr*Par1*e	
			2.A.5.5	Rebar	REB	0	0.05		2/2.41	Kg Rebar/m3 Con				0 kg	Q=Par1*Q Con	
			2.A.6.1	Cross Laminated Timber (CLT) panels	CLT	0	0.16		351.13	foor area (m2)				0 m3	Q=nr*Par1*e	
		2.A.6-Mass timber structural floors	2.A.6.2	Steel in timber connect. (galvanized)	ST-G	0	0.10		331.13	kg Steel/m3 CLT	-		0.0		Q=nr*Par1*Q CLT	
			2.A.6.2	Structural steel	ST ST	0		7850	0.00	steel volume (m3)	1.1	due to connections		0 kg	Q=nr*Par1*d*Par2	
	2 P. Concrete stiffen	ing walls/steel in stiffening elements	2.B.2	Concrete	CON3	0		7830	0.00	concrete vol (m3)	1.1	due to connections		0 m3	Q=nr*Par1	
	2.B-Concrete stillen	ing wans/steer in stillerning elements	2.B.3	rebar	REB	0			140					0 kg	Q=Par1*Qcon	
			Z.B.3	rebar	KED	U			140	ng Rebar/III3 Con	+		0.0	∪ Kg	Q=Par1 · QCOII	
		I	3.A.1.1	Concrete	CON1	- 1	0.15		196.89	Slab area (m2)	1		20.5	3 m3	O=nr*Par1*e	
		3.A.1-Ground floor slab (non-	3.A.1.2		REB	1	0.15		130.05	Kg Rebar/m3 Con	1		886.0		Q=Par1*Qcon	
		structural)	3.A.1.2		AGG	4	0.25	1800	196.89	Slab area (m2)	1	-	88600.5		Q=nr*Par1*e*d	
			3.A.2.1	Ceramic tiles	CEFT	1	0.25	1800	257.52	Floor area (m2)				2 m2	Q=nr*Par1	
		3.A.2-Flooring Type I: Ceramic	3.A.2.1		ADH	1			257.52	Floor area (m2)	6.00	kg/m2	1545.1		Q=nr*Par1*Par2	
		flooring or	3.A.2.2	Mortar bed	MOR	1	0.03	1600	257.52	Floor area (m2)	0.00	Ng/1112	12360.9	U	Q=nr*Par1*Par2 Q=nr*e*Par1*d	
	3.A-Horizontal	nooning or	3.A.2.4		POLY	1	0.005	1000	257.52	Floor area (m2)				9 m3	Q=nr*e*Par1*d Q=nr*e*Par1	
	elements		3.A.2.4 3.A.3.1	Cleavage membrane Laminated wood flooring	WFL	1	0.005		257.52	Floor area (m2)				0 m2	Q=nr*e*Par1 Q=nr*Par1	
		3.A.3-Flooring Type II: Wood floating	3.A.3.1	Chipboard flooring (plywood)	PLYW	0	0.03		257.52	Floor area (m2)				0 m2	Q=nr*Par1*e	
		floor or		Insulation layer	MWOOL 4	0	0.03			Floor area (m2)				0 m3	Q=nr*Par1*e	
1		11001 01	3.A.3.3	moulation layer	WWOOL	U	0.04		257.52	rioul area (IIIZ)			0.0	U 1113	G-HL LQIT.6	



BIM-LCA Construction Project



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Excel Legend

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23.87 Parameter calculated by app and not editable

Project name: Single-family house in concrete and bricks

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846.26 kg Quantity calculated by the program based on the user inputs and parameters of each material. Not user-editable

MWOOL A type of material or construction element from which one material can be chosen from several alternatives. See note 3, 4 and 5.

										Auxiliary quantiites			1	
						nr.	thickness	density	P	arameter 1		Parameter 2	Material	
ilding part	Building elen	nent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) Unit	Formula
i			3.A.3.4	Timber battens	GLT	0			257.52	Floor area (m2)	0.045	m3 timb/m2 floor	0.00 m3	O=nr*Par1*Par2
		3.A.4-Flooring Type III: Screed	3.A.4.1	Wet screed (cement mostar)	MOR	0	0.05		257.52	Floor area (m2)	0.013	mo umb/mz noor	0.00 m4	Q=nr*Par1*e
		flooring	3.A.4.2	Sound insulation layer	POLY	0	0.005		257.52	Floor area (m2)			0.00 m3	Q=nr*e*Par1
		3.B.1-Internal partition Type I: Brick	3.B.1.1	Brick wall	CERB	1	0.110	805	221.66	Wall area (m2)			19627.99 kg	Q=nr*e*Par1*d
		walls	3.B.1.2	Finishing coat (plastering mortars)	PLASM	1	0.110	1600	221.66	Wall area (m2)			7093.12 kg	Q=nr*e*Par1*d
		Walls		Gypsum cardboard or fiberboard	GYP F	1	0.02	1600	221.66	Wall area (m2)			0.00 m2	Q=nr*Par1
		3.B.2-Internal partition Type II:	3.B.2.2	Galvanized steel (U, C) channel studs	ST-GC	0			221.66	Wall area (m2)	3 040	kg ST /m2 wall	0.00 Mg	Q=nr*Par1*Par2
		Gypsum cardboard walls	3.B.2.2	Insulation layer	MWOOL	0	0.05		221.66	Wall area (m2)	3:040	ng 31 /1112 wall	0.00 mg	Q=nr*Par1
						0							0.00 m3	
				Cross Laminated Timber (CLT) panels	CLT	0	0.100		221.66	Wall area (m2)				Q=nr*Par1*e
		3.B.3-Internal partition Type III:	3.B.3.2	Steel in timber connect. (galvanized)	ST-G	Ų			4	kg Steel/m3 CLT			0.00 kg	Q=nr*Par1*Q CLT
- Non-load	3.B-Vertical	Structural Timber wall	3.B.3.3	Insulation layer	MWOOL	0	0.050		221.66	Wall area (m2)			0.00 m3	Q=nr*Par1*e
bearing	elements		3.B.3.4	Timber battens	GLT	0			221.66	Wall area (m2)	0.045	m3 timb/m2 wall	0.00 m3	Q=nr*Par1*Par2
elements			3.B.3.5	Gypsum plasterboard	GYP_P	0			221.66	Wall area (m2)	2	number or boards	0.00 m2	Q=nr*Par1*Par2
			3.B.4.1	Concrete blocks	CONB	4-1	0.20		0.00	Wall area (m2)			0.00 m3	Q=nr*Par1*e
		3.B.4-External party walls	3.B.4.2	Insulation layer	MWOOL	1	0.05		0.00	Wall area (m2)			0.00 m3	Q=nr*Par1*e
			3.B.4.3	Finishing coat (plastering mortars)	PLASM	1	0.04	1600	0.00	Wall area (m2)			0.00 kg	Q=nr*e*Par1*d
		3.D.F. Davanate	3.B.5.1	Brick wall	CERB	1	0.110	805	26.40	Wall area (m2)			2337.72 kg	Q=nr*e*Par1*d
		3.B.5-Parapets	3.B.5.2	Finishing coat (plastering mortars)	PLASM	1	0.02	1600	26.40	Wall area (m2)			844.80 kg	Q=nr*e*Par1*d
		3.B.6-Railings	3.B.6	Railings	ST-SL	1			5.50	long (m)	9.50	kg ST/m railing	52.25 kg	Q=nr*Par1*Par2
		3.B.7-Interior doors	3.B.7	Interior doors	WDOOR	1			7.64	door (m2)			7.64 m2	Q=nr*Par1
		3.C.1-Stairs	3.C.1.1	Ceramic tiles	CEFT	1			10.80	stairs area (m2)	1.27	m2 title/m2 stairs	13.72 m2	Q=nr*Par1*Par2
	3.C-Inclined		3.C.1.2	Tile bond coat (adhesive)	ADH	1			6.00	kg/m2 title			82.30 kg	Q=nr*Par1*m2 title
			3.C.1.3	Mostar	MOR	- 1		1600	10.80	stairs area (m2)	0.0715	m3 mor/m2 stairs	1235.52 kg	O=nr*Par1*Par2*d
				Concrete	CON3	1	0.20		10.80	stairs area (m2)			2.16 m3	Q=nr*Par1*e
				Rebar	REB	1			137.6	Kg Rebar/m3 Con			297.22 kg	Q=nr*Par1*Qcon
				Structural steel	ST	0			10.80	stairs area (m2)	21 22	kg ST/m2 Stairs	0.00 kg	Q=nr*Par1*Par2
			3.C.1.7	Cross Laminated Timber (CLT) panels	CLT	0	0.160		10.80	stairs area (m2)	21.55	ng 31/1112 Stall 3	0.00 m3	Q=nr*Par1*e
	elements		3.C.1.8	Steel in timber connect. (galvanized)	ST-G	0	0.100		4.00	kg Steel/m3 CLT			0.00 kg	Q=nr*Par1*Q CLT
			3.C.2.1	Ceramic tiles	CEFT	1			0.00	ramp area (m2)			0.00 m2	Q=nr*Par1
			3.C.2.2	Tile bond coat (adhesive)	ADH	- 1			0.00	ramp area (m2)	6.00	kg/m2 title	0.00 Mg	Q=nr*Par1*Par2
		3.C.2-Ramps	3.C.2.2	Mostar	MOR	1	0.03	1600	0.00	ramp area (m2)	0.00	kg/mz title	0.00 kg	Q=nr*e*Par1*d
		5.C.2-Ramps			CON3	- 1		1600						
			3.C.2.4	Concrete		1	0.10		0.00	ramp area (m2)			0.00 m3	Q=nr*e*Par1
			3.C.2.5	Rebar	REB	1			30	Kg Rebar/m3 Con			0.00 kg	Q=Par1*Qcon
		1											ł	
				External finish	PLASM	1	0.03	1600		Wall area (m2)			17972.16 kg	Q=nr*e*Par1*d
		4.A.1-Facade type I:		Brick walls	CERB	1	0.22	805	374.42	Wall area (m2)			66309.78 kg	Q=nr*e*Par1*d
		with bricks or,	4.A.1.3	Insulation layer	MWOOL	1	0.07	152	374.42	Wall area (m2)			26.21 m3	Q=nr*Par1*e
			4.A.1.4	Interior finish	GYP_P	1			374.42	Wall area (m2)			374.42 m2	Q=nr*Par1
			4.A.2.1	Gypsum plasterboard	GYP_P	0			374.42	Wall area (m2)			0.00 m2	Q=nr*Par1
			4.A.2.2	Cross Laminated Timber (CLT) panels	CLT	0	0.100		374.42	Wall area (m2)			0.00 m3	Q=nr*Par1*e
	4.A-External wall	4.A.2-Facade type II: Timber panels	3.B.3.2	Steel in timber connect (galvanized)	ST-G	0			4	kg Steel/m3 CLT			0.00 kg	Q=nr*Par1*Q CLT
	systems	or,	4.A.2.3	Insulation layer	MWOOL	0	0.05		374.42	Wall area (m2)			0.00 m3	Q=nr*Par1*e
- Facades			4.A.2.4	Timber battens	GLT	0			374.42	Wall area (m2)	0.045	m3 timb/m2 wall	0.00 m3	Q=nr*Par1*Par2
			4.A.2.5	External wooden cladding	WCLA	0			374.42	Wall area (m2)			0.00 m2	Q=nr*Par1
			4.A.3.1	Gypsum plasterboard	GYP_P	0			374.42	Wall area (m2)			0.00 m2	Q=nr*Par1
		4.A.3-Facade type III:		Brick wall	CERB	0	0.12	1000	374.42	Wall area (m2)			0.00 kg	Q=nr*e*Par1*d
	l	Ventilated facade	4.A.3.3	Insulation layer	MWOOL	0	0.05		374.42	Wall area (m2)			0.00 m3	Q=nr*Par1*e
			4.A.3.4	Tiles for external cladding	N-STON	n	0.03	2750	374.42	Wall area (m2)			0.00 kg	Q=nr*Par1*e*d
		4.B.1-Windows	4.A.3.4 4.B.1	Windows	WIN PVC		0.03	2/30		Surface (m2)			21.54 m2	Q=nr*Par1
	4 D Feedda and '					1					-			
	4.B-Facade openings	4.B.2-Exterior doors	4.B.2.1	Exterior glazed doors	DOOR_GL	1		<u> </u>	4.00	Surface (m2)			4.00 m3	Q=nr*Par2
			4.B.2.2	Exterior front doors	DOOR_W	1			4.00	Surface (m2)			4.00 m3	Q=nr*Par3
					_									
		5 A 1-Finishing cost	5.A.1.1	Ceramic tiles or	CEFT	1		2300	134.33	roof area (m2)			134.33 m2	Q=nr*Par1





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Building Material Quantities

	Excel Legend		
10.80	User input (or parameter readed from IFC file)	Project name:	Single-family house in concrete and bricks
23.87	Parameter calculated by app and not editable		
30	Parameter loaded by default by app and editable by user		
846.26	kg Quantity calculated by the program based on the user inputs and parameters of each material. Not	user-editable	
MWOOL	A type of material or construction element from which one material can be chosen from several altern	atives. See note 3, 4 ar	nd 5.

										Auxiliary quantiites			1		
						nr.	thickness	density	P	arameter 1	F	Parameter 2	Materia	ıl	1
Building part	Building elem	ent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula
	5.A-Roof Type I: Flat	J.A.1*Tillishing Coat	5.A.1.2	Gravel ballast	GRAV	0	0.15	1800	134.33	roof area (m2)			0.00	kg	Q=nr*Par1*e*d
	roof or	5.A.2-Waterproofing layer	5.A.2	Waterproofing layer	WP	1			134.33	roof area (m2)			134.33	m2	Q=nr*Par1
	100101	5.A.3-Insulation layer	5.A.3	Insulation layer	MWOOL	1	0.07		134.33	Wall area (m2)			9.40	m3	Q=nr*Par1*e
		5.A.4-Screed to falls	5.A.4	Cement mostar	MOR	1	0.03	1600	134.33	Wall area (m2)			6447.84	kg	Q=nr*e*Par1*d
		5.B.1-Roof tiles	5.B.1	Roof tiles	RTIL	1			86.22	roof tiles area (m2)	40	kg/m2	3670.14	kg	Q=nr*Par1*Par2/cos(Par3)
5 - Roof		5.B.2-Mostar	5.B.2	Cement mostar	MOR	1	0.02	1600	86.22	roof tiles area (m2)			2936.11	kg	Q=nr*e*Par1*d/cos(Par3)
		5.B.3-Waterproofing layer	5.B.3	Waterproofing layer	WP	1			86.22	roof tiles area (m2)			91.75	m2	Q=nr*Par1/cos(Par3)
	5.B-Roof type II:	5.B.4-Decking	5.B.4	Ceramic deck or	CERB	1	0.03	1030	86.22	roof tiles area (m2)			2835.18	kg	Q=nr*e*Par1*d/cos(Par3)
	Inclinated tiled roof	J.B.4 Decking	5.B.5	wooden deck (plywood)	PLYW	0	0.03		86.22	roof tiles area (m2)			0.00	m3	Q=nr*Par1*e
		5.B.5-Structure	5.B.6	Brick walls or	CERB	1	0.045	483	86.22	roof tiles area (m2)	0.80	wall separation (m)	1979.19	kg	Q=nr*e*(Par1^0.5/Par2)*(tg(Par
		3.B.3-3tructure	5.B.7	Gulam timber beams	GLT	0	0.05		86.22	roof tiles area (m2)	0.60	wall separation (m)	0.00	m3	Q=nr*e*0.05*(((Par1^0.5)/cos(P
		5.B.6-Insulation layer	5.B.8	Insulation layer	MWOOL	1	0.05		86.22	roof tiles area (m2)			4.31	m3	Q=nr*Par1*e
						T									





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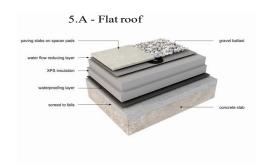
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846.26	kg Quantity calculated by the program based on the user inputs and parameters of each material. Not	user-editable	
MWOOL	A type of material or construction element from which one material can be chosen from several alterr	natives. See note 3, 4 a	nd 5.

Auxiliary quantiites

					nr.	thickness	density	nsity Parameter 1		P	arameter 2	Materi	al	
Building part	Building element types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula

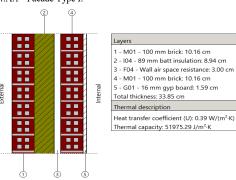


5.B - Tiled roof with timber structure

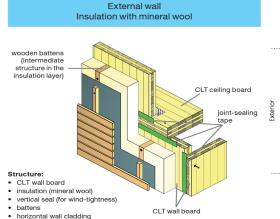
5.B - Tiled roof Tiled roof with brick walls



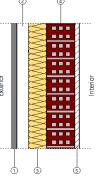
4.A.1 - Facade Type I: Facade with double brick wall



4.A.2 - Facade Type II: with Timber walls



4.A.3 - Facade Type III: Ventilated facade



- Caliza muy dura [2200 < d < 2590]: 2.00 cm

- 2 Cámara de aire: 5.00 cm
- 3 URSA TERRA Vento Plus P8792 80mm: 8.00 cm
- 4 1/2 pie LP métrico o catalán 40 mm< G < 60 mm: 12.00 cm
- 5 Enlucido de yeso 1000 < d < 1300: 2.00 cm

Espesor total: 29.00 cm

Caracterización térmica

Transmitancia térmica (U): 0.33 W/(m²-K)

Capacidad térmica: 61992.71 J/m²·K





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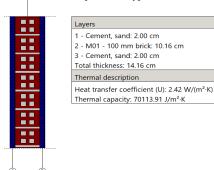
Building Material Quantities

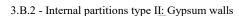
	Excel Legend		
10.80	User input (or parameter readed from IFC file)	Project name:	Single-family house in concrete and bricks
23.87	Parameter calculated by app and not editable		
30	Parameter loaded by default by app and editable by user		
846.26	kg Quantity calculated by the program based on the user inputs and parameters of each material. Not use	er-editable	
MWOOL	A type of material or construction element from which one material can be chosen from several alternation	ves. See note 3, 4 an	d 5.
	•		

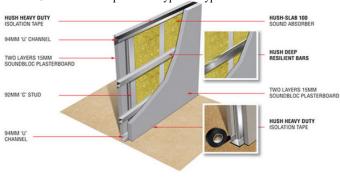
Auxiliary quantiites

					nr.	thickness	density	Pi	arameter 1	P	arameter 2	Material	1
Building part	Building element types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) Unit	Formula

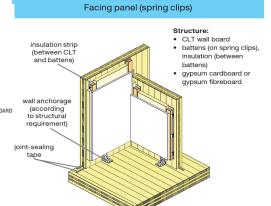








3.B.3 - Internal partitions type III: Timber walls



3.A.2 - Flooring Type I: Ceramic flooring

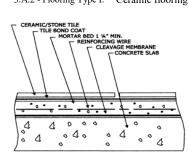
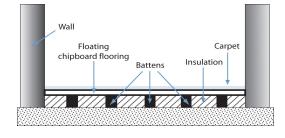


FIGURE F

3.A.3 - Flooring Type II: Wooden floating floor



3.A.4 - Flooring Type IIIScreed flooring



- 1A. Wet screed (50-70 mm) with impact sound insulation (20-30 mm).
- 1B. Dry screed (25 mm) with impact sound insulation (20-30 mm).
- 2. CLT floor 220 mm (140 mm or thicker).
- 3. Mineral wool and suspended ceiling (~70 mm) with single layer gypsum board ceiling.





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BIM-LCA Construction Project

Description of Materials and Impact Data

			1	2	-	Quant. Studied in		
nr.	Building part	Type of Material	Mat Code	Material Name	Description	EPD	Unit	Cost €
1	Under foundation	Blinding concrete	CON0	Concrete C16/20	C16/20 ECOPact Prime concrete produced in the plant of Greenwich of Aggregate Industries for use as ready-mixed concrete of normal building construction and civil engineering.	1	m3	87.54
	Structure	Concrete	CON1	Ready mixed concrete (C30/37, C35/45 SCC) - C30/37 (Foundation)	Inal factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 206 DK NA. The SPD has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	118.28
	Structure	Concrete	CON2	Ready mixed concrete (C30/37, C35/45 SCC) - C35/45 SCC (Floor)	Inal factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 206 DK NA. The SPD has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	244.28
4	Structure	Concrete	CON3	Ready mixed concrete (C30/37, C35/45 SCC) - C30/37 (Inner wall, Column and Beams)	Im3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 206 DK NA. The SPD has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	408
5	Structure	Rebar	REB	STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT	STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT are used to reinforce concrete in building constructions	1000	kg	1800
6	Structure	Structural steel	ST	Hot rolled steel profiles	The hot rolled steel profiles are made of steel bloom produced in electric arc furnace (EAF) process using 100% of iron scrap. The profiles constitute intermediate products commonly used for construction of power poles, roads, steel structures, supporting structures for buildings, load-bearing structures of buildings sudah bearing structures of buildings sudah industrial halls and warehouses as well as in railway, mining and shipbuilding industry. A specific product technical data is available at manufacturer website: www.wostsap.	1000	kg	2690
		Gulam Timber / Timber battens	GLT	Glued laminated timber	This EPD is based on a declared unit of 1 m³ of glued laminated timber (moisture of 10% at a raw density of 464 kg/m³). The results refer to a representative average of Rubner glued laminated timber including standard beams as well as sophisticated 30 beam components. The LCA covers 100% of the Rubner group's production referring to its sites located at Rohrbach (Austria), Ober-Grafendorf (Austria), Brixen (Italy) and Calitri (Italy).	1	m3	1134
8	Composite steel-concrete slabs	Galvanized steel plates	ST-G	Galvanized Structural Steel	The declaration covers galvanized structural steel produced at the production site in Brande, Denmark. The declaration covers all life cycle modules from A1-A5, C1-C4 and D and is based on product-specific data provided by Give Steel A/S and background data from GaBi professional 2020 and Ecoinvent v3.6.	1000	kg	2500
9	Walls and Lightweight concrete slabs	Concrete o ceramic blocks	CONB	Concrete blocks	Autoclaved aerated concrete blocks with a dry density of 375 kg/m3, also called Planstein PP 2/040	1	m3	261.76
10	Walls / Lightweight concrete slabs / Inclinated roof	Ceramic blocks / brick wall /ceramic deck	CERB	Red bricks or ceramic blocks	Bricks such as "RT Ultima 150" and "RT 550 Unika" are used to build walls, pillars and partitions.	1000	kg	420
11	Lightweight concrete slabs	Precast concrete beams	CONBEAM	Precast concrete elements of structures	Precast concrete structures: filigree slabs, shell/double walls, one/three layer walls, balconies, stairs, columns, beams and other precast concrete products	1	kg	0.3
12	Walls, slabs	Cross Laminated Timber (CLT) panels	CLT	Cross Laminated Timber - CLT	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3	1	m3	1355.7
13	Under the Ground slab	Graded aggregate	AGG	Aggregates	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300	1000	kg	50
14	Roof	Roof tiles	RTIL	Roof tiles (produced using natural gas) - Red tile	The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens=40 kg/m2)	1000	kg	3100
15	Flooting, roof	Ceramic tiles	CEFT	Ceramic Floor Tiles	Ceramic Floor Tiles 1 kg/m2	1	m2	32.21
16	Roof, fooring	Tile bond coat (adhesive)	ADH	Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites	The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes	1	kg	0.6
17	Roof, flooring	Mortar bed / Wet screed	MOR	Cement mortars	Cement mortars (1600 kg/m3)	1	kg	0.25
18	Flooring	Cleavage membrane / Sound insuolation layer	POLY		This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against scratches damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against heat loss. Polyethylene foam products in the form of rolls, sheets and bags. Dens=935 kg/m3	0.001069519	m3	1.73
19	Flooring	Laminated wood flooring	WFL		Nutl1-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area.	1	m2	29.71
	Flooring Flooring, partition, facades, roof	Chipboard flooring (plywood) Insulation layer	PLYW MWOOL	S-P-02010 SELEX® Plywood Mineral wool insulation (high bulk density	m3 of plywood products produced in Chile and installed across different countries across the world Mineral wool is the generic term for insulating materials made of glass wool and	1	m3	1430.67
				range)	stone wool. These are non-combustible insulating materials, which consist mainly of amorphous fibres obtained from a silicate melt. The mineral wool insulation materials described in this declaration are produced in the form of rolls, boards and mats in the high bulk density range (> 120 kg/m²). The ready-made products are supplied in thicknesses between 10 mm and 400 mm.	1	m3	96.5
22	Flooring, partition, facades, roof	Insulation layer	POLYU1	S-P-07206 insulation board with a core of rigid polyurethane (PIR) for buildings	6 cm/m2: thermal resistance (m2k/w): 2.33 Thermal Resistance (m2K/W) grammage (kg/m^2): 2.46 grammage (kg/m^2)	0.06	m3	30.69
23	Flooring, partition, facades, roof	Insulation layer	POLYU2		Polyurethane thermal insulation spray foam (blowing agent HFO; density 40 kg/m3)	0.13	m3	290.4
24	Flooring, partition, facades, roof	Insulation layer	EPS	0,035-0,039 W/mK	Expanded polystyrene foam EPS, wall insulation, External Thermal Insulation Composite System (ETICS), pitched roof insulation and ceiling insulation. Gross density: 16.0 kg/m ³	1	m3	114.5





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BIM-LCA Construction Project

Description of Materials and Impact Data

oring, partition, facades, roof	Insulation layer	CELL					
			Cellulose Fibre Insulation - Thermal insulation for use in pitched roofs, walls and floor spaces in dwellings.	One m ³ of installed in-situ insulation, thickness 300mm with an R-value of 9.09 m ³ K/W, at a density of 37 kg/m ³ . Reference service life of 50 years	0.3	m3	203.13
oring, partition, facades, roof	Insulation layer	CORK	S-P-02315 Cork-based thermal insulation panels: Slim and Lisoflex	Cork-based thermal insulation panels: grammage (kg/m^2): 3.3 grammage (kg/m^2); layer thickness (m): 0.02 layer thickness (m); thermal resistance (m2k/w): 0.465 Thermal Resistance (m2K/W).	0.02	m3	53.84
tition walls	Finishing coat (plastering mortars) / Esternal finishing /Interior finishing	PLASM	Mineral pre-made mortar: rendering and plastering mortar – normal/finishing render or plaster with special properties	Rendering and plastering mortars produced in the factory for use as a base coat or finishing render/plaster on walls, ceilings, piers, and separating walls of structures which comply with the applicable standards or on similar backgrounds. 1600 kg/m3	1	kg	1.5
tition walls	Gypsum cardboard or fiberboard	GYP_F	Gypsum fibreboards 12,5 mm	conversion factor to 1kg; 16.66 - gross density: 1175.0 kg/m^3 layer thickness: 0.0125 m grammaez: 16.66 kg/m^2	1	m2	36.9
tition walls, facades	Gypsum plasterboard	GYP_P	STANDARD GYPSUM PLASTERBOARD STD 12,5 mm	grammage (kg/m^2): 8.6 grammage (kg/m^2) thermal conductivity (w/m.k): 0.21 Thermal Conductivity (W/m.K) thermal resistance (m2K/w): 0.06 Thermal Resistance (m2K/W)	1	m2	36.9
tition walls	Galvanized steel (U, C) channel studs	ST-GC	Cold-rolled steel profiles for framing and partition systems	The raw material is hot dipped sheet rolled galvanised steel, grade DX51D+Z steel for forming. The steel profile sections are manufactured in accordance with EN 14195:2014 Metal framing components for gypsum board systems.	1000	kg	2820
lings	Railings	ST-SL	Welded and Pickled Stainless Steel Products	Products from Øglænd System AS that are made from stainless steel, and then machined, welded and pickled. Stainless steel forms a protective chromium oxide layer when the alloy is exposed to air, hindering direct contact between the alloy and the corrosive environment.	1	kg	14.47
erior doors	Interior doors	WDOOR	Wooden interior doors	This EPD describes an average of the doors produced by the member companies of the VHI. In addition to standard doors, the member companies of the VHI also produce so-called functional doors. These offer additional functions such as moisture, smoke, fire, sound, burglary and radiation protection. For these purposes, the doors are given a modified design.	2.6814	m2	394.28
ades	External wooden cladding	WCLA	Wood Plastic Composite products: Cladding: WEO 35	FIBERDECK wood plastic composite combines the proven strength of high-density, recycled polyethylene plastic and realistic wood fibers with an outer shell of polymer that completely encapsulates the board in an impermeable layer of protection from weather, sun, water, scuffs and scrapes	50.75	m2	2869.79
ades	Tiles for external cladding	N-STON	Slabs for façade claddings and for interior claddings and flooring in natural semi-rijo limestone:	Slabs for façade claddings and for interior claddings and flooring in natural semi-rijo limestone. Dens: 2750 kg/m3	1	kg	2.5
ades	Tiles for external cladding	PORCE	EXTRUDED PORCELAIN VENTILATED FAÇADE GA16 & GA20	EXTRUDED PORCELAIN VENTILATED FAÇADE GA16 & GA20. 324 kg/m2	324	kg	560
ades	Tiles for external cladding	A-STON	S-P-07728 STONEO Ventilated Facade Panels	The engineering stone facade panels are made of a high-quality material comprising a selected combination of aggregates, bound by stable polyester resins. The panels are used for facade cladding and are mounted as a component of ventilated facades (rainscreen claddings).	1	kg	2.25
ndows	Windows	WIN_PVC	Passiv PVC Double Glazed Window	The Passiv PVC windows cover a range of different sizes and shapes of windows. The LCA has been executed based on a Double-glazed 1230 mm x 1480 mm window, with a thermal performance of U window = 1.2 W/mZK, U glass = 1.2 W/mZK and a life expectancy of 50 years. After which the results have been scaled back to a functional unit of 1m2.	1	m2	146.96
ndows	Windows	WIN_WOOD	Hardwood double glazed window	The raw materials for the Hardwood windows comprise glass, argon, hardwood/softwood profiles, warm edge spacer and associated hardware (hinges, handles, recievers and gears).	1	m2	299.17
ndows	Windows	WIN_AL	Aluminium Windows	The aluminium windows are assembled with extruded aluminium profiles and comes in different frame widths of 45 mm - 50 mm and 70 mm - 75 mm. They consist of an aluminium profile frame and an aluminium profile sash with an insulating glass unit (IGU). The aluminium profiles are powder coated and thermally broken with a reinforced polyamide strip.	1	m2	127.72
ades	Exterior glazed doors	DOOR_GL	Exterior facade folding doors with thermally modified beech and double glazing, painted	Folding door in the facade of buildings, for renovation and in new buildings	1	m2	150.14
ades	Exterior front doors	DOOR_W	Wooden full doors	Exterior doors manufactured by Porta KMI Poland Sp. 2 o. 0. Sp. k. are dedicated for communication in domestic as well as commercial premises. Among company's products, wooden and steel doorsare distinguish. Depending on the customer's needs, doors possess various functionalities and can be produced from a wide range of materials.	2.307	m2	632.54
of			S-P-05225 Aggregates from Nyrand gravel pit-Svebølle	S-P-05225 Aggregates from Nyrand gravel pit-Svebølle	1000	kg	123.75
of	Waterproofing layer	WP	PTM reinforced bitumen membrane for roof waterproofing	System of PTM reinforced bitumen membrane for roof waterproofing: -PTM BituFlex (top layer) & PTM DuraFlex Kombi (bottom layer) .	1	m2	4.2
ti lii lii lii lii lii lii lii lii lii l	tion walls, facades tion walls ngs ior doors des des des des dows dows dows dows des des	fiberboard tion walls, facades Gypsum plasterboard Galvanized steel (U, C) channel studs Railings Railings Interior doors Interior doors des External wooden cladding Tiles for external cladding des Tiles for external cladding Windows Windows Windows Windows Windows Exterior glazed doors des Exterior front doors	fiberboard Gyp_P Gypum plasterboard GyP_P Ition walls Galvanized steel (U, C) channel ST-GC stude Railings Railings ST-SL ior doors Interior doors WDOOR External wooden cladding WCLA Tiles for external cladding PORCE Tiles for external cladding A-STON Windows Windows Windows Win_PVC Jows Windows Win_AL WIN_AL des Exterior glazed doors DOOR_GL Gravel ballast GRAV	fiberboard Gypsum plasterboard Gyp_P STANDARD GyPSUM PLASTERBOARD STD 12,5 mm tion walls, facades Galvanized steel (U, C) channel studs Railings Railings ST-SL Welded and Pickled Stainless Steel Products WOODR Wooden interior doors WELA Galding: WEO 35 WELA Welded and Pickled Stainless Steel Products WOODR Wooden interior doors WELA Galding: WEO 35 Tiles for external cladding WCLA Tiles for external cladding PORCE EXTENDED PORCELAIN VENTILATED FAÇADE GA16 & GA20 Ges Tiles for external cladding A-STON S-P-07728 STONEO Ventilated Facade Panels WIN_PVC Passiv PVC Double Glazed Window Windows Windows Windows Win_WOOD Hardwood double glazed window Windows Windows Windows Win_AL Aluminium Windows Exterior facade folding doors with thermally modified beech and double glazing, painted des Exterior front doors DOOR_W Wooden full doors Waterproofing layer WP PTM reinforced bitumen membrane for	floor walls, facades Openum plainlinebound OPP_P STANDAND GYPSUM PASTERBOAND STO U25 mm STANDAND GAMPINED STORE (S. 6 kg/m²) 2 grammage 16 66 kg/m² 2 grammage 16 66 kg/m² 2 grammage 16 66 kg/m² 2 grammage 16 60 kg/m² 2 kg/m² 2 grammage 16 60 kg/m² 2 k	Power Third or white Third or whit	See dealing. 1153 sighted special process. 1550 sighted special pr

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Corone Depletion Potential formatic (APPT)

BIM-LCA Construction Project

Module Building part	Building eleme	ent types / building elements	Ref. Type of Material	Mat Code	Quantities (Q) Unit	Cost (Euros)	PERT (MJ)	PENRT (MJ)	PERT (MJ)	PENRT (MJ)	PERT (MJ)	PENRT GWP (MJ) (kg CO2-	ADPF eq) (MJ)	ADPE (kg Sb-eq)	AP EP (kg SO2-eq.) (kg Phosphat-ec	POCP (kg Ethen-eq)	ODP GWP (kq CFC 11-eq) (kg CO2-eq.)	ADPF ADI	PE AP -eq) (kg SO2-eq.)		POCP (kg Ethen-eq)		GWP (kg CO2-eq.)	ADPF (MJ)	ADPE (kg Sb-eq)	AP (kg SO2-eq.)	(kg Phosphat-eq.)	POCP (kg Ethen-eq) (kg	ODP CFC 11-eq)
		1.A - Piles	1.A.1 Concrete	CON1	0.00 m3	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0	0
		I.APiles	1.A.2 Rebar	REB	0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 (0 0	0	0	0	0	0	0	0	0	0
		1.B.1-Pile Caps	1.B.1.1 Concrete 1.B.1.2 Rebar	CON1 REB	0.00 m3 0.00 kg	0.0	.00 0	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			1.B.1.3 Blinding concrete 1.B.2.1 Concrete	CON0 CON1	0.00 m3 53.89 m3	6374.:	.00 0	75446	0 184.3038	0 3179.51	0	0 6.52069 15	0 196.98 73290.	0.00371841	0 0 1 23.49604 7.5	0 446 0.85685	0 0 0 233.8	0 0 326 3168.732 1.0	0 (65981E-05 0.544289	0 0 9 0.1309527	-0.1816093	3.85852E-14	0.97002	13.25694	3.50824E-05	0.004171086	0.01708313	0.00080835	6.25124E-08
		1.B.2-Footings	1.8.2.2 Rebar	REB	3411.24 kg	6140.2	.23 5403.399408	24543.85022	40.934844	2237.771472	0	0.10233711 1797.		0.003477074	6.822474 2.906373	924 0.64131255	6 0.000183879 139.860	717 2166.135495 0.0		8 0.143271954	0.030701133	2.68123E-05	0.000286203	0.003411237	1.05748E-08	1.25875E-06	5.15097E-06	2.43221E-07	1.88641E-11
1- Foundation	1.B-Basement		1.B.2.3 Blinding concrete 1.B.3.1 Concrete	CON0 CON1	7.38 m3 9.53 m3 846.26 kg 2.39 m3 0.00 m3	1127.	13 233.90389 21 1810.7	6630.3523 13342	6.7078528 32.5926	211.98232 562.27	5.1194616	309.19009 93 1.15313 2	8.8632 6608.209. 687.46 12960.	2.42835E-05 0.00065757	5 1.9131552 0.08303 7 4.15508 1.3	342 0.15152	7 2.24382E-05 15.027 3.19255E-05 41.3		93524E-06 0.096253	1 0.000111232 3 0.0231579	0.018489405 -0.0321161	3.54878E-06 6.82348E-15	29.088521 0.17154	308.82104 2.34438	1.11675E-06 6.20403E-06	0.16474392	0.001959656	0.18297499	3.30743E-06 1.10548E-08
		1.B.3-Foundation beams	1.8.3.1 Concrete 1.8.3.2 Rebar 1.8.3.3 Blinding concrete	REB CON0	846.26 kg	1523.	28 1340.482176 96 75.64403	6088.86948	10.155168 2.1693056	555.149184 68.55464	1 6556222	0.02538792 445.	687.46 12960. 181128 5521.872 3.6264 2137.081	0.000862597	7 1.692528 0.721016 5 0.6187104 0.02685	928 0.15909763	2 4.5617E-05 34.696 2 7.25648E-06 4.859	324 537.37764 6.1 332 68.55464 3.1	04232E-05 0.20310336 16278E-07 0.012080607	6 0.035543088 7 3.59721E-05	0.007616376 0.005979435	6.65164E-06 1.14767E-06	7.10015E-05	0.000846264 99.87208	2.62342E-09	3.12271E-07	1.27786E-06	6.03386E-08	4.67984E-12
			1.B.4.1 Concrete	CON1	0.00 m3	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		1.B.4-Foundation slab	1.B.4.2 Rebar 1.B.4.3 Blinding concrete	REB CON0	0.00 kg 0.00 m3 0.00 m3 0.00 kg	0.0		0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
	1.0	C - Retaining walls	1.8.4.3 Blinding concrete 1.C.1 Concrete 1.C.2 Rebar 1-Total Fundations	CON0 CON3	0.00 m3	0.0	.00 0	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			1-C-2 Repar 1-Total Fundations	REB		16019.9	91 19103.2295	128195.3141	276.8636	6815.2376	6.7751	416.9831 2137	0.6326 122776.684	0.0087	7 38.6980 12.6	161 4.022	2 0.0005 469.6	880 6713.1461	0.0003 1.7118	8 0.3331	-0.1509	0.0000	39.6376	424.2987	0.0000	0.2229	0.0227	0.2431	0.0000
			2.A.1.1 Gulam Timber	GLT ST.G	0.00 m3 0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		2.A.1-Beams	2.A.1.2 Steel in timber connect (galvanized) 2.A.1.3 Structural steel	ST	0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			2.A.1.4 Concrete 2.A.1.5 Rebar	CON3 REB	0.00 kg 19.68 m3 2707.97 kg	8029.4	.44 3739.2 34 4289.421312	27552 19483.82976	67.3056 32.495616	1161.12 1776.427008	0	31.8816 5 0.08123904 1427	549.76 26764. 199136 17669.491	0.00135792	2 8.58048 2.7 2 5.415936 2.307188	552 0.31291 736 0.50909798	.2 0.000065928 85.4 4 0.00014597 111.026	112 1157.184 6.0 588 1719.55968 0.0	06144E-06 0.198768 00193349 0.64991233	8 0.478224 2 0.113734656	-0.663216 0.024371712	1.40909E-14 2.12846E-05	4.6248 0.000227199	64.72752 0.002707968	0.000171019 8.3947E-09	0.1968 9.9924E-07	0.7872 4.08903E-06	0.003936 1.93078E-07	3.0504E-07 1.49751E-11
			Z.A.Z.1 Guiam Timber	GLT	0.00 m3 0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		2.A.2-Columns	2.A.2.2 Steel in timber connect (galvanized) 2.A.2.3 Structural steel	ST-G ST	0.00 kg	0.0	.00	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			2.A.2.4 Concrete	CON3	0.00 kg 10.89 m3	4443.3	.12 2069.1 .48 3489.626448	15246	37.2438	642.51	0	17.6418 3	070.98 14810.	0.00075141	4.74804 1.5	246 0.17315	1 3.64815E-05 47.2	526 640.332 3.:	35412E-06 0.109989 00157298 0.52873128	9 0.264627	-0.366993	7.79724E-15	2.55915	35.81721	9.46341E-05	0.1089	0.4356	0.002178	1.68795E-07
		2.A.3-Mass concrete slabs or	2.A.2.5 Rebar 2.A.3.1 Concrete 2.A.3.2 Rebar	CON2	2203.05 kg 68.10 m3	16636.0	.08 12939.475	95343.5 44099.77388	26.436564 232.91055	1445.198832 4018.0475 4020.7716	0	0.06609141 1161. 15.3230625 192	04.905 92619.	0.004699073	5 4.406094 1.876996 8 29.69269 9.53	435 1.0828297	66 0.000118753 90.324 5 0.000228143 295.56	927 1398.934845 0.0 485 4004.427 2.1	0.68783525	8 0.092527974 5 1.65489075	0.019827423 -2.29505425	1.73159E-05 4.87614E-14	2.2473825	31.05474	8.2404E-05	0.009738658	0.039908065	0.001886439	1.4642E-07
	2.A-Frames	2.PCJ William Controller Sillada Gr	2.A.3.2 Rebar	REB	6129.23 kg	11032.0		44099.77388	73.5507	4020.7716	0	0.18387675 3230.	01575 39993.1931	0.006247519	12.25845 5.2220	997 1.152294	3 0.00033039 251.298	225 3892.057875 0.0	00437627 1.471014	4 0.25742745	0.055163025	4.81757E-05	0.000514242	0.006129225	1.90006E-08	2.26168E-06	9.25513E-06	4.37014E-07	3.38946E-11
2 - Load bearing		2.A.4-Composite slabs or	2.A.4.1 Concrete 2.A.4.2 Rebar	REB	0.00 m3 0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			2.A.4.3 Galvanized steel plates 2.A.5.1 Concrete blocks or	ST-G CONB	0.00 kg 0.00 m3	0.0	.00 0	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		2.A.S-Lightweight concrete slabs	2.A.5.2 Ceramic blocks	CERB	0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	ő	ő	0	ő	0	0	0	0	0
		or	2.A.5.3 Precast concrete beams 2.A.5.4 Concrete (cast in place)	CONBEAM CON2	0.00 kg 0.00 m3 0.00 kg	0.0	.00 0	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
				REB	0.00 kg 0.00 m3	0.0	00 0	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		2.A.6-Mass timber structural floors	2.A.6.1 Cross Laminated Timber (CLT) panels 2.A.6.2 Steel in timber connect (galvanized) 2.A.6.3 Steel in connections (galvanized)	ST-G	kg	0.0	.00	0	0	0	0	ō	0	0	Ö	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
	<u> </u>		2.A.6.3 Steel in connections (galvanized) 2.B.1 Structural steel	ST-G ST	0.00 kg 0.00 kg	0.0	00 0	0	0	0	0	0	0	0 0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
	2.B-	-Load-bearing walls	2.B.1 Structural steel 2.B.2 Concrete	CON3	0.00 kg 0.00 kg 0.00 m3 0.00 kg	0.0	.00	0	0	ō	0	0	0	0	0	0	0 0	0 0	0 0	0 0	ő	o o	0	0	0	0	0	0	0
	L		2.B.3 rebar 2-Total structural elements	KEB				217576.0268	469.9428	13064.0749	0.0000	65.1777 3364	3.8515 206232.166	0.0181	65.1017 23.2	204 3.644	0 0 5 0.0009 880.8		0.0008 3.6462	2 2.8614	-3.2259	0.0001	9.4323	131.6105	0.0003	0.3154	1.2627	0.0080	0.0000
		3.A.1-Ground floor slab	3.A.1.1 Concrete	CON1	29.53 m3	3493.	22 5611.365	41346.9 6374.805975	101.00457	1742.4765 581.21928	0	3.5735535 83	28.447 40165.5	0.002037812	2 12.876606 4.13 5 1.77201 0.75487	469 0.4695826 626 0.1665689	9.89372E-05 128.17 4 4.77592E-05 36.326	539 1736.5698 9. 205 562.613175 6.	09632E-06 0.29828833 32608E-05 0.2126412	5 0.071766405 2 0.03721221	-0.099527895 0.007974045	2.1146E-14 6.964E-06	0.531603	7.265241	1.92263E-05	0.002285893	0.00936212	0.000443003	3.42589E-08
		(non-structural)	3.A.1.2 rebar 3.A.1.3 Graded aggregate	REB AGG	886.01 kg 88600.50 kg	1594.i 4430.i	.03 1151.8065	2569.4145	10.63206	1333.083123	0	29144.33707 203	78115 2569.414	0.000903105	0.886005 1.77	201 0.106320	4.77592E-05 36.326 6 4.07562E-06 116.5096	575 10851.34624 0.0	59185134 6.910839	9 1.417608	0.354402	0.0886005	0.26402949	37.389411	9.77264E-06	0.001159781	0.004752176	0.000224425	1.74543E-08
		3.A.2-Flooring Type I:	3.A.2.1 Ceramic tiles 3.A.2.2 Tile bond coat (adhesive)	CEFT	257.52 m2 1545.12 kg	8294.1 927.0	.72 10506.816 .07 3012.984	48413.76 11356.632	3.270504	2366.6088 2085.912	517.6152	2678.208 30 0.8343648 794	38.736 41975.7 19168 10383.206	0.0888444	7.571088 0.9064 2.394936 0.74320	704 0.538216	8 0.000507314 156.05 2 4.92893E-05 38.318	712 2224.9728 6.0 976 4244.135616 0.1	69552E-06 0.2600952 42769088 2.472192	2 0.03064488 2 0.540173952	0.012953256 0.142769088	2.88422E-05 0.050185498	285.8472	2070.4608	0.002678208 1.70581F-07	0.669552 2.0272F-05	0.09760008 8 28184F-05	0.04661112 3.91224F-06	2.13742E-05 3.0408F-10
	3.A-Horizontal	Ceramic flooring or	3.A.2.3 Mortar bed	MOR	12360.96 kg	3090.2	24 4697.1648	64771.4304	0	0	0	0 71	07.552 64647.820	0.102843187	7 26.3288448 1.2979		6 0.000537702 406.1440	527 4467.250944 0.0	24351091 2.82534462	7 0.554982382	1.51357483	0.504574387	0.036835661	0.504574387	1.36218E-06	0.161953298	0.000660941	3.13227E-05	2.4314E-09
	elements		3.A.2.4 Cleavage membrane 3.A.3.1 Laminated wood flooring 3.A.3.2 Chipboard flooring (plywood) 3.A.3.3 Insulation layer	POLY	1.29 m3 0.00 m2 0.00 m3 0.00 m3 0.00 m3 0.00 m3	2082.	76 4340.803474	107268.0246	21.3091362	1480.80438	0.068983814	0.934231056 3339.	0 107219.868	0.016987114	0.014614907 1.291189	185 15.2053327	0.005680727 100.4057	0 1480.80438 0.0	0.405716322	0.006729835	0.40932804	2.3115E-05	0.042377491	0.930619338	2.68471E-07	0.00061038	0.000104379	0.000208276	1.20391E-09
		3.A.3-Flooring Type II: Wood	3.A.3.2 Chipboard flooring (plywood)	PLYW	0.00 m3	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			3.A.3.4 Timber battens	MW00L GLT	0.00 m3 0.00 m3	0.0	.00	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		3.A.4-Flooring Type III: Screed flooring	3.A.4.1 Wet screed (cement mostar)	MOR	0.00 m4	0.0		0	0	0	0	0	0	0	0	0	0 0	0 0	0 (0 0	0	0	0	0	0	0	0	0	0
		3.B.1-Internal partition Type I:	3.A.4.2 Sound insulation layer 3.B.1.1 Brick wall	CERB	0.00 m3 19627.99 kg	8243.	76 6045.421844	81063.61109	40.23738565	802.7849137	18.74473332	196.27993 6163.	89802 73212.4138		19.58873701 4.043366		7 9.93176E-06 57.90257		65183E-06 0.243387113	3 0.060454218	-0.088914808	1.94317E-11	46.12578355	191.5692117	3.98448E-06	0.078315692	0.012954475	-0.002610523	1.55061E-11
		Brick walls	3.B.1.2 Finishing coat (plastering mortars) 3.B.2.1 Gypsum cardboard or fiberboard	PLASM GYP F	7093.12 kg 0.00 m2	10639.0	.68 5546.81984	24896.8512	139.734464	2078.28416	16.8106944	87.245376 2652 0	82688 22910.777	0.006107176	6.5256704 0.671718	0.54404230	0 1.76619E-05 154.630	0 2071.19104 1.0	60305E-05 0.117745792	0.026528269	-0.001666883	3.24865E-12 0	295.783104	78.733632	5.17798E-06	0.038728435	0.008582675	0.002588989	4.05017E-12 0
A1-A3		 B.2-Internal partition Type II: Gypsum cardboard walls 	3.B.2.2 Galvanized steel (U. C) channel stud:	ls ST-GC	0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
			3.B.2.3 Insulation layer 3.B.3.1 Cross Laminated Timber (CLT) panels	ls CLT	0.00 kg 0.00 m3 0.00 m3 0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		3.B.3-Internal partition Type III:	3.B.3.2 Steel in timber connect (galvanized) 3.B.3.3 Insulation layer 3.B.3.4 Timber hattens	ST-G MWOOL	0.00 kg 0.00	0.0	.00 0	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
3 - Non-load bearing	d 3.B-Vertical elements	Structural Timber wall	3.8.3.4 Timber battens 3.8.3.5 Gypsum plasterboard	GLT	0.00 m3 0.00 m2	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
elements			3.B.4.1 Concrete blocks	CONB	0.00 m2 0.00 m3 0.00 m3	0.0	.00	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		3.B.4-External party walls	3.8.4.2 Insulation layer	MWOOL PLASM	0.00 m3	0.0	00 0	0	0	0	0	0	0	0 0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		3.B.S-Parapets	3.B.4.3 Finishing coat (plastering mortars) 3.B.5.1 Brick wall	CERB	0.00 kg 2337.72 kg	981.8	.84 720.01776	9654.7836	4.792326	95.612748	2.2325226	23.3772 734		0.000624171	2.33304456 0.48157	032 0.12132766	8 1.18289E-06 6.896	274 95.378976 5	.5404E-07 0.028987728	8 0.007200178	-0.010589872	2.31434E-12	5.493642	22.8161472	4.74557E-07	0.009327503	0.001542895	-0.000310917	1.8468E-12
		3.8.6-Railings	3.B.5.2 Finishing coat (plastering mortars) 3.B.6 Railings	PLASM ST-SL	844.80 kg 52.25 kg	1267.1 756.0	.20 660.6336 .06 514.14	2965.248 3370.125	16.64256 0.000788975	247.5264 6.53125	2.002176 98.7525	10.39104 31 397.518	5.9552 2728.70 246.62 3317.87	0.000727373	3 0.777216 0.08000 3 3.213375 0.1614	256 0.0647961 525 1.5152	6 2.10355E-06 18.41 5 1.34283E-05 18.9	564 246.6816 1.5 145 2080.22925 0.	90925E-06 0.01402368 01133825 1.30629	8 0.003159552 5 0.26125	-0.000198528 0.05225	3.86918E-13 0.02460975	35.22816 0.99275	9.37728 13.8985	6.16704E-07 3.66795E-05	0.004612608	0.001022208 0.01781725	0.000308352 0.000841225	4.82381E-13 6.53125E-08
		3.B.7-Interior doors	3.8.6 Railings 3.8.7 Interior doors 3.C.1.1 Ceramic tiles 3.C.1.2 Tile bond coat (adhesive)	WDOOR	7.64 m2 13.72 m2	1123.4	41 5230.761587	3971.893936 2578.608	0.1741932	126.05004	124.854479	44.22048184 -53.99 142.6464 16	143626 3562.85447	0.007604669	0.515345267 0.107630 0.4032504 0.04828	715 0.10167576	6 2.8068E-10 1.626926 4 2.70205E-05 8.311	233 179.0445141 0.0	00977295 0.113970314 56616E-07 0.01385316	4 0.022794063 6 0.001632204	0.005698516	0.002116999 1.53619E-06	30.31610353	9.163213247	1.06049E-06	0.00994391	0.002254903	0.000581818	1.14113E-14
			3.C.1.2 Tile bond coat (adhesive)	ADH	82.30 kg	49.3	38 160.4772	604.8756	0	111.0996	0		00144 553.0291	4.75671E-05	0.1275588 0.039584	376 0.00687994	6 2.62524E-06 2.0409	108 226.0506528 0.	00760415 0.1316736	6 0.028770682	0.00760415	0.002672974	0.000245242	0.003423514	9.08548E-09	1.07972E-06	4.41107E-06	2.08373E-07	1.61959E-11
		3.C.1-Stairs	3.C.1.4 Concrete	MOR CON3	1235.52 kg 2.16 m3	308.0 881.1	.88 469.4976 28 410.4	6474.1248 3024	7.3872	127.44	0	3.4992	10.424 6461.769 609.12 2937	0.010279526	5 2.6316576 0.1297 4 0.94176 0.3	296 1.927411 024 0.03434	2 5.37451E-05 40.59548 4 0.000007236 9.3	064 446.516928 0.0 744 127.008 6	02433974 0.282402800 .6528E-07 0.021810	6 0.055472377 6 0.052488	0.151286953 -0.072792	0.050433926 1.54656E-15	0.00368185	0.050433926 7.10424	1.36154E-07 1.87704E-05	0.016187783 0.0216	6.60633E-05 0.0864	3.13081E-06 0.000432	2.43027E-10 3.348E-08
		3.C.1-Stairs	3.C.1.5 Rebar 3.C.1.6 Structural steel	REB	297.22 kg	534.9	99 470.790144	2138.46912	3.566592	194.973696	0	0.00891648 156.	32832 1939.334	0.000302952	0.594432 0.253228	0.05587660	8 1.60211E-05 12.185	356 188.73216 2.	12212E-05 0.07133184	4 0.012483072	0.002674944	2.33612E-06	2.49364E-05	0.000297216	9.2137E-10	1.09673E-07	4.48796E-07	2.11915E-08	1.6436E-12
	3.C-Inclined elements		Structural steel 3.C.1.7 Cross Laminated Timber (CLT) panels 3.C.1.8 Steel in timber connect. (galvanized)	ls CLT	0.00 kg 0.00 m3		.00	0	0	0	0	0	0	0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		<u> </u>	3.C.1.8 Steel in timber connect. (galvanized) 3.C.2.1 Ceramic tiles	ST-G CEFT	0.00 m3 0.00 kg 0.00 m2 0.00 kg	0.0	.00 0	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		3.C.2-Ramps	3.C.2.2 Tile bond coat (adhesive)	ADH MOR	0.00 kg	0.0	.00	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
1 1		s.c.z-kamps	3.C.2.3 Mostar 3.C.2.4 Concrete 3.C.2.5 Rebar		0.00 kg 0.00 m3 0.00 kg	0.0		0	0	0	0	0	0	0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
	-	l	3.C.2.5 Rebar 3-Total non-load bearing elements	CON3 REB	0.00 kg	49141		422843.5578	248 7510	13380.4069	808 6504	0 32733,1448 2501	8.2360 401322.574	0.2807	7 89.4962 17.2	0 193 41 217	0 0 0 1212.0	0 0 327 32147.8544	0.2491 15 720	0 0	2 387¢	0 7732	716 4026	2559 6088	0 0029	1 0542	0 2494	0.0518	0.0000
			4.A.1.1 External finish	PLASM	17972.16 kg	26958.2	24 14054.22912	63082.2816	354.051552	5265.84288	42.5940192	221.057568 6721	58784 58050.076	0.01547403	16.5343872 1.701963	552 1.37846467	2 4.47507E-05 391.793	088 5247.87072 4.0	0.298337856	6 0.067215878	-0.004223458	8.23125E-12	749.439072	199.490976	1.31197E-05	0.098127994	0.021746314	0.006559838	1.02621E-11
		4.A.1-Facade type I: with bricks or,	4.A.1.2 Brick walls 4.A.1.3 Insulation layer	CERB MWOOL	66309.78 kg 26.21 m3 374.42 m2 0.00 m2	27850.: 2529.:		273859.3997 55013.5306	135.9350531 66.4932478	2712.070084 1154.52407	63.32584181 250.168723	663.09782 20821 1230.793424 4544	.70996 51920.821	0.017704712	2 66.17716244 13.65981 4 26.602541 3.64572	509 3.44147768 754 1.57151562	3.35527E-05 195.6138 4 1.45672E-08 84.918	569 2705.439106 1.1 456 1142.72984 6.1	57154E-05 0.822241293 98218E-06 0.125595443	7 0.204234129 5 0.027362614	-0.300383312 -0.028175105	6.56467E-11 2.10855E-14	155.8279877 580.276116	647.1834723 1155.048258	1.34609E-05 2.11588E-05	0.26457603 0.581586586	0.043764456 0.082926542	-0.008819201 0.034832293	5.23847E-11 2.91449E-10
			4.A.1.3 Insulation layer 4.A.1.4 Interior finish 4.A.2.1 Gypsum plasterboard	MWOOL GYP_P GYP_P	374.42 m2	13816.:	10 1411.5634	16549.364	6.36514	2429.9858	212.67056	1127.0042 81	2.4914 14377.72	0.000225775	1.666169 0.01160	702 2.317659	8 4.79258E-05 183.09	138 2415.009 6.:	29026E-06 0.5092112	2 0.000143403	0.7900262	3.93141E-06	90.23522	999.7014	9.32306E-06	0.2321404	0.001067097	0.33585474	2.4824E-06
			4.A.2.2 Cross Laminated Timber (CLT) panels	ls CLT	0.00 m2 0.00 m3	0.0	.00	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
	4.A-External wall systems	4.A.2-Facade type II: Timber panels or,	4 4 2 3 Steel in timber connect (galvanized)	ST-G MWOOI	0.00 m3 0.00 kg 0.00 m3	0.0	00 0	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
4 - Facades		panels or,	4.A.2.4 Insulation layer 4.A.2.5 Timber battens 4.A.2.6 External wooden cladding 4.A.3.1 Gypsum plasterboard 4.A.3.2 Brick wall	GLT	0.00 m3	0.0	.00	0	0	0	0	0	0	0 0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
4 - racades			4.A.2.6 External wooden cladding 4.A.3.1 Gypsum plasterhoard	WCLA GYP P	0.00 m3 0.00 m2 0.00 m2 0.00 kg 0.00 m3 0.00 kg 21.54 m2	0.0	.00 0	0	0	0	0	0	0	0	0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
		4.A.3-Facade type III:	4.A.3.2 Brick wall	CERB	0.00 kg	0.0	00 0	0	0	ő	0	0	0	0	0	0	0 0	0 0	0 0	0 0	ő	ő	0	ő	0	0	0	0	0
		Ventilated facade	4.A.3.3 Insulation layer 4.A.3.4 Tiles for external cladding	MWOOL N-STON	0.00 m3 0.00 kg	0.0	.00 0	0	0	0	0	0	0	0 0	0 0	0	0 0	0 0	0 0	0 0	0	0	0	0	0	0	0	0	0
	4.B-Facade	4.B.1-Windows	4.B.1 Windows	WIN_PVC	21.54 m2	3165.5		25950.4227	0.1703814	12.29934	2.059224	44.8032 128	47.533 22832.6369	10.082874	4.70431446 0.5696	253 0.34876706	4 2.11904E-05 7793	.48 12.0624 0.	0.00557886 0.0031233	3 0.000497574	0.000141949	1.3484E-07	10489.98	43.7262	5.66502E-08	0.0057081	0.00060312	0.000374796	3.85566E-07
	openings	4.B.2-Exterior doors	4.B.2.1 Exterior glazed doors 4.B.2.2 Exterior front doors	DOOR_GL DOOR_W	4.00 m3 4.00 m4	1096.	.56 5600 .73 1691.205202	4080 1763.502384	1.228	22.08	75.9774599	26.90940616 9.085	172 192284 1620.28608	0.002990377	7 0.483953186 0.095722	564 0.88 583 0.26929345		568 0 342 108.9536194 0.0	0.00533 00594712 0.06935414			2.116E-16 0.001288253	62.8 18.44820113	5.576072822	6.4534E-07	0.02532 0.006051149	0.000001568	0.000354053	6.94408E-15
I —			4- Total facades 5.A.1.1 Ceramic tiles or 5.A.1.2 Gravel ballast 5.A.2 Waterproofing layer	CEFT	134.33 m2	76016.4	46 55695.3639 77 5480.664 00 0 19 2417.94	440298.5009	564.2434 1.705991	11596.8022 1234.4927	650.8358	3327.2256 4592	8.6791 396137.036 85.094 21895.7	10.1203	3 117.5405 19.6 2 949202 0 4729	901 10.215 416 0.280749	2 0.0002 8655.5 7 0.00026463 81.40	548 11632.0647 398 1160.6112 3.	0.0062 1.8333 49258E-06 0.135673	2 0.3133	0.4657	0.0013 1.5045E-05	12147.0066	3050.7264	0.0001	1.2135	0.1515	0.3979	0.0000 1.11494E-05
	S.A-Roof Type I: Flat	5.A.1-Finishing coat	5.A.1.2 Gravel ballast	GRAV	0.00 kg 134.33 m2	4326.	.00 0	23234.04	1.703991	0	0			0.04634385		0	0 0	0 0	0	0 0	0	0	145.1063	0	0.001397032	0.349238	0.03031107	0.02431373	0
	roof or	5.A.2-Waterproofing layer 5.A.3-Insulation layer	5.A.2 Waterproofing layer 5.A.3 Insulation layer	WP	134.33 m2 9.40 m3	564.:	.19 2417.94 40 4127.02050	37746.73 19737 1069	12.801649 23.8556647		347.9147 89.7525895	6797.098 46 441.569576 1630	7.4684 .49754 18627.541	0.000359957	0 0.9282203 0.02511 7 9.5441465 1.30797	971 0.942996 121 0.56380987	6 5.56126E-06 13.97 6 5.22624E-09 30.466		0 0.0157166: 50499E-06 0.045059655		0.01356733 -0.010108333	1.3836E-12 7.56479E-15	255.227 208.184634	0 414.394617	7,59112F-06	0.5453798 0.208654789	0.007750841 0.029751408	0.5077674 0.01249672	2.12241E-05 1.04562E-10
		5.A.4-Screed to falls	5.A.4 Cement mostar 5.B.1 Roof tiles	MWOOL MOR	6447.84 kg 3670.14 kg	1611.5	40 4127.02059 96 2450.1792 42 3963.747206	33786.6816	0	0	0	0 37	.49754 18627.541 07.508 33722.203	0.053646029	7 9.5441465 1.30797 9 13.7338992 0.6770	232 10.058630	4 0.000280481 211.8566	789 2330.249376 0.0	1.473782789	9 0.28949512	0.789525112	0.263200829	0.019214563	0.263200829	7.10552E-07	0.0944706	0.000244766	1.63388E-05	1.26829E-09
		5.B.1-Roof tiles 5.B.2-Mostar	5.B.1 Roof tiles 5.B.2 Cement mostar	RTIL MOR	3670.14 kg 2936.11 kg	11377.4	42 3963.747206 03 1115.721436	16845.92562 15385.21138	7.523779419	161.8530109	3.780240391	32.92112263 1031.	108301 16515.6133 162699 15355.8502	0.001471725	14.0933234 1.181783	889 0.74136753	3 7.74399E-06 11.89124 5 0.000127721 96.47173		0.008661523 05784135 0.671106444		-0.000111572 0.35952068	8.51472E-13 0.119851971	27.74623044 0.008749605	31.67327628 0.119851971	2.33054E-07 3.23559E-07	0.038468901	0.000156994	-0.000340222 7.4401E-06	2.00389E-12 5.77533E-10
5 - Roof		5.B.3-Waterproofing layer	5.B.3 Waterproofing layer	WP CERB	91.75 m2	385.	36 1651.561336	25782.70752	8.744099739	126.6197024	237.6413255	4642.722422 319.3	18582 46612 10575.2224	0		887 0.64410892	1 3.79859E-06 9.542354	384 0	0.010735149	9 3.43158E-05	0.35952068 0.009267094	9.4506E-13	174.3314743	0	0	0.372518835	0.005294172	0.346827881	1.4497E-05
	5.B-Roof type II: Inclinated tiled roof	5.B.4-Decking	5.8.2 Cement mostar 5.8.3 Waterproofing layer 5.8.4 Ceramic deck or 5.8.5 wooden deck (plywood)	PLYW	2936.11 kg 91.75 m2 2835.18 kg 0.00 m3	1190.	.42 5963.747.200 .03 1115.721436 .36 1651.561336 .78 873.2355303 .00 0	11709.29461	5.812119601 0	0	2.70759718					0	7 1.4346E-06 8.363781 0 0	0 0	71938E-07 0.035156236	0	-0.012843367 0	2.80683E-12 0	6.662673689 0	27.67135966 0	5.75542E-07 0	0.011312369	0.001871219 0	-0.000377079 0	2.23979E-12 0
		5.B.5-Structure	5.B.6 Brick walls or	CERB	1979.19 kg 0.00 m3 4.31 m3	831.2	.26 609.5906241	8174.056097	4.057340193	80.94888483	1.890126773		57662 7382.37996			0	9 1.00147E-06 5.838611	0	69068E-07 0.02454190		-0.008965732	1.9594E-12	4.651097295	19.3168977	4.01776E-07	0.007896969	0.001306266	0	1.56356E-12
		5.8.6-Insulation layer	5.8.7 Gulam timber beams 5.8.8 Insulation layer	MWOOL	4.31 m3	416.0	01 1892.0979	9048.789	10.937007	189.89955	41.148495		7.5274 8540.09						0 14845E-06 0.020658312				95.44554	189.98577					4.79383E-11
 	_1		5-Total Roofs Total building (A1-A5)			22345.18	24581.7578 162547.053	203470.5427 1208913.3997	75.4377 1659.8016	2509.3547 44856.5216	994.8384 1466.2614	13561.9314 1268 36542.5311 13596	8.6806 132614.691 1.3993 1126468.460	0.1277	7 58.3172 5.5 3 310.8364 72.7	816 18.320 459 59.199	3 0.0007 483.7 1 0.0086 11318.9		0.0185 2.441: 0.2565 22.9218		1.1420 -0.5237	0.3831 0.7247	921.3829 12912.4790	1763.4382 6166.2444	0.0014 0.0034	1.7254 2.8062	0.1130 1.6853	0.8962 0.7009	0.0000
			U)									1333	22.22.400		72.7		32320.3		22.02.20										





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BIM-LCA Construction Project

LCA - Enviromental Impact results

ule	Building part	Building elemi	ent types / building elements	Ref.	Type of Material	Mat Code	Quantities (Q) Unit	Cost (Euros)
			1.A - Piles	1.A.1	Concrete	CON1	0.00 m3	0.00
				1.A.2 1.B.1.1	Rebar Concrete	REB CON1	0.00 kg 0.00 m3	0.0
			1.B.1-Pile Caps	1.B.1.2 1.B.1.3	Rebar Blinding concrete	REB CONO	0.00 kg 0.00 m3	0.0
				1.B.2.1	Concrete	CON1	53.89 m3	6374.1
			1.B.2-Footings	1.B.2.2 1.B.2.3	Rebar Blinding concrete	REB CON0	3411.24 kg 7.38 m3	6140.2 646.1
	1- Foundations	1.B-Basement	1.B.3-Foundation beams	1.B.3.1 1.B.3.2	Concrete	CON1 REB	9.53 m3 846.26 kg	1127.2
			1.B.3-Foundation beams	1.B.3.3	Rebar Blinding concrete	CON0	2.39 m3	208.9
			1.B.4-Foundation slab	1.B.4.1 1.B.4.2	Concrete Rebar	CON1 REB	0.00 m3 0.00 kg	0.0
				1.8.4.3	Blinding concrete	CON0	0.00 m3	0.0
		1.0	- Retaining walls	1.C.1 1.C.2	Concrete Rebar	CON3 REB	0.00 m3 0.00 kg	0.0
				2.A.1.1	1-Total Fundations Gulam Timber	GLT	0.00 m3	16019.9
				2.A.1.2	Steel in timber connect (galvanized)	ST-G	0.00 kg	0.0
			2.A.1-Beams	2.A.1.3 2.A.1.4	Structural steel Concrete	ST CON3	0.00 kg 19.68 m3	8029.4
				2.A.1.5	Rebar	REB GLT	2707.97 kg	4874.3
				2.A.2.1 2.A.2.2	Gulam Timber Steel in timber connect (galvanized)	ST-G	0.00 m3 0.00 kg	0.0
			2.A.2-Columns	2.A.2.3 2.A.2.4	Structural steel Concrete	ST CON3	0.00 kg 10.89 m3	4443.1
				2.A.2.5	Rebar	REB	2203.05 kg	3965.4
		2.A-Frames	2.A.3-Mass concrete slabs or	2.A.3.1 2.A.3.2	Concrete Rebar	CON2 REB	68.10 m3 6129.23 kg	16636.0 11032.6
	2 - Load bearing		2.A.4-Composite slabs or	2.A.4.1 2.A.4.2	Concrete Rebar	CON2 REB	0.00 m3 0.00 kg	0.0
	structural frame		2.A.4-Composite states or	2.A.4.3	Galvanized steel plates	ST-G	0.00 kg	0.0
				2.A.5.1 2.A.5.2	Concrete blocks or Ceramic blocks	CONB	0.00 m3 0.00 kg	0.0
			2.A.5-Lightweight concrete slabs or	2.A.5.3	Precast concrete beams	CONBEAM	0.00 kg	0.0
				2.A.5.4 2.A.5.5	Concrete (cast in place) Rebar	CON2 REB	0.00 m3 0.00 kg	0.0
			2.A.6-Mass timber structural	2.A.6.1 2.A.6.2	Cross Laminated Timber (CLT) panels Steel in timber connect (galvanized)	CLT ST-G	0.00 m3 kg	0.0
			floors	2.A.6.3	Steel in connections (galvanized)	ST-G	0.00 kg	0.0
		2 R-	Load-bearing walls	2.B.1 2.B.2	Structural steel Concrete	ST CON3	0.00 kg 0.00 m3	0.0
		2.0		2.B.3	rebar	REB	0.00 kg	0.0
			3.A.1-Ground floor slab	3.A.1.1	- Total structural elements Concrete	CON1	29.53 m3	48981.0 3493.2
			3.A.1-Ground floor slab (non-structural)	3.A.1.2	rebar	REB	886.01 kg	1594.8
			, ,	3.A.1.3 3.A.2.1	Graded aggregate Ceramic tiles	AGG	88600.50 kg 257.52 m2	4430.0 8294.7
			3.A.2-Flooring Type I:	3.A.2.2 3.A.2.3	Tile bond coat (adhesive) Mortar bed	ADH MOR	1545.12 kg	927.0 3090.2
		3.A-Horizontal elements	Ceramic flooring or	3.A.2.4	Cleavage membrane	POLY	12360.96 kg 1.29 m3	2082.7
		elements	3.A.3-Flooring Type II: Wood	3.A.3.1 3.A.3.2	Laminated wood flooring Chipboard flooring (plywood)	WFL PLYW	0.00 m2 0.00 m3	0.0
			floating floor or	3.A.3.3	Insulation layer	MWOOL	0.00 m3	0.0
			3.A.4-Flooring Type III: Screed	3.A.3.4 3.A.4.1	Timber battens Wet screed (cement mostar)	GLT	0.00 m3 0.00 m4	0.0
			flooring	3.A.4.2	Sound insulation layer	POLY	0.00 m3	0.0
			3.B.1-Internal partition Type I: Brick walls	3.B.1.1 3.B.1.2	Brick wall Finishing coat (plastering mortars)	PLASM	19627.99 kg 7093.12 kg	8243.70 10639.60
			3.B.2-Internal partition Type II:	3.B.2.1	Gypsum cardboard or fiberboard	GYP_F ST-GC	0.00 m2	0.0
1-A3			Gypsum cardboard walls	3.B.2.2 3.B.2.3	Galvanized steel (U, C) channel studs Insulation layer	MW00L	0.00 kg 0.00 m3	0.0
				3.B.3.1 3.B.3.2	Cross Laminated Timber (CLT) panels Steel in timber connect (galvanized)	CLT ST-G	0.00 m3 0.00 kg	0.0
	3 - Non-load	3.B-Vertical	3.B.3-Internal partition Type III: Structural Timber wall	3.B.3.3	Insulation layer	MWOOL	0.00	0.0
	bearing	elements		3.B.3.4 3.B.3.5	Timber battens Gypsum plasterboard	GLT GYP P	0.00 m3 0.00 m2	0.0
	elements			3.B.4.1	Concrete blocks	CONB	0.00 m3	0.0
			3.B.4-External party walls	3.B.4.2 3.B.4.3	Insulation layer Finishing coat (plastering mortars)	MWOOL PLASM	0.00 m3 0.00 kg	0.0
			3.B.5-Parapets	3.B.5.1 3.B.5.2	Brick wall	CERB PLASM	2337.72 kg 844.80 kg	981.8- 1267.2
			3.B.6-Railings	3.B.6	Finishing coat (plastering mortars) Railings	ST-SL	52.25 kg	756.0
			3.B.7-Interior doors	3.B.7 3.C.1.1	Interior doors Ceramic tiles	WDOOR	7.64 m2 13.72 m2	1123.4 441.7
				3.C.1.2	Tile bond coat (adhesive)	ADH	82.30 kg	49.3
			2045	3.C.1.3 3.C.1.4	Mostar Concrete	MOR CON3	1235.52 kg 2.16 m3	308.8 881.2
			3.C.1-Stairs	3.C.1.5	Rebar	REB	297.22 kg	534.9
		3.C-Inclined		3.C.1.6 3.C.1.7	Structural steel Cross Laminated Timber (CLT) panels	CLT	0.00 kg 0.00 m3	0.0
		elements		3.C.1.8 3.C.2.1	Steel in timber connect. (galvanized) Ceramic tiles	ST-G CEFT	0.00 kg 0.00 m2	0.0
				3.C.2.2	Tile bond coat (adhesive)	ADH	0.00 kg	0.0
			3.C.2-Ramps	3.C.2.3 3.C.2.4	Mostar Concrete	MOR CON3	0.00 kg 0.00 m3	0.0
				3.C.2.5	Rebar	REB	0.00 kg	0.0
	-			4.A.1.1	tal non-load bearing elements External finish	PLASM	17972.16 kg	49141.1 26958.2
			4.A.1-Facade type I: with bricks or,	4.A.1.2 4.A.1.3	Brick walls	CERB MWOOL	66309.78 kg	27850.1 2529.2
			with pricks of,	4.A.1.4	Insulation layer Interior finish	GYP_P	26.21 m3 374.42 m2	13816.1
				4.A.2.1 4.A.2.2	Gypsum plasterboard Cross Laminated Timber (CLT) panels	GYP_P CLT	0.00 m2 0.00 m3	0.0
		4.A-External wall	4.A.2-Facade type II: Timber	4.A.2.3	Steel in timber connect (galvanized)	ST-G	0.00 kg	0.0
		systems	panels or,	4.A.2.4 4.A.2.5	Insulation layer Timber battens	MW00L GLT	0.00 m3 0.00 m3	0.0
	4 - Facades			4.A.2.6	External wooden cladding	WCLA	0.00 m2	0.0
			4.A.3-Facade type III:	4.A.3.1 4.A.3.2	Gypsum plasterboard Brick wall	GYP_P CERB	0.00 m2 0.00 kg	0.0
			Ventilated facade	4.A.3.3	Insulation layer	MWOOL	0.00 m3	0.0
		40.50	4.B.1-Windows	4.A.3.4 4.B.1	Tiles for external cladding Windows	WIN_PVC	0.00 kg 21.54 m2	3165.5
		4.B-Facade openings	4.B.2-Exterior doors	4.B.2.1	Exterior glazed doors Exterior front doors	DOOR_GL	4.00 m3	600.50 1096.7
				4.B.2.2	4- Total facades	DOOR_W	4.00 m4	76016.4
			5.A.1-Finishing coat	5.A.1.1 5.A.1.2	Ceramic tiles or	CEFT	134.33 m2 0.00 kg	4326.7
		5.A-Roof Type I: Flat roof or	5.A.2-Waterproofing layer	5.A.1.2 5.A.2	Gravel ballast Waterproofing layer	WP	134.33 m2	564.1
		100101	5.A.3-Insulation layer	5.A.3	Insulation layer	MWOOL	9.40 m3 6447.84 kg	907.4 1611.9
			5.A.4-Screed to falls 5.B.1-Roof tiles	5.A.4 5.B.1	Cement mostar Roof tiles	MOR	3670.14 kg	11377.4
	5 - Roof		5.B.2-Mostar	5.B.2	Cement mostar	MOR WP	2936.11 kg	734.0 385.3
		5.B-Roof type II:	5.B.3-Waterproofing layer 5.B.4-Decking	5.B.3 5.B.4	Waterproofing layer Ceramic deck or	CERB	91.75 m2 2835.18 kg	1190.7
		Inclinated tiled roof		5.B.5 5.B.6	wooden deck (plywood) Brick walls or	PLYW	0.00 m3 1979.19 kg	0.00 831.2
			5.B.5-Structure	5.B.7	Gulam timber beams	GLT	0.00 m3	0.0
			5.B.6-Insulation layer	5.B.8	Insulation layer	MWOOL	4.31 m3	416.0

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(MJ/m2/yr) | ADPE
(kg Sb-eq./m2/yr)
 | AP
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(kg Phosphat-eq./m2/yr) | POCP
(kg Ethen-eq./m2/yr) | ODP
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(kg CO2-eq./m2/yr)
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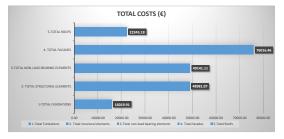


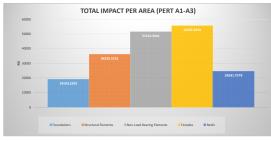
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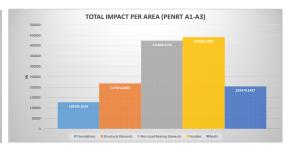
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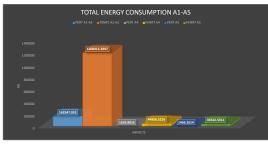
Graphical Results

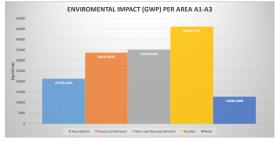
Impacts	Enviromental
Eutrophication potential (EP)	Abiotic depletion potential for fossil resources (ADPF)
Photochemical Ozone Creation Potential (POCP)	Abiotic depletion potential for non fossil resources (ADPE)
Ozone Depletion Potential (ODP)	Acidification potential (AP)
	Global warming potential (GWP)

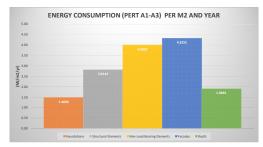


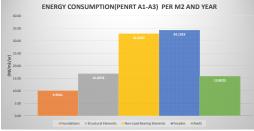


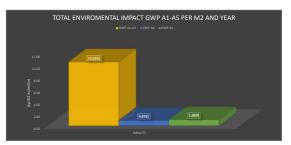














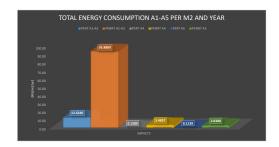


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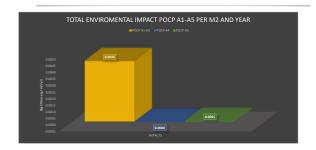
BIM-LCA Construction Project

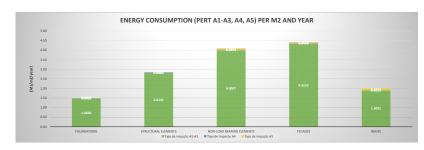
Graphical Results

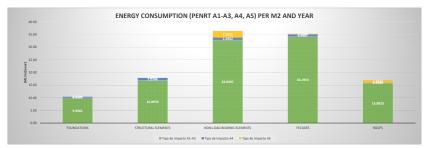
Impacts	Enviromental I							
Eutrophication potential (EP)	Abiotic depletion potential for fossil resources (ADPF)							
Photochemical Ozone Creation Potential (POCP)	Abiotic depletion potential for non fossil resources (ADPE)							
Ozone Depletion Potential (ODP)	Acidification potential (AP)							
	Global warming potential (GWP)							

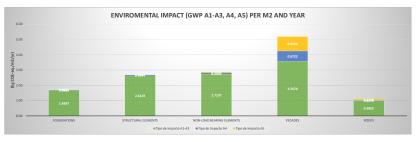


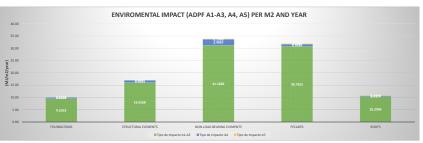














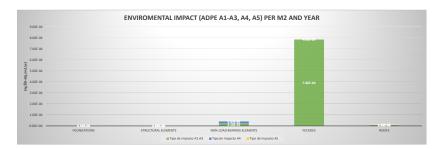


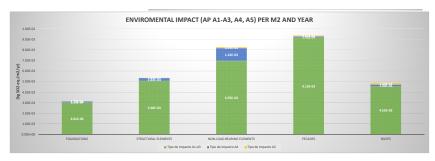
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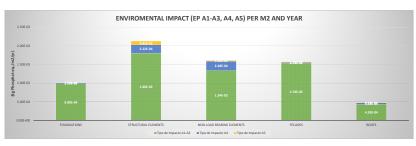
BIM-LCA Construction Project

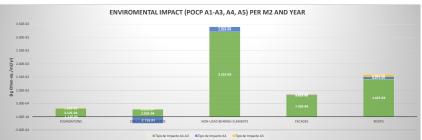
Graphical Results

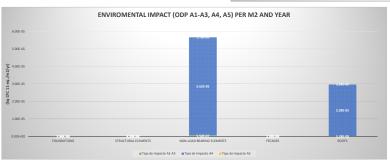
Impacts	Enviromental						
Eutrophication potential (EP)	Abiotic depletion potential for fossil resources (ADPF)						
Photochemical Ozone Creation Potential (POCP)	Abiotic depletion potential for non fossil resources (ADPE)						
Ozone Depletion Potential (ODP)	Acidification potential (AP)						
	Global warming potential (GWP)						













Spanish case study report



Annex 2. LCA with Excel app of a single-family house in steel and bricks



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BIM-LCA Construction Project

Inputs

1- Data of the building

Inclina

Project Name:	Single-family house with steel structure and brick						
Building type	Residential						
Address	Street 1						
IndoorFloor area	257.52	m2					
Analysed service life	50	year					
City	Cartagena						
Country	Spain						

Excel Legend

10.80	User input (or parameter readed from IFC file)
23.87	Parameter calculated by app and not editable

2- Areas and volumes in elements of the building - User inputs

Footing volume (m3):	24.88
Volume of Foundation beams (m3):	12.37
Footing plant area (m2):	9.05
Foundation beam plant area (m2):	4.52
Volume of piles (m3):	0.00
Volumen of pile caps (m3):	0.00
Pile cap plant area (m2):	0.00
Foundation slab volume (m3):	0.00
Foundation slab plant area (m2):	0.00
·	
Column volume (m3):	4.87
beam volume (m3):	1.41
Retaining wall volume (m3):	0.00
Area of slabs (including beams) (m2):	351.13
Partition area (m2):	221.66
Facade area (m2):	374.42
Exterior party wall (m2):	0.00
Stairs (m2):	10.80
Ramps (m2):	0.00
Steel volume in stiffening elements (m3):	0.00
Concrete volume in stiffening walls (m3):	0.00
Interior door surface (m2):	7.64
Main door surface (m2):	4.00
Exterior glazed door surface (m2):	4.00
Windows surface (m2):	21.54
Flat roof area (m2):	134.33
ited roof area (horizontal projection) (m2):	86.22
roof inclination angle (deg):	20.00
parapets (m2):	26.40
Railing (m):	5.50

Note: $\ensuremath{\mathsf{IMPORTANT}}$ - If any of the previus element is missing in the project enter 0

Floor Areas (m2)	Indoor	outdoor	total
Ground floor:	116.52	80.37	196.89
Intermediate floors:	141		
roof type 1:		128.48	
roof tape 2:		5.85	



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BIM-LCA Construction Project

Inputs







(1) Piles and pile caps

2- Choice the type of structural, construction systems & materials

(2) Footings

(3) Foundation slab

b) Material in Beams and Columns



(1) Reinf. Concrete



(2) Steel



(enter 1, 2, 3 or 4)

(4) Timber slabs

(3) Timber

c) Type of structural slabs







(1)-Mass concrete

(2) Composite slab

(3) Lightweight concrete slabs

c-1) If the perviuos answer was (3) Lightweight concrete slabs , pease chose:

Type of bocks:





(1) Concrete blocks

(2) Ceramic blocks

d) If it exists in the building, choose one of these stiffening systems:

Type of structure stiffening system:

(0) Without

stiffening system



(1) Concrete stiffening walls



(2) Steel stiffening elements

e) Type of flooring (non-structural)



(1) Ceramic flooring



floor



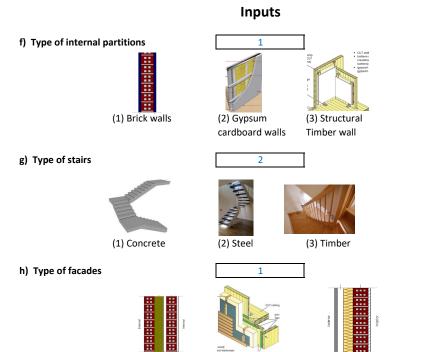
(2) Wood floating (3) Screed flooring





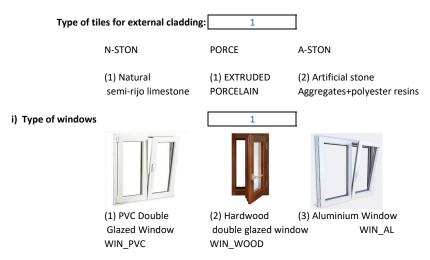
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BIM-LCA Construction Project



h-1) If the perviuos answer was (3) $Ventilated\ facade$, pease chose:

(1) Double bricks wall



(2) Timber

(3) Ventilated facade

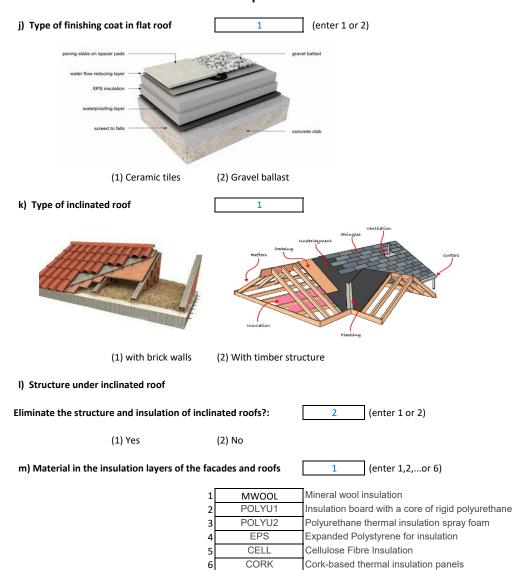




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BIM-LCA Construction Project

Inputs







Erasmus+ Project 2022-1-NO01-KA220-HED-000087893

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Building Material Quantities

Excel Legend

User input (or parameter readed from IFC file)

Project name: Single-family house with steel structure and bricks

Parameter calculated by app and not editable Parameter loaded by default by app and editable by user

1098.46 kg Quantity calculated by the program based on the user inputs and parameters of each material. Not user-editable

MWOOL A type of material or construction element from which one material can be chosen from several alternatives. See note 3, 4 and 5.

							Auxiliary quantiites								
						nr.	thickness	density	P	arameter 1	F	Parameter 2	Materi	al	
Building part	Building elen	ent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula
			1.A.1	Concrete	CON1	0			0.00	vol (m3)			0.00	m3	O=nr*Par1
		1.A - Piles	1.A.2	Rebar	REB	0				Kg Rebar/m3 Con			0.00		Q=nr*Par1*Qcon
			1.B.1.1	Concrete	CON1	0			0.00	vol (m3)				m3	Q=nr*Par1
		1.B.1-Pile Caps	1.B.1.2	Rebar	REB	0			0.00	Kg Rebar/m3 Con			0.00		Q=Par1*Qcon
		1.b.1 The Caps	1.B.1.3	Blinding concrete	CON0	0	0.10		0.00	pile cap area (m2)			0.00		Q=nr*e*Par1
			1.B.2.1	Concrete	CON1	1	0.10			footing vol (m3)			24.88		Q=nr*Par1
		1.B.2-Footings	1.B.2.2		REB	1				Kg Rebar/m3 Con			1574.90		Q=Par1*Qcon
		1.5.2 1 000	1.B.2.3	Blinding concrete	CON0	1	0.10		9.05	Footing area (m2)			0.91	Ü	Q=nr*e*Par1
1- Foundations	1.B-Basement		1.B.3.1	Concrete	CON1	1	0.10		12.37	beam vol (m3)			12.37		Q=nr*Par1
		1.B.3-Foundation beams	1.B.3.2	Rebar	REB	1			88.8	Kg Rebar/m3 Con			1098.46		Q=nr*Par1*Qcon
			1.B.3.3	Blinding concrete	CON0	1	0.10		4.52	Beam area (m2)			0.45		Q=nr*e*Par1
			1.B.4.1	Concrete	CON1	0	0.10			slab vol (m3)			0.00		Q=nr*Par1
		1.B.4-Foundation slab	1.B.4.2		REB	0			75	Kg Rebar/m3 Con			0.00		<u> </u>
			1.B.4.3	Blinding concrete	CON0	0	0.10		0.00	Slab area (m2)			0.00	Ü	O=e*Par1
			1.C.1	Concrete	CON3	1				wall vol (m3)			0.00		Q=nr*Par1
	1	C - Retaining walls	1.C.2	Rebar	REB	1			90	Kg Rebar/m3 Con			0.00		Q=Par1*Qcon
													1	ľ	
			2.A.1.1	Gulam Timber	GLT	0			1.41	beam volume (m3)			0.00	m3	Q=nr*Par1
			2.A.1.2	Steel in timber connec. (galvanized)	ST-G	0			8	kg Steel/m3 timber			0.00	kg	Q=nr*Par1*Q CLT
		2.A.1-Beams (Timber, steel or	2.A.1.3	Structural steel	ST	1		7850	1.41	beam volume (m3)	1.1	due to connections	12175.35	kg	Q=nr*Par1*d*Par2
		concrete)	2.A.1.4	Concrete	CON3	0				beam volume (m3)			0.00	m3	Q=nr*Par1
			2.A.1.5	Rebar	REB	0			137.6	Kg Rebar/m3 Con			0.00	kg	Q=Par1*Q Con
			2.A.2.1	Gulam Timber	GLT	0			4.87	column vol (m3)			0.00	m3	Q=nr*Par1
		2.A.2-Columns (Timber, steel or concrete	2.A.2.2	Steel in timber connect. (galvanized)	ST-G	0			8	kg Steel/m3 timber			0.00	kg	Q=nr*Par1*Q CLT
			2.A.2.3	Structural steel	ST	1		7850	4.87	column vol (m3)	1.1	due to connections	42052.45	kg	Q=nr*Par1*d*Par2
			2.A.2.4	Concrete	CON3	0			4.87	column vol (m3)			0	m3	Q=nr*Par1
			2.A.2.5	Rebar	REB	0				Kg Rebar/m3 Con			0.00	kg	
	2.4.5	2.4.2.44	2.A.3.1	Concrete	CON2	0	0.25		345.49	Slab area (m2)			0.00	m3	Q=nr*e*Par1
2 - Load bearing	2.A-Frames	2.A.3-Mass concrete slabs or	2.A.3.2	Rebar	REB	0			90	Kg Rebar/m3 Con			0.00	kg	
structural			2.A.4.1	Concrete	CON2	1	0.16		351.13	Slab area (m2)			56.18	m3	Q=nr*e*Par1
frame		2.A.4-Composite slabs or	2.A.4.2	Rebar	REB	1			25	Kg Rebar/m3 Con			1404.52	kg	Q=Par1*Q Con
			2.A.4.3	Galvanized steel plates	ST-G	1	0.001	7850	351.13	Slab area (m2)	1.200	m2 plates/m2 slab	3307.64	kg	Q=nr*e*Par1*Par2*d
			2.A.5.1	Concrete blocks or	CONB	0	0.25		345.49	Slab area (m2)	0.820	m3 block/m2 slab	0.00	m3	Q=nr*e*Par1*Par2
			2.A.5.2	Ceramic blocks	CERB	0	0.25	320	345.49	Slab area (m2)	0.820	m3 block/m2 slab	0.00	kg	Q=nr*e*Par1*Par2*d
		2.A.5-Lightweight concrete slabs or	2.A.5.3	Precast concrete beams	CONBEAM	0		2500	345.49	Slab area (m2)	0.038	m2 beam cross sec	0.00	kg	Q=nr*(Par1/0.8)*Par2*d
			2.A.5.4	Concrete (cast in place)	CON2	0	0.05		345.49	Slab area (m2)			0.00	m3	Q=nr*Par1*e
			2.A.5.5	Rebar	REB	0			25	Kg Rebar/m3 Con			0.00	kg	Q=Par1*Q Con
		2.A.6-Mass timber structural floors	2.A.6.1	Cross Laminated Timber (CLT) panels	CLT	0	0.16		351.13	foor area (m2)			0.00		Q=nr*Par1*e
		Z.A.O Wass timber structural noors	2.A.6.2	Steel in timber connect. (galvanized)	ST-G	0			4	kg Steel/m3 CLT			0.00	kg	Q=nr*Par1*Q CLT
			2.B.1	Structural steel	ST	0		7850	0.00	steel volume (m3)	1.1	due to connections	0.00	kg	Q=nr*Par1*d*Par2
	2.B-Concrete stiffen	ing walls/steel in stiffening elements	2.B.2	Concrete	CON3	0			0.00	concrete vol (m3)			0.00		Q=nr*Par1
			2.B.3	rebar	REB	0			140	Kg Rebar/m3 Con			0.00	kg	Q=Par1*Qcon
		3.A.1-Ground floor slab (non-		Concrete	CON1	1	0.15		196.89	Slab area (m2)			29.53		Q=nr*Par1*e
		structural)	3.A.1.2	rebar	REB	1			30	Kg Rebar/m3 Con			886.01	U	Q=Par1*Qcon
		3ti detai aij	3.A.1.3	Graded aggregate	AGG	1	0.25	1800	196.89	Slab area (m2)			88600.50	U	Q=nr*Par1*e*d
				Ceramic tiles	CEFT	1			257.52	Floor area (m2)			257.52	m2	Q=nr*Par1
1		3.A.2-Flooring Type I: Ceramic	3.A.2.2	Tile bond coat (adhesive)	ADH	1			257.52	Floor area (m2)	6.00	kg/m2	1545.12		Q=nr*Par1*Par2
1	3.A-Horizontal	flooring or	3.A.2.3	Mortar bed	MOR	1	0.03	1600	257.52	Floor area (m2)			12360.96	kg	Q=nr*e*Par1*d
	elements		3.A.2.4	Cleavage membrane	POLY	1	0.005		257.52	Floor area (m2)			1.29	m3	Q=nr*e*Par1
	cicilicits		3.A.3.1	Laminated wood flooring	WFL	0			257.52	Floor area (m2)			0.00	m2	Q=nr*Par1
1		3.A.3-Flooring Type II: Wood floating	3.A.3.2	Chipboard flooring (plywood)	PLYW	0	0.03		257.52	Floor area (m2)			0.00	m3	Q=nr*Par1*e





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Building Material Quantities

Excel L	Legend
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Jser input (or parameter readed from IFC file)

Project name: Single-family house with steel structure and bricks

23.87 Parameter calculated by app and not editable
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			Auxiliary quantiites							1					
						nr.	thickness	density	P	arameter 1		Parameter 2	Material		
lding part	Building elen	nent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) U	nit	Formula
	İ	floor or	3.A.3.3	nsulation laver	MW00L 4	- 0	0.04		257.52	Floor area (m2)			0.00 m	2	O=nr*Par1*e
		11001 01		Fimber battens	GLT	0	0.04		257.52	Floor area (m2)	0.045	m3 timb/m2 floor	0.00 m		O=nr*Par1*Par2
		3.A.4-Flooring Type III: Screed		Wet screed (cement mostar)	MOR	0	0.05		257.52	Floor area (m2)	0.045	III3 LIIID/III2 IIOOI	0.00 m		Q=nr*Par1*e
		flooring		Sound insulation laver	POLY	0	0.005		257.52	Floor area (m2)			0.00 m		Q=nr*e*Par1
		3.B.1-Internal partition Type I: Brick		Brick wall	CERB	0	0.003	805	237.32	Wall area (m2)			19627.99 kg		Q=nr*e*Par1*d
		walls		Finishing coat (plastering mortars)	PLASM	1	0.110	1600	221.66	Wall area (m2)			7093.12 kg		Q=nr*e*Par1*d
		WdllS				1	0.02	1600							
		3.B.2-Internal partition Type II:	3.B.2.1	Gypsum cardboard or fiberboard	GYP_F	0			221.66	Wall area (m2)	2.040	In CT /m2	0.00 mi		Q=nr*Par1
		Gypsum cardboard walls		Galvanized steel (U, C) channel studs	ST-GC	U			221.66	Wall area (m2)	3:040	kg ST /m2 wall	0.00 kg	•	Q=nr*Par1*Par2
		**		nsulation layer	MWOOL	0	0.05		221.66	Wall area (m2)			0.00 m		Q=nr*Par1
			3.B.3.1	Cross Laminated Timber (CLT) panels	CLT	0	0.100		221.66	Wall area (m2)			0.00 m		Q=nr*Par1*e
		3.B.3-Internal partition Type III:		Steel in timber connect. (galvanized)	ST-G	0			4	kg Steel/m3 CLT			0.00 kg		Q=nr*Par1*Q CLT
- Non-load	3.B-Vertical	Structural Timber wall	3.B.3.3	nsulation layer	MWOOL	Ö	0.050		221.66	Wall area (m2)			0.00 m		Q=nr*Par1*e
bearing	elements	Structural Timber Wall	3.B.3.4	Timber battens	GLT	0			221.66	Wall area (m2)	0.045	m3 timb/m2 wall	0.00 m		Q=nr*Par1*Par2
elements	Cicincino			Gypsum plasterboard	GYP_P	0			221.66	Wall area (m2)	2	number or boards	0.00 m		Q=nr*Par1*Par2
			3.B.4.1	Concrete blocks	CONB	1	0.20		0.00	Wall area (m2)			0.00 m	3	Q=nr*Par1*e
		3.B.4-External party walls	3.B.4.2	nsulation layer	MWOOL	1	0.05		0.00	Wall area (m2)			0.00 m	3	Q=nr*Par1*e
			3.B.4.3	Finishing coat (plastering mortars)	PLASM	1	0.04	1600	0.00	Wall area (m2)			0.00 kg		Q=nr*e*Par1*d
		2.0.5.0	3.B.5.1		CERB	1	0.110	805	26.40	Wall area (m2)			2337.72 kg	:	Q=nr*e*Par1*d
		3.B.5-Parapets	3.B.5.2 F	Finishing coat (plastering mortars)	PLASM	1	0.02	1600	26.40	Wall area (m2)			844.80 kg		Q=nr*e*Par1*d
		3.B.6-Railings		Railings	ST-SL	1			5.50	long (m)	9.50	kg ST/m railing	52.25 kg		Q=nr*Par1*Par2
		3.B.7-Interior doors	3.B.7	nterior doors	WDOOR	1			7.64	door (m2)		0 7	7.64 m		Q=nr*Par1
				Ceramic tiles	CEFT	- 1			10.80	stairs area (m2)	1.27	m2 title/m2 stairs	13.72 m		Q=nr*Par1*Par2
				File bond coat (adhesive)	ADH	- 1			6.00	kg/m2 title			82.30 kg		Q=nr*Par1*m2 title
				Mostar	MOR	- 1		1600	10.80	stairs area (m2)	0.0715	m3 mor/m2 stairs	1235.52 kg		Q=nr*Par1*Par2*d
				Concrete	CON3	0	0.20		10.80	stairs area (m2)			0.00 m		Q=nr*Par1*e
		3.C.1-Stairs	3.C.1.5		REB	0	0.20		137.6	Kg Rebar/m3 Con			0.00 kg		Q=nr*Par1*Qcon
				Structural steel	ST	1			10.80	stairs area (m2)	21 22	kg ST/m2 Stairs	230.36 kg		Q=nr*Par1*Par2
	3.C-Inclined			Cross Laminated Timber (CLT) panels	CLT	- 1	0.160		10.80	stairs area (m2)	21.33	kg 31/1112 Stall S	0.00 m		Q=nr*Par1*e
	elements				ST-G	0	0.160		4.00				0.00 kg		Q=nr*Par1*0 CLT
				Steel in timber connect. (galvanized)		0				kg Steel/m3 CLT					
				Ceramic tiles	CEFT	1			0.00	ramp area (m2)			0.00 m		Q=nr*Par1
				File bond coat (adhesive)	ADH	1				ramp area (m2)	6.00	kg/m2 title	0.00 kg		Q=nr*Par1*Par2
		3.C.2-Ramps		Mostar	MOR	1	0.03	1600	0.00	ramp area (m2)			0.00 kg		Q=nr*e*Par1*d
				Concrete	CON3	1	0.10		0.00	ramp area (m2)			0.00 m		Q=nr*e*Par1
			3.C.2.5	Rebar	REB	1			30	Kg Rebar/m3 Con			0.00 kg		Q=Par1*Qcon
	1		4.A.1.1	External finish	PLASM	- 1	0.03	1600	374.42	Wall area (m2)			17972.16 kg		Q=nr*e*Par1*d
		4 A 1 Facada tima li		Brick walls	CERB	1	0.03	805	374.42	Wall area (m2)			66309.78 kg		Q=nr*e*Par1*d
		4.A.1-Facade type I:				- 1					1				
		with bricks or,		nsulation layer	MWOOL	1	0.07	152	374.42	Wall area (m2)			26.21 m		Q=nr*Par1*e
				nterior finish	GYP_P	1			374.42	Wall area (m2)			374.42 m		Q=nr*Par1
			-	Gypsum plasterboard	GYP_P	0			374.42	Wall area (m2)			0.00 m		Q=nr*Par1
				Cross Laminated Timber (CLT) panels	CLT	0	0.100		374.42	Wall area (m2)			0.00 m		Q=nr*Par1*e
	4.A-External wall			Steel in timber connect (galvanized)	ST-G	0			4	kg Steel/m3 CLT			0.00 kg		Q=nr*Par1*Q CLT
	systems	or,	4.A.2.3	nsulation layer	MWOOL	0	0.05		374.42	Wall area (m2)			0.00 m		Q=nr*Par1*e
- Facades				Fimber battens	GLT	0			374.42	Wall area (m2)	0.045	m3 timb/m2 wall	0.00 m		Q=nr*Par1*Par2
			4.A.2.5	External wooden cladding	WCLA	0			374.42	Wall area (m2)			0.00 m	2	Q=nr*Par1
			4.A.3.1	Gypsum plasterboard	GYP_P	0			374.42	Wall area (m2)			0.00 m	2	Q=nr*Par1
		4.A.3-Facade type III:	4.A.3.2	Brick wall	CERB	0	0.12	1000	374.42	Wall area (m2)			0.00 kg		Q=nr*e*Par1*d
		Ventilated facade	4.A.3.3	nsulation layer	MWOOL	0	0.05		374.42	Wall area (m2)			0.00 m	3	Q=nr*Par1*e
				Files for external cladding	N-STON 4	0	0.03	2750	374.42	Wall area (m2)			0.00 kg		Q=nr*Par1*e*d
		4.B.1-Windows		Windows	WIN PVC	1			21.54	Surface (m2)			21.54 m		Q=nr*Par1
	4.B-Facade openings			Exterior glazed doors	DOOR GL	1			4.00	Surface (m2)	-		4.00 m		Q=nr*Par2
	acade openings	4.B.2-Exterior doors		Exterior front doors	DOOR_GL	1		l	4.00	Surface (m2)			4.00 m		Q=nr*Par3
	1	1	+.D.Z.Z	LATERIOR ITOTIL GOODS	DOOK_W	1			4.00	Juridee (IIIZ)		1	4.00 III	•	Q-111 Fal3





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						_				Auxiliary quantiites				
						nr.	thickness	density		Parameter 1	F	Parameter 2	Material	
Building part	Building eleme	ent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) Unit	Formula
			5.A.1.1	Ceramic tiles or	CEFT	1		2300	134.3	roof area (m2)			134.33 m2	Q=nr*Par1
		5.A.1-Finishing coat		Gravel ballast	GRAV	0	0.15	1800		3 roof area (m2)			0.00 kg	Q=nr*Par1*e*d
	5.A-Roof Type I: Flat roof or	5.A.2-Waterproofing layer	5.A.2	Waterproofing layer	WP	1			134.3	roof area (m2)			134.33 m2	Q=nr*Par1
	root or	5.A.3-Insulation layer	5.A.3	Insulation layer	MWOOL	1	0.07		134.3	Wall area (m2)			9.40 m3	Q=nr*Par1*e
		5.A.4-Screed to falls	5.A.4	Cement mostar	MOR	1	0.03	1600	134.3	Wall area (m2)			6447.84 kg	Q=nr*e*Par1*d
		5.B.1-Roof tiles	5.B.1	Roof tiles	RTIL	1			86.2	roof tiles area (m2)	40	kg/m2	3670.14 kg	Q=nr*Par1*Par2/cos(Par3)
5 - Roof		5.B.2-Mostar	5.B.2	Cement mostar	MOR	1	0.02	1600	86.2	roof tiles area (m2)			2936.11 kg	Q=nr*e*Par1*d/cos(Par3)
		5.B.3-Waterproofing layer	5.B.3	Waterproofing layer	WP	1			86.2	roof tiles area (m2)			91.75 m2	Q=nr*Par1/cos(Par3)
	5.B-Roof type II:	5.B.4-Decking	5.B.4	Ceramic deck or	CERB	1	0.03	1030	86.2	roof tiles area (m2)			2835.18 kg	Q=nr*e*Par1*d/cos(Par3)
	Inclinated tiled roof	5.B.4-Decking	5.B.5	wooden deck (plywood)	PLYW	0	0.03		86.2	roof tiles area (m2)			0.00 m3	Q=nr*Par1*e
		5.B.5-Structure	5.B.6	Brick walls or	CERB	1	0.045	483	86.2	roof tiles area (m2)	0.80	wall separation (m)	1979.19 kg	Q=nr*e*(Par1^0.5/Par2)*(tg(Pa
		o.b.o-o.ructure	5.B.7	Gulam timber beams	GLT	0	0.05		86.2	2 roof tiles area (m2)	0.60	wall separation (m)	0.00 m3	Q=nr*e*0.05*(((Par1^0.5)/cos(
		5.B.6-Insulation layer	5.B.8	Insulation layer	MWOOL	1	0.05		86.2	roof tiles area (m2)			4.31 m3	Q=nr*Par1*e
		·												





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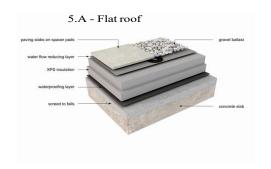
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National Agencies cannot be held responsible for any use which may be made of the information contained therein

Building Material Quantities

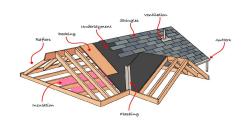
		Excel Legend		
	10.80	User input (or parameter readed from IFC file)	Project name:	Single-family house with steel structure and bricks
	23.87	Parameter calculated by app and not editable		
		Parameter loaded by default by app and editable by user		
10	98.46	kg Quantity calculated by the program based on the user inputs and parameters of each material. Not	user-editable	
MW	100L	A type of material or construction element from which one material can be chosen from several altern	atives. See note 3, 4 a	nd 5.

Auxiliary quantiites

					nr.	thickness	density	P	arameter 1	P	arameter 2	Material	1
Building part	Building element types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) Unit	Formula



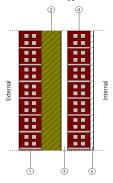
5.B - Tiled roof with timber structure



5.B - Tiled roof
Tiled roof with brick walls



4.A.1 - Facade Type I: Facade with double brick wall



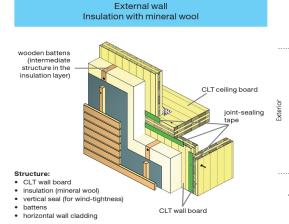
1 - M01 - 100 mm brick: 10.16 cm

- 2 104 89 mm batt insulation: 8.94 cm 3 - F04 - Wall air space resistance: 3.00 cm 4 - M01 - 100 mm brick: 10.16 cm
- 5 G01 16 mm gyp board: 1.59 cm Total thickness: 33.85 cm

Thermal description

Heat transfer coefficient (U): 0.39 W/(m²·K)
Thermal capacity: 51975.29 J/m²·K

4.A.2 - Facade Type II: with Timber walls



4.A.3 - Facade Type III: Ventilated facade

Capas 1 - Caliza muy dura [2200 < d < 2590]: 2.00 cm 2 - Cámara de aire: 5.00 cm

- 3 URSA TERRA Vento Plus P8792 80mm: 8.00 cm
- 4 1/2 pie LP métrico o catalán 40 mm< G < 60 mm: 12.00 cm
- 5 Enlucido de yeso 1000 < d < 1300: 2.00 cm

Espesor total: 29.00 cm Caracterización térmica

...

Transmitancia térmica (U): 0.33 W/(m²-K) Capacidad térmica: 61992.71 J/m²-K





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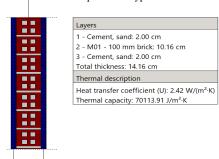
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Building Material Quantities

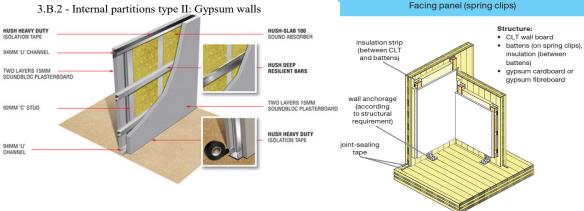
	Excel Legend		
10.80	User input (or parameter readed from IFC file)	Project name:	Single-family house with steel structure and bricks
23.87	Parameter calculated by app and not editable		
	Parameter loaded by default by app and editable by user		
1098.46	kg Quantity calculated by the program based on the user inputs and parameters of each material. Not u	ser-editable	
MWOOL	A type of material or construction element from which one material can be chosen from several alternat	ives. See note 3, 4 a	nd 5.

													_
					nr.	thickness	density	P	arameter 1	P	arameter 2	Material	1
Building part	Building element types / building elements	Building element types / building elements Ref. Type of Material Mat Code 1/0 e (m) d (kg/m3) Par. Value					Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) Unit	Formula		

3. B.1 - Internal partitions type I: brick walls







3.A.2 - Flooring Type I: Ceramic flooring

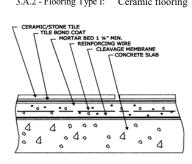
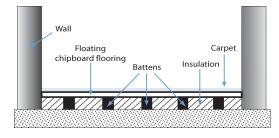


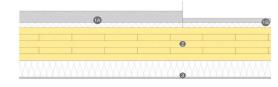
FIGURE F

3.A.3 - Flooring Type II: Wooden floating floor



3.A.4 - Flooring Type III:Screed flooring

3.B.3 - Internal partitions type III: Timber walls



- 1A. Wet screed (50-70 mm) with impact sound insulation (20-30 mm).
- 1B. Dry screed (25 mm) with impact sound insulation (20-30 mm).
- 2. CLT floor 220 mm (140 mm or thicker).
- 3. Mineral wool and suspended ceiling (~70 mm) with single layer gypsum board ceiling.





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BIM-LCA Construction Project

Description of Materials and Impact Data

			1		: -	3 4		, ,
nr.	Building part	Type of Material	Mat Code	Material Name	Description	Quant. Studied in EPD	Unit	Cost €
1	Under foundation	Blinding concrete	CON0	Concrete C16/20	C16/20 ECOPact Prime concrete produced in the plant of Greenwich of Aggregate Industries for use as ready-mixed concrete of normal building construction and civil engineering.	1	m3	87.54
2	Structure	Concrete	CON1	Ready mixed concrete (C30/37, C35/45 SCC) - C30/37 (Foundation)	1m3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 260 B NA. The SP0 has been prepared on the basis of weighted average data from several manufacturers (average product, industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	118.28
3	Structure	Concrete	CON2	Ready mixed concrete (C30/37, C35/45 SCC) - C35/45 SCC (Floor)	Im3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 206 DK NA. The SP0 has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	244.28
	Structure	Concrete	CON3	Ready mixed concrete (C30/37, C35/45 SCC) - C30/37 (Inner wall, Column and Beams)	1m3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 260 B NA. The SP0 has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	408
5	Structure	Rebar	REB	STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT	STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT are used to reinforce concrete in building constructions	1000	kg	1800
6	Structure	Structural steel	ST	Hot rolled steel profiles	The hot rolled steel profiles are made of steel bloom produced in electric arc furnace (EAF) process using 100% of iron scrap. The profiles constitute intermediate products commonly used for construction of power poles, roads, steel structures, supporting structures for buildings, load-bearing structures of buildings such industrial halls and warehouses as well as in railway, mining and shipbuilding industry. A specific product technical data is available at manufacturer website: www.wostsa.pl.	1000	kg	2690
7	Structure / Pattitions /roof stucture	Gulam Timber / Timber battens	GLT	Glued laminated timber	This EPD is based on a declared unit of 1 m³ of glued laminated timber (moisture of 10% at a raw density of 464 kg/m³). The results refer to a representative average of Rubner glued laminated timber including standard beams as well as sophisticated 30 beam components. The LCA covers 100% of the Rubner group's production referring to its sites located at Rohrbach (Austria), Ober-Grafendorf (Austria), Brixen (Italy) and Calitri (Italy).		m3	1134
8	Composite steel-concrete slabs	Galvanized steel plates	ST-G	Galvanized Structural Steel	The declaration covers galvanized structural steel produced at the production site in Brande, Denmark. The declaration covers all life cycle modules from A1-A5, C1-C4 and D and is based on product-specific data provided by Give Steel A/S and background data from GaBi professional 2020 and Ecoinvent v3.6.	1000	kg	2500
9	Walls and Lightweight concrete slabs	Concrete o ceramic blocks	CONB	Concrete blocks	Autoclaved aerated concrete blocks with a dry density of 375 kg/m3 , also called Planstein PP 2/040	1	m3	261.76
10	Walls / Lightweight concrete slabs / Inclinated roof	Ceramic blocks / brick wall /ceramic deck	CERB	Red bricks or ceramic blocks	Bricks such as "RT Ultima 150" and "RT 550 Unika" are used to build walls, pillars and partitions.	1000	kg	420
11	Lightweight concrete slabs	Precast concrete beams	CONBEAM	Precast concrete elements of structures	Precast concrete structures: filigree slabs, shell/double walls, one/three layer walls, balconies, stairs, columns, beams and other precast concrete products	1	kg	0.3
12								
	Walls, slabs	Cross Laminated Timber (CLT)	CLT	Cross Laminated Timber - CLT	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3	1	m3	1355.7
13	Walls, slabs Under the Ground slab	Cross Laminated Timber (CLT) panels Graded aggregate	CLT	Cross Laminated Timber - CLT Aggregates	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3 Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300	1 1000	m3 kg	1355.7 50
	Under the Ground slab	panels		Aggregates	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using			
14	Under the Ground slab	panels Graded aggregate	AGG	Aggregates	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The	1000	kg	50
14	Under the Ground slab	panels Graded aggregate Roof tiles	AGG RTIL	Aggregates Roof tiles (produced using natural gas) - Red tile	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2).	1000	kg kg	50 3100
14 15 16	Under the Ground slab Roof Flooting, roof	panels Graded aggregate Roof tiles Ceramic tiles	AGG RTIL CEFT	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40®	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates	1000	kg kg m2	50 3100 32.21
14 15 16	Under the Ground slab Roof Flooting, roof Roof, fooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound	AGG RTIL CEFT ADH	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cerment mortars POLYETHYLENE FOAM BASED	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens=40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes	1000 1000 1 1	kg kg m2	50 3100 32.21 0.6
14 15 16	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed	AGG RTIL CEFT ADH MOR	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Ceremit mortars	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens=40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3)	1000	kg kg m2	50 3100 32.21 0.6
14 15 16 17 18	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insudiation layer Laminated wood flooring	AGG RTIL CEFT ADH MOR POLY	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortars POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against scratches damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against heat loss. Polyethylene foam products in the form of rolls, sheets and bags. Dens-935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area.	1000 1000 1 1 1	kg kg m2 kg	50 3100 32.21 0.6
14 15 16 17 18	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insuolation layer Laminated wood flooring Chipboard flooring (plywood)	AGG RTIL CEFT ADH MOR POLY WFL	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortars POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring S-P-02010 SELEX® Plywood	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cerment and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against set acts. Polyethylene foam products in the form of rolls, sheets and bags. Dens=935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area. 30 of plywood products produced in Chile and installed across different countries across the world	1000 1000 1 1 1 0.001069519	kg kg m2 kg kg m3	50 3100 32.21 0.6 0.25
14 15 16 17 18	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insudiation layer Laminated wood flooring	AGG RTIL CEFT ADH MOR POLY	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortars POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The international EPD System: Construction products / Cerment and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against set also. Polyethylene foam products in the form of rolls, sheets and bags. Dens-935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area. 30 of plywood products produced in Chile and installed across different countries	1000 1000 1 1 1 0.001069519	kg kg m2 kg kg m3	50 3100 32.21 0.6 0.25
14 15 16 17 18 19	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insuolation layer Laminated wood flooring Chipboard flooring (plywood)	AGG RTIL CEFT ADH MOR POLY WFL	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortars Cement mortars POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring S-P-02010 SELEX® Plywood Mineral wool insulation (high bulk density	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against scratches damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against heat loss. Polyethylene foam products in the form of rolls, sheets and bags. Dens=935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area. Mileral wool is the generic term for insulating materials, which consist mainly of amorphous fibres obtained from a silicate melt. The mineral wool is the generic term for insulating materials, which consist mainly of amorphous fibres obtained from a silicate melt. The mineral wool is busiation materials described in this declaration are produced in the form of rolls, boards and mats in the high bulk density range (> 120 kg/m²). The	1000 1000 1 1 1 0.001069519	kg kg m2 kg m3 m3	50 3100 32.21 0.6 0.25 1.73





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BIM-LCA Construction Project

Description of Materials and Impact Data

_		1	1	. 2		4		6
nr.	Building part	Type of Material	Mat Code	Material Name	Description	Quant. Studied in EPD	Unit	Cost €
24	•	Insulation layer	EPS	EUROTHERM EPS INSULATION (white); 0,035-0,039 W/mK	Expanded polystyrene foam EPS, wall insulation, External Thermal Insulation Composite System (ETICS), pitched roof insulation and ceiling insulation. Gross density: 16.0 kg/m ³	1	m3	114.5
25	Flooring, partition, facades, roof	Insulation layer	CELL	Cellulose Fibre Insulation - Thermal insulation for use in pitched roofs, walls and floor spaces in dwellings.	One m ² of installed in-situ insulation, thickness 300mm with an R-value of 9.09 m ² K/W, at a density of 37 kg/m ³ . Reference service life of 50 years	0.3	m3	203.13
26	Flooring, partition, facades, roof	Insulation layer	CORK	S-P-02315 Cork-based thermal insulation panels: Slim and Lisoflex	Cork-based thermal insulation panels: grammage (kg/m^2): 3.3 grammage (kg/m^2): layer thickness (m): 0.02 layer thickness (m); thermal resistance (m2k/w): 0.465 Thermal Resistance (m2k/W).	0.02	m3	53.84
27	Partition walls	Finishing coat (plastering mortars) / Esternal finishing //Interior finishing	PLASM	Mineral pre-made mortar: rendering and plastering mortar – normal/finishing render or plaster with special properties	Rendering and plastering mortars produced in the factory for use as a base coat or finishing render/plaster on walls, ceilings, piers, and separating walls of structures which comply with the applicable standards or on similar backgrounds. 1600 kg/m3	1	kg	1.5
28	Partition walls	Gypsum cardboard or fiberboard	GYP_F	Gypsum fibreboards 12,5 mm	conversion factor to 1kg: 16.66 - gross density: 1175.0 kg/m/3 layer thickness: 0.0125 m grammage: 16.66 kg/m/2	1	m2	36.9
29	Partition walls, facades	Gypsum plasterboard	GYP_P	STANDARD GYPSUM PLASTERBOARD STD 12,5 mm	grammage (kg/m^2): 8.6 grammage (kg/m^2) thermal conductivity (w/m.k): 0.21 Thermal Conductivity (W/m.K) thermal resistance (m2k/w): 0.06 Thermal Resistance (m2k/W) layer thickness (m): 0.0125 layer thickness (m)	1	m2	36.9
30	Partition walls	Galvanized steel (U, C) channel studs	ST-GC	Cold-rolled steel profiles for framing and partition systems	The raw material is hot dipped sheet rolled galvanised steel, grade DX51D+Z steel for forming. The steel profile sections are manufactured in accordance with EN 14195:2014 Metal framing components for gypsum board systems.	1000	kg	2820
31	Railings	Railings	ST-SL	Welded and Pickled Stainless Steel Products	Products from Øglænd System AS that are made from stainless steel, and then machined, welded and pickled. Stainless steel forms a protective chromium oxide layer when the alloy is exposed to air, hindering direct contact between the alloy and the corrosive environment.	1	kg	14.47
32	Interior doors	Interior doors	WDOOR	Wooden interior doors	This FPD describes an average of the doors produced by the member companies of the VHI. In addition to standard doors, the member companies of the VHI also produce so-called functional doors. These offer additional functions such as moisture, smoke, fire, sound, burglary and radiation protection. For these purposes, the doors are given a modified design.	2.6814	m2	394.28
33	Facades	External wooden cladding	WCLA	Wood Plastic Composite products: Cladding: WEO 35	FIBERDECK wood plastic composite combines the proven strength of high-density, recycled polyethylene plastic and realistic wood fibers with an outer shell of polymer that completely encapsulates the board in an impermeable layer of protection from weather, sun, water, scuffs and scrapes	50.75	m2	2869.79
34	Facades	Tiles for external cladding	N-STON	Slabs for façade claddings and for interior claddings and flooring in natural semi-rijo limestone:	Slabs for façade claddings and for interior claddings and flooring in natural semi-rijo limestone. Dens: 2750 kg/m3	1	kg	2.5
35	Facades	Tiles for external cladding	PORCE	EXTRUDED PORCELAIN VENTILATED FAÇADE GA16 & GA20	EXTRUDED PORCELAIN VENTILATED FAÇADE GA16 & GA20. 324 kg/m2	324	kg	560
36	Facades	Tiles for external cladding	A-STON	S-P-07728 STONEO Ventilated Facade Panels	The engineering stone facade panels are made of a high-quality material comprising a seetcted combination of aggregates, bound by stable polyester resins. The panels are used for facade cladding and are mounted as a component of ventilated facades (rainscreen claddings).	1	kg	2.25
37	Windows	Windows	WIN_PVC	Passiv PVC Double Glazed Window	The Passiv PVC windows cover a range of different sizes and shapes of windows. The LCA has been executed based on a Double-glazed 1230 mm x 1480 mm window, with a thermal performance of U window = 1.2 W/m2K, U glass = 1.2 W/m2K and a life expectancy of 50 years. After which the results have been scaled back to a functional unit of 1m2.	1	m2	146.96
38	Windows	Windows	WIN_WOOD	Hardwood double glazed window	The raw materials for the Hardwood windows comprise glass, argon, hardwood/softwood profiles, warm edge spacer and associated hardware (hinges, handles, recievers and gears).	1	m2	299.17
	Windows	Windows	WIN_AL	Aluminium Windows	The aluminium windows are assembled with extruded aluminium profiles and comes in different frame widths of 45 mm - 50 mm and 70 mm - 75 mm. They consist of an aluminium profile frame and an aluminium profile sash with an insulating glass unit (IGU). The aluminium profiles are powder coated and thermally broken with a reinforced polyamide strip.	1	m2	127.72
40	Facades	Exterior glazed doors	DOOR_GL	Exterior facade folding doors with thermally modified beech and double glazing, painted	Folding door in the facade of buildings, for renovation and in new buildings	1	m2	150.14
41	Facades	Exterior front doors	DOOR_W	Wooden full doors	Exterior doors manufactured by Porta KMI Poland Sp. z o. o. Sp. k. are dedicated for communication in domestic as well as commercial premises. Among company's products, wooden and steel doorsare distinguish. Depending on the customer's needs, doors possess various functionalities and can be produced from a wide range of materials.	2.307	m2	632.54
42	Roof	Gravel ballast	GRAV	S-P-05225 Aggregates from Nyrand gravel pit-Svebølle	S-P-05225 Aggregates from Nyrand gravel pit-Svebølle	1000	kg	123.75
43	Roof	Waterproofing layer	WP	PTM reinforced bitumen membrane for roof waterproofing	System of PTM reinforced bitumen membrane for roof waterproofing: -PTM BituFlex (top layer) & PTM DuraFlex Kombi (bottom layer) .	1	m2	4.2

☼ BIM-LCA

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Absorb depletion potential for foost resources (
Absorb depl

Informental Impacts

Abortic depletion potential for fossi resources (ADPS)

Abiotic depletion potential for fossi resources (ADPS)

Abiotic depletion potential for non fossi resources (ADPS)

Abiotic depletion potential for non fossi resources (ADPS)

Photochemical Ozono Creation Potential (PC)

Global warming potential (GWP)

LCA - Enviromental Impact results

Project name: Single-family house with steel structure and bricks

		• • • • • • • • • • • • • • • • • • • •	geet manner	Single-family house	With Steel Structu	are and briens				UNIT IMPACTS * QUANTITIES																
								Energy C	onsumption (A1-A3)	Energy Consumption (A4) Energy Con PERT PENRT PERT	sumption (AS)		Env impacts A	A1-A3				Env im	pacts A4						Env impacts AS	
Module Building n	rt Building ele	ment types / building elements	Ref.	Type of Material	Mat Code	Quantities (Q) Unit	Cos it (Euro	t PERT	PENRT (MI)	PERT PENRT PERT (MI) (MI) (MI)	PENRT (MI)	GWP ADPF ADPE (kg CO2-eq) (MJ) (kg Sb-eq)	(kg SO2-eq.)	(ke Phosphat-eq.) (i	POCP ODP (kg Fthen-en) (kg CFC 11-en)	(kg (O2-en)	ADPF (MJ)	ADPE //	AP EP 02-eq.) (kg Phosphat-eq.)	POCP (kg Fthen-en)		(kg CO2-en.)	ADPF (MI)	(kg Sh-en)	(kg SO2-eq.) (kg Phosphat-eq.)	POCP ODP (kg Ftheo-eq) (kg CFC 11-eq)
module ballang p	t building cit	ment types / building elements			mac code	Quantities (Q)	it (core	(143)	(HU)	(110)	(110)	(18 cozed) (100) (18 so ed)	(18 302 (4.)	(ng i nospilat eq.)	(MCC11cd)	(16 002 04)	(140)	(16 m cd) (18 m	(ig i nospirat eq.)	(Ag Editor ed)	(nq crc 11 cq)	(ag coz-eq.)	(NO)	(16 20 cd)	(ag 102 eq.) (ag 1103pinat eq.	(ing contract) (ind co co co co)
		1.A - Piles	1.A.1 1.A.2	Concrete	CON1	0.00 m3		0.00	0 1	0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
			1.8.1.1	Concrete	CON1	0.00 kg 0.00 m3		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		1.B.1-Pile Caps	1.B.1.2	Rebar Blinding concrete	REB	0.00 m3 0.00 kg 0.00 m3		0.00	0 (0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
			1.B.1.3	Blinding concrete	CONO			0.00 942.81 47	27.2	0 0 0 85.0896 1467.92 0	2.010	0 0 0 48 7016.16 33836.8 0.0017167	2 10.84768	2 4922	0 205503 0 0000093	0 0	1463.044	7.66304E-06	0 251200 0.050450	-0.0838456	1.78141E-14	0 44794	6 12048	1 610605 05	0 001035713 0 007894	0 0 0
		1.B.2-Footings	1.B.2.1 1.B.2.2	Rebar	CON1 REB	24.88 m3 1574.90 kg	21	334.83 2494.64	936 11331.4342	18.898848 1033.137024	0.047247	12 829.974408 10276.2486 0.001605	3 3.149808	1.341818208	0.296081952 8.489368	-05 64.571064	1000.06404	0.000112448	0.37797696 0.06614596	0.014174136	1.23787E-05	0.000132134	0.001574904	4.8822E-09	5.8114E-07 2.37811E	06 1.12291E-07 8.70922E-12
	1.B-Basement		1.B.2.3	Blinding concrete	CONO	0.91 m3 12.37 m3		79.22 28.6	945 812.961	0.822464 25.9916 0.627708	37.910	45 115.116 810.2465 2.97745E-0 77 3488.34 16823.2 0.0008535	0.234576	0.01018125	0.205073 2.75128	06 1.84258	25.9916	1.19913E-07 0	.004580205 1.36384E-0.	0.002267025	4.35124E-07	3.566605	37.8652	1.36927E-07	0.0201996 0.0002402	78 0.02243495 4.05531E-07
1- Founda	ions	1.B.3-Foundation beams	1.8.3.1	Concrete	CON1			163.12 23		42.3054 729.83 0 13.181472 720.587136 0	1.496	777 3488.34 16823.2 0.0008535 68 578.886312 7167.4254 0.00111965	5.39332 6 2.196912	1.7318 0.935884512	0.196683 4.14395E 0.206509728 5.92112E	-05 53.6858 -05 45.036696	727.356 697.51956		0.124937 0.030059 0.26362944 0.04613515	-0.0416869 0.009886104	8.85692E-15 8.63386E-06	0.22266	3.04302 0.001098456	8.05287E-06	0.000957438 0.003921 4.0533E-07 1.65867E	29 0.00018555 1.43492E-08 06 7.83199E-08 6.07446E-12
		1.6.5 Foundation beams	1.B.3.2 1.B.3.3	Blinding concrete	CONO	1098.46 kg 0.45 m3	-	39.57 14.3	388 406.031	0.4107776 12.98144 0.3135072	18.934	28 57.4944 404.6756 1.48708E-0		0.005085	0.1024232 1.37408E		12.98144		.002287572 6.81164E-0	0.00388104	2.17322E-07	1.781332	18.91168	6.83876E-08	0.01008864 0.0001200	06 0.01120508 2.02541E-07
			1.B.4.1	Concrete	CON1	0.45 m3 0.00 m3		0.00	0 (0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		1.B.4-Foundation slab	1.B.4.2	Rebar Blinding concrete	REB CONO	0.00 kg 0.00 m3		0.00	0 1	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
			1.C.1	Concrete	CON3 REB	0.00 m3		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		1.C - Retaining walls	1.C.2	Concrete Rebar	REB	0.00 m3 0.00 kg		0.00	0 (0 0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		1	2 A 1 1	1-Total Fundations	GIT	0.00 m2	9	0.00	056 72603.818	160.7086 3990.4472 0.9412	61.43	22 12085.9711 69318.5961 0.005	21.9395	7.5080	1.4024 0.0	0 274.0356	3926.8566	0.0002	1.0247 0.202	-0.0981	0.0000	6.0187	65.9431	0.0000	0.0332 0.01	0.0342 0.0000
			2.A.1.2	Gulam Timber Steel in timber connect (galvan Structural steel	ized) ST-G	0.00 m3 0.00 kg		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		2.A.1-Beams	2.A.1.3	Structural steel	ST	12175.35 kg	32	751.69 13193.50	235 114315.578	0 4.10309295	0.36526	05 8234.310959 112611.0297 0.02066229	36.32138237	5.318229406	20.30945783 0.001284	0.30438375	33.44568645	0.00018263	0.243507 0.00426137	0.001125002	0.000395699	0.005771116	0.08522745	2.13069E-07	2.53247E-05 0.0001038	56 4.90667E-06 3.81088E-10
			2.A.1.4 2.A.1.5	Concrete Rebar	CON3 REB	0.00 m3 0.00 kg		0.00	0 1	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
			2.A.2.1	Gulam Timber Steel in timber connect (galvan	GLT	0.00 m3 0.00 kg		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		2 4 2 6 1	2.A.2.2	Steel in timber connect (galvan	ized) ST-G	0.00 kg		0.00	0 0	0 0 0	4 25457	0 0 0	0 0	0	0	0 0	0	0	0 000000	0	0	0	0	0	0	0 0 0
		2.A.2-Columns	2.A.2.4	Structural steel Concrete	CON3	42052.45 kg 0.00 m3	113.	0.00 45569.2	0 1	0 14.17167565 0 0 0	1.20157	35 28440.49246 388947.3153 0.07136553 0 0 0	0 0	18.36863632	0.004430	0 0	113.3180802	0.000030787	0.041049 0.01471033	0.003883040	0.001366705	0.019932801	0.25430713	7.339182-07	0 0.0003387	0 0 0
			2.A.2.5	Rebar	REB	0.00 kg		0.00	0 (0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
	2.A-Frames	2.A.3-Mass concrete slabs or	2.A.3.1 2.A.3.2	Concrete	CON2	0.00 m3 0.00 kg		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
2 - Load b			2.A.4.1	Concrete	CON2	56.18 m3	13	723.85 10674	.352 78653.1	192.138336 3314.6672	12.640	68 15842.9856 76405.888 0.00387647	5 24.4948288	7.865312	0.89327472 0.000188	243.824672	3303.43104		0.56742608 1.3651934	-1.89329296	4.02255E-14	1.8539664	25.6184448	6.79788E-05	0.008033854 0.0329219	49 0.001556208 1.20789E-07
structural	rame	2.A.4-Composite slabs or	2.A.4.2	Rebar	REB	1404.52 kg	2!	528.14 2224.7		16.85424 921.36512 (0.04213	56 740.18204 9164.493 0.00143162	7 2.80904	1.19665104	0.26404976 7.570928	05 57.58532	891.8702	0.000100283	0.3370848 0.0589898	0.01264068	1.10395E-05	0.000117839	0.00140452	4.35401E-09	5.18268E-07 2.12083E	06 1.00142E-07 7.767E-12
1 1			2.A.4.3 2.A.5.1	Galvanized steel plates Concrete blocks or	ST-G CONB	3307.64 kg 0.00 m3	83	0.00	0 37376.3839	21.23507833 367.1485506 2.40134998 0 0 0	41.676321	96 3439.950384 37045.61952 0.00097244 0 0 0	9.889857354	0.00549069	8.467570176 2.8545E	-11 27.75113819 0 0	367.1485506 0	2.22604E-06 0	0.04531473	0.088314111	5.0607E-15 0	2.176430147	41.67632196	2.51712E-07	0.011279068 0.005027	0 0 0 0
		2.A.5-Lightweight concrete slab	2.A.5.2	Concrete blocks or Ceramic blocks	CERB	0.00 m3 0.00 kg		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		or or	2.A.5.3	Precast concrete beams Concrete (cast in place)	CONBEAM	0.00 kg		0.00	0 1	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	Ó	0 0 0
			2.A.5.4 2.A.5.5	Rebar	REB	0.00 m3 0.00 kg		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		2.A.6-Mass timber structural	2.A.6.1	Rebar Cross Laminated Timber (CLT)	canels CLT	0.00 m3		0.00	0	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
1 1		floors	2.A.6.2	Steel in timber connect (galvani Steel in connections (galvanize	tred) ST-G	0.00 %		0.00	0	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
			2.B.1	Structural steel	ST ST	0.00 kg		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
1 1	2	.B-Load-bearing walls	2.B.2	Concrete rebar	CON3	0.00 m3 0.00 kg		0.00	0 (0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
			2.B.3	rebar Total structural elements	REB	0.00 kg	170	0.00	0 635285.2624 1878 635285.2624	230 2277 4621 4556 2 4013	55.98	0 0 0 60 56697.9214 624174.3455 0.098	3 198 9656	32 7543	100.0812 0.0	0 0	4711 4136	0.0009	2 0883 1 488	-1 7873	0.0018	4 0562	67.6758	0.0001	0 0194 0.03	0 0 0 84 0.0158 0.0000
		3.A.1-Ground floor slab	3.A.1.1		CON1	29.53 m3	34			101.00457 1742.4765	3.57355	35 8328.447 40165.56 0.00203781	2 12.876606	4.13469	0.46958265 9.893728	-05 128.17539	1736.5698	9.09632E-06	0.29828835 0.07176640	-0.099527895	2.1146E-14	0.531603	7.265241	1.92263E-05	0.002285893 0.009362	12 0.000443003 3.42589E-08
		(non-structural)	3.A.1.2	rebar	REB	886.01 kg	1!	94.81 1403.4	6374.80597	10.63206 581.21928	0.026580	15 466.924635 5781.182625 0.00090310	5 1.77201	0.75487626	0.16656894 4.775928	-05 36.326205	562.613175	6.32608E-05	0.2126412 0.0372122	0.007974045	6.964E-06	7.43358E-05	0.000886005	2.74662E-09	3.26936E-07 1.33787E	06 6.31722E-08 4.89961E-12
			3.A.1.3	Graded aggregate	AGG	88600.50 kg 257.52 m2	4	130.03 1151.3 294.72 10506	916 49412.7	0 1333.083123 C 3.270504 2366.6088 517.6152	29144.337	07 203.78115 2569.4145 0.00017720 08 3038.736 41975.76 0.088844	0.886005	1.77201 0.9064704	0.1063206 4.075628	-06 116.5096575 114 156.05712	10851.34624	0.059185134 6.695525.06	6.910839 1.41760 0.2600952 0.0206449	0.354402	0.0886005 2.88422E-05	0.26402949	37.389411	9.77264E-06	0.001159781 0.0047521	76 0.000224425 1.74543E-08
		3.A.2-Flooring Type I:	3.A.2.2	Ceramic tiles Tile bond coat (adhesive)	ADH	1545.12 kg		227.07 3012		0 2085.912	0.83436	48 794.19168 10383.2064 0.00089307	2.394936	0.74320272	0.129172032 4.928938		4244.135616	0.142769088	2.472192 0.54017395	0.142769088	0.050185498	0.004604458	0.064276992	1.70581E-07	2.0272E-05 8.28184E	05 3.91224E-06 3.0408E-10
	3.A-Horizontal	Ceramic flooring or	3.A.2.3	Mortar bed Cleavage membrane	MOR	12360.96 kg	31	090.24 4697.: 082.76 4340.80:	1648 64771.430	0 0 0 0 21.3091362 1480.80438 0.068983814	0.0242240	0 7107.552 64647.8208 0.10284318 56 3339.635244 107219.8684 0.01698711	7 26.3288448	1.2979008	19.2830976 0.000537	702 406.1440627 127 100.4057604	4467.250944	0.024351091 2	825344627 0.55498238	1.51357483	0.504574387	0.036835661	0.504574387	1.36218E-06	0.161953298 0.0006609	41 3.13227E-05 2.4314E-09
	elements		3.A.2.4 3.A.3.1	Laminated wood flooring	WFL			0.00	0 107268.024	21.3091362 1480.80438 0.068983814	0.9342310	0 0 0	0.014614907	1.291189185	0.005680	0 0	1480.80438	0.000355152 0	0.00672983	0.40932804	2.31151-05	0.042377491	0.930619338	2.684/1E-U/ 0	0.00061038 0.0001043	0 0.000208276 1.20391E-09
		3.A.3-Flooring Type II: Wood	3.A.3.2	Laminated wood flooring Chipboard flooring (plywood) Insulation layer	PLYW	0.00 m2 0.00 m3 0.00 m3		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		floating floor or	3.A.3.3	Insulation layer	MWOOL	0.00 m3		0.00	0 1	0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		3.A.4-Flooring Type III: Screed	3.A.4.1	Timber battens Wet screed (cement mostar)	MOR	0.00 m3 0.00 m4		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		flooring	3.A.4.2	Sound insulation layer	POLY	0.00 m3 19627.99 kg		0.00	0 (0 0 0 40.23738565 802.7849137 18.74473332		0 0	0	0 4.043366558	0 1.018692837 9.931768	0 0 -06 57.90257935	0	0 4.65183E-06 0	0 .243387113 0.06045421	0	0 1.94317E-11	0	0 191.5692117	0	0	0 0 0 75 -0.002610523 1.55061E-11
		3.B.1-Internal partition Type I: Brick walls	3.B.1.1	Brick wall Finishing coat (plastering morta	ars) PLASM	7093.12 kg	83	243.76 6045.42	0 1844 81063.61109 1984 24896.851	40.23738565 802.7849137 18.74473332 139.734464 2078.28416 16.8106944	196.279 87.2453	0 0 0 93 6163.189802 73212.41389 0.00524067 76 2652.82688 22910.7776 0.00610717	4 19.58873701 6 6.5256704	4.043366558 0.671718464	1.018692837 9.93176E 0.544042304 1.76619E	-05 57.90257935 -05 154.630016	2071.19104	4.65183E-06 0 1.60305E-05 0	.117745792 0.02652826	-0.088914808 -0.001666883	1.94317E-11 3.24865E-12	46.12578355 295.783104	191.5692117 78.733632	3.98448E-06 5.17798E-06	0.078315692 0.0129544 0.038728435 0.0085826	75 -0.002610523 1.55061E-11 75 0.002588989 4.05017E-12
		3.B.2-Internal partition Type II	3.B.2.1	Gypsum cardboard or fiberboa Galvanized steel (U, C) channel	rd GYP_F		10	0.00	0	0 0	0112100	0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
A1-A3		Gypsum cardboard walls	3.B.2.2	Galvanized steel (U, C) channel	studs ST-GC	0.00 m2 0.00 kg		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
			3.8.2.3	Insulation layer Cross Laminated Timber (CLT) p	canels CLT	0.00 m3 0.00 m3		0.00	0 1	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		3.8.3-Internal partition Type III	3.B.3.2	Steel in timber connect (galvan	ized) ST-G	0.00 kg		0.00	0 (0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
3 - Non-	oad 3.B-Vertical	Structural Timber wall	3.B.3.3	Insulation layer Timber battens	MWOOL	0.00		0.00	0 1	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
bearin			3.B.3.5	Gypsum plasterboard	GYP_P	0.00 m3 0.00 m2		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
elemen	В	20454	3.B.4.1	Concrete blocks Insulation layer	CONB	0.00 m3		0.00	0	0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		3.B.4-External party walls	3.B.4.3	Finishing coat (plastering morta	ars) PLASM	0.00 kg	_	0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		3.8.5-Parapets	3.B.5.1	Brick wall Finishing coat (plastering mort	CERB ars) PLASM	2337.72 kg		981.84 720.0	1776 9654.783	4.792326 95.612748 2.2325226	23.37	72 734.04408 8719.6956 0.00062417	2.33304456	0.48157032	0.121327668 1.182898	-06 6.896274	95.378976		.028987728 0.00720017	-0.010589872	2.31434E-12	5.493642	22.8161472	4.74557E-07	0.009327503 0.0015428	95 -0.000310917 1.8468E-12
		3.B.6-Railings	3.B.5.2	Finishing coat (plastering mort:	ars) PLASM ST-SL	844.80 kg	12	267.20 660.		16.64256 247.5264 2.002176 0.000788975 6.53125 98.7525	10.391	04 315.9552 2728.704 0.00072737 18 246.62 3317.875 0.0322382	3 0.777216 5 3.213375	0.08000256 0.1614525	0.06479616 2.103558 1.51525 1.342838	-06 18.41664 -05 18.9145	246.6816 2080.22925	1.90925E-06 0.01133825	0.01402368 0.00315955 1.30625 0.2612	-0.000198528 0.05225	3.86918E-13 0.02460975	35.22816	9.37728	6.16704E-07 3.66795E-05	0.004612608 0.0010222 0.004362875 0.017817	08 0.000308352 4.82381E-13 25 0.000841225 6.53125E-08
		3.B.7-Interior doors	3.B.6 3.B.7	Interior doors	WDOOR	52.25 kg 7.64 m2	1	756.06 51 123.41 5230.76 141.79 559.	1587 3971.89393	0 0 124.854479	44.220481	84 -53.99343626 3562.854479 0.00760466	0.515345267	0.107630715	0.101675766 2.80688	1.626926233	179.0445141	0.000977295 0	.113970314 0.02279406	0.005698516	0.002116999	30.31610353	9.163213247	1.06049E-06	0.00994391 0.0022549	03 0.000581818 1.14113E-14
			3.C.1.1	Ceramic tiles	CEFT	13.72 m2		141.79 559.0	5128 2578.60	0.1741932 126.05004 27.56916	142.64	64 161.8488 2235.708 0.0047320	0.4032504	0.04828032	0.02866644 2.70205E	05 8.311896	118.50624	3.56616E-07	0.01385316 0.00163220	0.000689915	1.53619E-06	15.22476	110.27664	0.000142646	0.0356616 0.0051983	64 0.002482596 1.13843E-06
			3.C.1.2 3.C.1.3	Tile bond coat (adhesive) Mostar	ADH MOR	82.30 kg 1235.52 kg	 	49.38 160. 308.88 469.	1772 604.8751 1976 6474.1241	0 111.0996	0.044439	84 42.300144 553.02912 4.75671E-0 0 710.424 6461.7696 0.01027952	5 0.1275588 6 2.6316576	0.039584376 0.1297296	0.006879946 2.62524E 1.9274112 5.37451E	-06 2.0409408 -05 40.59548064	226.0506528 446.516928	0.00760415	0.1316736 0.02877068 282402806 0.05547237	0.00760415	0.002672974 0.050433926	0.000245242	0.003423514	9.08548E-09 1.36154E-07	1.07972E-06 4.41107E 0.016187783 6.60633E	05 2.08373E-07 1.61959E-11 05 3.13081E-06 2.43027F-10
		3.C.1-Stairs	3.C.1.4 3.C.1.5	Concrete	CON3	0.00 m3 0.00 kg		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		3.0.2-30013	3.C.1.5	Rebar Structural steel	REB			0.00	0 2163 61063	0 0 0	0.000040	0 0 0	0 0 697310501	0.100533596	0 204265501 2 420407	0 0 0057501	0 633900000	0 3.45546E-06	0 00460739 9 063745 0	2.120565.05	7.48683E-06	0 000100103	0.001613640	4 031375 00	4 701575 07	0 0 0
	3.C-Inclined		3.C.1.7	Structural steel Cross Laminated Timber (CLT) ;	panels CLT	230.36 kg 0.00 m3	— I — '	0.00	0 2162.91063	0 0.077632668	0.006910	0 0 0 0	0.687219581	0.100623686	0.384265581 2.43018E	0 0.0057591	0.632809908	5.455461-06	0.00460728 8.06274E-0	2.12856E-05 0	7.4e683E-06	0.000109193	0.001612548	4.03137E-09 0	4.79157E-07 1.965E- 0	0 0 0 0
	elements		3.C.1.8	Steel in timber connect. (galvar	nized) ST-G	0.00 kg		0.00	0	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
			3.C.2.1 3.C 2 2	Ceramic tiles Tile bond coat (adhesive)	CEFT ADH	0.00 m2 0.00 kg	—— I ——	0.00	0	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		3.C.2-Ramps	3.C.2.3 3.C.2.4	Mostar	MOR	0.00 kg		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
			3.C.2.4 3.C.2.5	Concrete	CON3 REB	0.00 m3 0.00 kg	—— I —	0.00	0 1	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		1		Rebar al non-load bearing elements	KEB	0.00 kg		50991	1830 419843.999	337.7980 13058.0708 808.6504	32729.64	36 34408.2807 398576.2996 0.280	7 88.6472	16.7643	41.6113 0.0	071 1291.2782	31832.7471	0.2491	15.6420 3.126	2.4577	0.7233	715.8951	2552.5059	0.0029	1.0327 0.16	20 0.0514 0.0000
			4.A.1.1	External finish	PLASM	17972.16 kg	269	958.24 14054.23	1912 63082.281 1286 273859.399	354.051552 5265.84288 42.5940192	221.0575	69 6721 59794 59050 0769 0 0154740			1.378464672 4.47507E	-05 391.793088	5247.87072	4.06171E-05 0	.298337856 0.06721587	-0.004223458	8.23125E-12	749.439072	199.490976	1.31197E-05	0.098127994 0.0217463	14 0.006559838 1.02621E-11
		4.A.1-Facade type I: with bricks or,	4.A.1.2	Brick walls Insulation layer	CERB	66309.78 kg 26.21 m3	271	350.11 20423.4 529.21 11503.3	1286 273859.399 1566 55013.530	135.9350531 2712.070084 63.32584181 66.4932478 1154.52407 250.168723	1220.7024	82 20821.27155 247335.4869 0.01770471 24 4544.70996 51920.8214 0.00100303	2 66.17716244	13.65981509 3.64572754	3.441477686 3.35527E	05 195.6138569 08 84.918456	2705.439106	1.57154E-05 0 6 98218F-06 0	.822241297 0.20423412 .125595445 0.02736261	-0.300383312 -0.028175105	6.56467E-11 2.10855E-14	155.8279877 580.276116	647.1834723 1155.048258	1.34609E-05	0.26457603 0.0437644	56 -0.008819201 5.23847E-11 42 0.034832293 2.91449F-10
	- 1	with Dricks Or,	4.A.1.4	Insulation layer Interior finish	GYP_P	374.42 m2	131	316.10 1411.		6.36514 2429.9858 212.67056	1127.00	42 812.4914 14377.728 0.00022577	1.666169	0.01160702	2.3176598 4.79258E		2415.009		0.5092112 0.00014340	0.7900262	3.93141E-06	90.23522	999.7014	9.32306E-06	0.2321404 0.0010670	97 0.33585474 2.4824E-06
			4.A.2.1	Gypsum plasterboard	GYP_P	0.00 m2		0.00	0 1	0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
	4.A-External wall	4.A.2-Facade type II: Timber	4.A.2.2	Cross Laminated Timber (CLT) Steel in timber connect (galvan	ized) ST-G	0.00 m3 0.00 kg		0.00	0	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
	systems	panels or,	4.A.2.4	Insulation layer	MWOOL	0.00 m3		0.00	0	0 0		0 0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
4 - Faca			4.A.2.5	Insulation layer Timber battens	GLT WCLA	0.00 m3 0.00 m2		0.00	0 1	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
			4.A.2.6 4.A.3.1	External wooden cladding Gypsum plasterboard	WCLA GYP P	0.00 m2		0.00	0	0 0		0 0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		4.A.3-Facade type III:	4.A.3.2	Gypsum plasterboard Brick wall	CERB	0.00 kg		0.00	0	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
		Ventilated facade	4.A.3.3	Insulation layer	MWOOL			0.00	0 1	0 0		0 0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
	-	4.B.1-Windows	4.A.3.4 4.B.1	Tiles for external cladding Windows	N-STON WIN_PVC	0.00 kg 21.54 m2 4.00 m3 4.00 m4	2	165.52 1011.6	0 1 1764 25950.422 6600 4081 5202 1763.50238	0 0 0 0.1703814 12.29934 2.059224	44.80	0 0 0 32 12847.533 22832.63694 10.08287	4 4.70431446	0.5696253	0 0.348767064 2.11904E		12.0624	0.00557886	0.0031233 0.00049757	0.000141949	1.3484E-07	10489.98	43.7262	5.66502E-08	0.0057081 0.000603	
	4.B-Facade openings	4.B.2-Exterior doors	4.B.2.1	Exterior glazed doors Exterior front doors	DOOR GL	4.00 m3		500.56	600 408	1.228 22.08 4.04	26 909406	56 172 0 16 9.085392284 1620.286086 0.00299037	0 1.372	0.00564 0.095722583	0.00000	28 1.668	0	0	0.00532 0.0000049	0.0048	2.116E-16 0.001288253	62.8	0 5 576077922	0	0.02532 0.0000015	68 0.02876 7.24E-15
	Sperinings	4.0.2 Exterior 000/S	4.8.2.2	Exterior front doors	DOOR_W	4.00 m4	10	96.73 1691.20	1763.50238	0 0 75.9774595	26.909406	16 9.085392284 1620.286086 0.00299037	0.483953186	0.095722583	0.269293455 4.039888		108.9536194	0.000594712	0.06935414 0.01387082		0.001288253	18.44820113	5.576072822 3050.7264	6.4534E-07	0.006051149 0.0013721	72 0.000354053 6.94408E-15
-			5.A.1.1	4- Total facades Ceramic tiles or	CEFT	134.33 m2	76i	326.77 5480	1703-36130 16639 440298.5009 1.6664 25254.00 0 77.94 37746.7:	564.2434 11596.8022 650.8358 1.705991 1234.4927 270.0033	1397.0	56 45928.6791 396137.0361 10.120 32 1585.094 21895.79 0.0463438	3.949302	0.4728416	0.2807497 0.00026	002 8655.5548 163 81.40398	11632.0647 1160.6112	0.0062 3.49258E-06	1.8332 0.313 0.1356733 0.0159852	0.4657	0.0013 1.5045E-05	149.1063	1080.0132	0.001397032	0.349258 0.050911	15 0.3979 0.0000 07 0.02431373 1.11494E-05
	S.A-Roof Type I: FI	5.A.1-Finishing coat			GRAV	0.00 kg		0.00	0 1	0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0 0
1	roof or	5.A.2-Waterproofing layer 5.A.3-Insulation layer	5.A.2	Waterproofing layer	WP MWOOL	0.00 kg 134.33 m2 9.40 m3		64.19 241	7.94 37746.7	12.801649 185.3754 347.9147 23.8556647 414.206555 89.7525895	6797.0	98 467.4684 0 76 1630.49754 18627.5411 0.00035985	0.9282203 7 9.5441465	0.02511971 1.30797121	0.9429966 5.561268 0.563809876 5.226248	-06 13.97032 -09 30.466044	409.97516		0.01571661 5.02394E-0 .045059655 0.00981683	0.01356733	1.3836E-12 7.56479E-15	255.227 208.184634	0 414.394617	7 501135 00	0.5453798 0.0077508 0.208654789 0.0297514	41 0.5077674 2.12241E-05 08 0.01249672 1.04562E-10
		5.A.3-Insulation layer 5.A.4-Screed to falls	5.A.3	Cement mostar	MOR	9.40 m3	1	511.96 2450	19737.106	0 0 0 0	441.5695	0 3707.508 33722.2032 0.05264602	9 13,7338993	0.6770232	10.0586304 0.000280	81 211.8566789	409.97516 2330.249376		.473782789 0.2894951	0.789525112	7.56479E-15 0.263200829	208.184634 0.019214563	0.263200829	7.10552F-07	0.208034783 0.0297514	08 0.01249672 1.04562E-10 66 1.63388E-05 1.26829E-09
		5.B.1-Roof tiles	5.B.1	Cement mostar Roof tiles	MOR RTIL	6447.84 kg 3670.14 kg	111	377.42 3963.74	1792 33786.6810 7206 16845.9256	7.523779419 161.8530109 3.780240391	32.921122	0 3707.508 33722.2032 0.05364602 63 1031.308301 16515.61336 0.00147172	14.0933234	0.6770232 1.181783889	0.741367533 7.743998	06 11.89124162	160.3849564	1.01296E-06 0	.008661522 0.00172496	-0.000111572	8.51472E-13	27.74623044	31.67327628	7.10552E-07 2.33054E-07	0.0844796 0.0003447 0.011817839 0.0019818	74 -0.000340222 2.00389E-12
5 - Ro	f	5.B.2-Mostar	5.B.2	Cement mostar	MOR WP	2936.11 kg		734.03 1115.72	15385.2113	9 744099729 126 6107024 227 644026	AC42 7224	0 1699 262600 15255 95020 0.02442942	7 6.252012259	0.308291449	4.580330105 0.000127 0.644109021 2.709506	96.47173477	1061.109808		.671106444 0.13182542 .010735149 3.43158E-0	0.35952068	0.119851971 9.4506E-13	0.008749605		3.23559E-07	0.038468901 0.0001569	94 7.4401E-06 5.77533E-10
	5.B-Roof type II:	5.B.3-Waterproofing layer	5.B.4	Cement mostar Waterproofing layer Ceramic deck or	CERB	91.75 m2 2835.18 kg		190.78 873.235	1436 15385.2113 1336 25782.7075 5303 11709.2946	0 0 0 8.744099739 126.6197024 237.6413255 5.812119601 115.958874 2.70759718	4642.7224 28.351802	22 319.3018582 0 93 890.246612 10575.22249 0.00075699	3 2.829509932	0.58404714	0.644108921 3.79859E 0.147145857 1.4346E	-06 9.542354384 -06 8.363781865	115.675356	6.71938E-07 0	.010735149 3.43158E-0 .035156236 0.00873235	-0.012843367	9.4506E-13 2.80683E-12	6.662673689	27.67135966	5.75542E-07	0.372518835 0.0052941 0.011312369 0.0018712	72 0.346827881 1.4497E-05 19 -0.000377079 2.23979E-12
	Inclinated tiled roo	of 5.B.4-Decking			PLYW	0.00 m2		0.00	0 (5241 8174.05609 0 (0 0		0 0	0 0	0	0	0 0	0	0	0	0	0	0	0	0	0	0 0
		5.B.5-Structure	5.B.6	Brick walls or Gulam timber beams	CERB	1979.19 kg	- 1	331.26 609.590	8174.05609	4.057340193 80.94888483 1.890126773	19.791903	38 621.4657662 7382.379961 0.00052844	1.975231957	0.40771321	0.102719979 1.001478	06 5.838611498	80.7509658	0	0.00609590	-0.008965732	1.9594E-12	4.651097295	19.3168977	4.01776E-07	0.007896969 0.0013062	66 -0.000263232 1.56356E-12
		5.B.6-Insulation layer	5.B.8	Gulam timber beams Insulation layer	MWOOL	1979.19 kg 0.00 m3 4.31 m3		16.01 1892.	9048.78	10.937007 189.89955 41.148495	202.444	0 0 0 56 747.5274 8540.091 0.00016498	2 4.375665	0.5996601	0.25848756 2.39605E		187.9596	1.14845E-06 0	.020658312	-0.004634325	3.4682E-15	95.44554	189.98577			0 0 0 04 0.005729319 4.79383E-11
L			•	5-Total Roofs	•		22345	.18 24581.	7578 203470.542 .140 1568031.580	75.4377 2509.3547 994.8384 1292.9776 33266.7758 1462.8288	13561.93	14 12688.6806 132614.6914 0.127	7 58.3172	5.5816 76.7167	18.3203 0.0 153.3100 0.0		5506.7164 52103.0820		2.4411 0.468 20.5882 5.131		0.3831 0.7263		1763.4382 5736.8511	0.0014 0.0031		
			Total bu	uilding (A1-A5)			32643	5.80 196672	.140 1568031.5809	1292.9776 33266.7758 1462.8288	36174.28	73 149120.8524 1488206.2773 10.504	427.0927	76.7167	153.3100 0.0	10551.3854	52103.0820	0.2565	20.5882 5.131	1.0379	0.7263	12872.9765	5736.8511	0.0031	2.2988 0.36	41 0.4993 0.0000



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BIM-LCA Construction Project

LCA - Enviromental Impact results

	Building part	Building elem	ent types / building elements	Ref.	Type of Material	Mat Code	Quantities (Q) Unit	Cost (Euros)
			1.A - Piles	1.A.1	Concrete	CON1	0.00 m3	0.0
			2.6 - 1 10.3	1.A.2 1.B.1.1	Rebar Concrete	REB CON1	0.00 kg 0.00 m3	0.0
			1.B.1-Pile Caps	1.B.1.2	Rebar	REB	0.00 kg	0.0
				1.B.1.3 1.B.2.1	Blinding concrete Concrete	CON0 CON1	0.00 m3 24.88 m3	0.0 2942.8
			1.B.2-Footings	1.8.2.2	Rebar	REB	1574.90 kg	2834.8
		1.B-Basement		1.B.2.3	Blinding concrete	CONO	0.91 m3 12.37 m3	79.2
	1- Foundations		1.B.3-Foundation beams	1.B.3.1 1.B.3.2	Concrete Rebar	CON1 RER	12.37 m3 1098.46 kg	1463.1 1977.2
				1.B.3.3	Blinding concrete	CONO	0.45 m3	39.5
			1.B.4-Foundation slab	1.B.4.1 1.B.4.2	Concrete Rebar	CON1 REB	0.00 m3 0.00 kg	0.0
			2.0.41 0011041011 3140	1.B.4.3	Blinding concrete	CON0	0.00 m3	0.0
		1.0	C - Retaining walls	1.C.1 1.C.2	Concrete	CON3 REB	0.00 m3 0.00 kg	0.0
				1.0.2	Rebar 1-Total Fundations	NEB	0.00 kg	9336.7
				2.A.1.1	Gulam Timber	GLT	0.00 m3	0.0
			2.A.1-Beams	2.A.1.2 2.A.1.3	Steel in timber connect (galvanized) Structural steel	ST-G	0.00 kg 12175.35 kg	0.0 32751.6
				2.A.1.4	Concrete	CON3	0.00 m3	0.0
				2.A.1.5 2.A.2.1	Rebar Gulam Timber	REB GLT	0.00 kg 0.00 m3	0.0
				2.A.2.2	Steel in timber connect (galvanized)	ST-G	0.00 kg	0.0
			2.A.2-Columns	2.A.2.3	Structural steel	ST CON3	42052.45 kg	113121.0
				2.A.2.4 2.A.2.5	Concrete Rebar	REB	0.00 m3 0.00 kg	0.0
			2.A.3-Mass concrete slabs or	2.A.3.1	Concrete	CON2	0.00 m3	0.0
		2.A-Frames		2.A.3.2 2.A.4.1	Rebar Concrete	REB CON2	0.00 kg 56.18 m3	13723.8
	2 - Load bearing structural frame		2.A.4-Composite slabs or	2.A.4.2	Rebar	REB	1404.52 kg	2528.1
	-aruccurat traine			2.A.4.3 2.A.5.1	Galvanized steel plates Concrete blocks or	ST-G CONB	3307.64 kg 0.00 m3	8269.1
			2 A S-Light-unight consents 111	2.A.5.2	Ceramic blocks	CERB	0.00 kg	0.0
			2.A.5-Lightweight concrete slabs or	2.A.5.3	Precast concrete beams	CONBEAM	0.00 kg	0.0
				2.A.5.4 2.A.5.5	Concrete (cast in place) Rebar	CON2 REB	0.00 m3 0.00 kg	0.0
			2.A.6-Mass timber structural	2.A.6.1	Cross Laminated Timber (CLT) panels	CLT	0.00 m3	0.0
			floors	2.A.6.2 2.A.6.3	Steel in timber connect (galvanized) Steel in connections (galvanized)	ST-G ST-G	0.00 kg	0.0
				2.B.1	Structural steel	ST	0.00 kg	0.0
		2.B	-Load-bearing walls	2.B.2	Concrete	CON3	0.00 m3	0.0
				2.B.3 2	rebar - Total structural elements	REB	0.00 kg	170393.
			3.A.1-Ground floor slab	3.A.1.1	Concrete	CON1	29.53 m3	3493.2
			(non-structural)	3.A.1.2 3.A.1.3	rebar Graded aggregate	REB AGG	886.01 kg 88600.50 kg	1594.8 4430.0
				3.A.2.1	Ceramic tiles	CEFT	257.52 m2	8294.7
			3.A.2-Flooring Type I:	3.A.2.2	Tile bond coat (adhesive)	ADH	1545.12 kg	927.0
		3.A-Horizontal	Ceramic flooring or	3.A.2.3 3.A.2.4	Mortar bed Cleavage membrane	MOR	12360.96 kg 1.29 m3	3090.2 2082.7
		elements		3.A.3.1	Laminated wood flooring	WFL	0.00 m2	0.0
			3.A.3-Flooring Type II: Wood floating floor or	3.A.3.2 3.A.3.3	Chipboard flooring (plywood) Insulation layer	PLYW MWOOL	0.00 m3 0.00 m3	0.0
			licating ribur or	3.A.3.4	Timber battens	GLT	0.00 m3	0.0
			3.A.4-Flooring Type III: Screed	3.A.4.1	Wet screed (cement mostar)	MOR	0.00 m4	0.0
			flooring 3.B.1-Internal partition Type I:	3.A.4.2 3.B.1.1	Sound insulation layer Brick wall	POLY	0.00 m3 19627.99 kg	8243.
			Brick walls	3.B.1.2	Finishing coat (plastering mortars)	PLASM	7093.12 kg	10639.
			3.B.2-Internal partition Type II:	3.B.2.1	Gypsum cardboard or fiberboard	GYP_F ST-GC	0.00 m2	0.0
A1-A3			Gypsum cardboard walls	3.B.2.2 3.B.2.3	Galvanized steel (U, C) channel studs Insulation layer	MW00L	0.00 kg 0.00 m3	0.0
				3.B.3.1	Cross Laminated Timber (CLT) panels	CLT	0.00 m3	0.0
			3.B.3-Internal partition Type III:	3.B.3.2 3.B.3.3	Steel in timber connect (galvanized) Insulation layer	ST-G MWOOL	0.00 kg 0.00	0.0
	3 - Non-load bearing	3.B-Vertical elements	Structural Timber wall	3.B.3.4	Timber battens	GLT	0.00 m3	0.0
	elements			3.B.3.5 3.B.4.1	Gypsum plasterboard Concrete blocks	GYP_P CONB	0.00 m2 0.00 m3	0.0
			3.B.4-External party walls	3.B.4.2	Insulation layer	MWOOL	0.00 m3	0.0
				3.B.4.3 3.B.5.1	Finishing coat (plastering mortars) Brick wall	PLASM CERB	0.00 kg 2337.72 kg	981.8
			3.B.5-Parapets	3.B.5.2	Finishing coat (plastering mortars)	PLASM	844.80 kg	1267.
			3.B.6-Railings	3.B.6	Railings	ST-SL	52.25 kg	756.
			3.B.7-Interior doors	3.B.7 3.C.1.1	Interior doors Ceramic tiles	WDOOR	7.64 m2 13.72 m2	1123.
				3.C.1.2	Tile bond coat (adhesive)	ADH	82 30 ke	49.
				3.C.1.3 3.C.1.4	Mostar Concrete	MOR CON3	1235.52 kg 0.00 m3	308.
			3.C.1-Stairs	3.C.1.5	Rebar	REB	0.00 kg	0.0
		3.C-Inclined		3.C.1.6	Structural steel	ST CLT	230.36 kg	619.
		elements		3.C.1.7 3.C.1.8	Cross Laminated Timber (CLT) panels Steel in timber connect. (galvanized)	ST-G	0.00 m3 0.00 kg	0.0
				3.C.2.1	Ceramic tiles	CEFT	0.00 m2	0.0
			3.C.2-Ramps	3.C.2.2 3.C.2.3	Tile bond coat (adhesive) Mostar	ADH MOR	0.00 kg 0.00 kg	0.0
				3.C.2.4	Concrete	CON3	0.00 m3	0.0
			l .	3.C.2.5 3-To:	Rebar tal non-load bearing elements	REB	0.00 kg	49244
				4.A.1.1	External finish	PLASM	17972.16 kg	26958
			4.A.1-Facade type I:	4.A.1.2	Brick walls	CERB	66309.78 kg 26.21 m3	27850.
			with bricks or,	4.A.1.3 4.A.1.4	Insulation layer Interior finish	GYP P	374.42 m2	2529.2 13816.1
				4.A.2.1	Gypsum plasterboard	GYP_P	0.00 m2	0.0
		4 A-External wall	4.A.2-Facade type II: Timber	4.A.2.2 4.A.2.3	Cross Laminated Timber (CLT) panels Steel in timber connect (galvanized)	CLT ST-G	0.00 m3 0.00 kg	0.0
		4.A-External wall systems	4.A.2-racade type II: I Imber panels or,	4.A.2.4	Steel in timber connect (galvanized) Insulation layer	MW00L	0.00 kg	0.0
	4 - Facades			4.A.2.5	Timber battens	GLT	0.00 m3	0.0
				4.A.2.6 4.A.3.1	External wooden cladding Gypsum plasterboard	WCLA GYP P	0.00 m2 0.00 m2	0.0
			4.A.3-Facade type III:	4.A.3.2	Brick wall	CERB	0.00 kg	0.0
			Ventilated facade	4.A.3.3 4.A.3.4	Insulation layer Tiles for external cladding	MWOOL N-STON	0.00 m3	0.0
				4.A.3.4 4.B.1	Tiles for external cladding Windows	N-STON WIN_PVC	21.54 m2	3165.
			4.B.1-Windows			DOOR GL	4.00 m3	600.5
		4.B-Facade openings		4.B.2.1	Exterior glazed doors			
		4.B-Facade openings	4.B.1-Windows 4.B.2-Exterior doors	4.B.2.1 4.B.2.2	Exterior front doors	DOOR_W	4.00 m4	1096.7
			4.8.2-Exterior doors		Exterior front doors 4- Total facades Ceramic tiles or	DOOR_W CEFT	134.33 m2	76016.4
		openings	4.8.2-Exterior doors 5.A.1-Finishing coat	4.B.2.2 5.A.1.1 5.A.1.2	Exterior front doors 4- Total facades Ceramic tiles or Gravel ballast	CEFT	134.33 m2 0.00 kg	76016.4 4326.3
			4.8.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer	5.A.1.1 5.A.1.2 5.A.2	Exterior front doors 4-Total facades Ceramic tiles or Gravel ballast Waterproofing layer	CEFT GRAV WP	134.33 m2 0.00 kg 134.33 m2	76016.4 4326.7 0.0 564.1
		openings 5.A-Roof Type I: Flat	4.B.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer 5.A.3-Insulation layer	4.B.2.2 5.A.1.1 5.A.1.2	Exterior front doors 4-Total facades Ceramic tiles or Gravel ballast Waterproofing layer Insulation layer	CEFT	134.33 m2 0.00 kg 134.33 m2 9.40 m3 6447.84 kg	76016.4 4326.1 0.0 564.1 907.4
		openings 5.A-Roof Type I: Flat	4.8.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer 5.A.3-Insulation layer 5.A.4-Screed to falls 5.B.1-Roof tiles	5.A.1.1 5.A.1.2 5.A.2 5.A.3 5.A.4 5.B.1	Exterior front doors 4- Total facades Ceramic tiles or Grave ballist Waterproofing layer Insulation layer Cement mostar Roof tiles	CEFT GRAV WP MWOOL MOR RTIL	134.33 m2 0.00 kg 134.33 m2 9.40 m3 6447.84 kg 3670.14 kg	76016.4 4326.1 0.0 564.1 907.4 1611.5 11377.4
	5 - Roof	openings 5.A-Roof Type I: Flat	4.8.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer 5.A.3-Insulation layer 5.A.4-Screed to falls 5.8.1-Roof tilles 5.8.2-Mostar	5.A.1.1 5.A.1.2 5.A.2 5.A.3 5.A.4 5.B.1 5.B.2	Exterior front doors 4 Total facades Ceramic tiles or Grave ballist Waterproofing layer Insulation layer Cement mostar Roof tiles Cement mostar	CEFT GRAV WP MWOOL MOR RTIL MOR	134.33 m2 0.00 kg 134.33 m2 9.40 m3 6447.84 kg 3670.14 kg 2936.11 kg	76016. 4326. 0.0 564. 907. 1611. 11377. 734.0
	S - Roof	openings S.A-Roof Type I: Flat roof or S.B-Roof type II:	4.8.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer 5.A.3-Insulation layer 5.A.3-Green to falls 5.8.1-Roof tiles 5.8.2-Mostar 5.8.3-Waterproofing layer	5.A.1.1 5.A.1.2 5.A.2 5.A.3 5.A.4 5.B.1 5.B.2 5.B.3 5.B.3	Saterior Front doors 4- Total Facedes Ceramic tiles or Grave ballisat Waterproofing layer Insulation layer Cement mostar Roof tiles Cement mostar Waterproofing layer Cement mostar Waterproofing layer Ceramic dock or	CEFT GRAV WP MWOOL MOR RTIL MOR WP CERB	134.33 m2 0.00 kg 134.33 m2 9.40 m3 6447.84 kg 3670.14 kg 2936.11 kg 91.75 m2 2835.18 kg	76016.4 4326.1 0.4 564.3 907.4 1611.9 11377.4 734.4 385.3
	S - Roof	openings S.A-Roof Type I: Flat roof or	4.8.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer 5.A.3-Insulation layer 5.A.4-Screed to falls 5.8.1-Roof tilles 5.8.2-Mostar	5.A.1.1 5.A.1.2 5.A.2 5.A.3 5.A.4 5.B.1 5.B.2 5.B.3 5.B.4 5.B.5	Exterior front factors 4-r Total factors 4-r Total factors Ceramic Lifes or Gravel ballist Waterproofing layer Insulation layer Cement mostar Rond times Cement mostar Waterproofing layer Ceramic deck or wooden deck (phywood)	CEFT GRAV WP MWOOL MOR RTIL MOR WP CERB	134.33 m2 0.00 kg 134.33 m2 9.40 m3 6447.84 kg 3670.14 kg 2936.11 kg 91.75 m2 2835.18 kg 0.00 m3	1096.5 76016.4 4326.1 0.0 564.1 907.4 11377.4 734.4 385.3 1190.0
	S - Roof	openings S.A-Roof Type I: Flat roof or S.B-Roof type II:	4.8.2-Exterior doors 5.A.1-Finishing coat 5.A.2-Waterproofing layer 5.A.3-Insulation layer 5.A.4-Secret to falls 5.8.1-Roof tiles 5.8.2-Mostar 5.8.3-Waterproofing layer	5.A.1.1 5.A.1.2 5.A.2 5.A.3 5.A.4 5.B.1 5.B.2 5.B.3 5.B.3	Saterior Front doors 4- Total Facedes Ceramic tiles or Grave ballisat Waterproofing layer Insulation layer Cement mostar Roof tiles Cement mostar Waterproofing layer Cement mostar Waterproofing layer Ceramic dock or	CEFT GRAV WP MWOOL MOR RTIL MOR WP CERB	134.33 m2 0.00 kg 134.33 m2 9.40 m3 6447.84 kg 3670.14 kg 2936.11 kg 91.75 m2 2835.18 kg	76016.4 4326.1 0.0 564.1 907.4 1611.1 11377.7 734.4 385.1

Energy Consumption	n (A1-A3) (/m2/yr)	IMPACTS PER UN Energy Consump	ation (A4) (/m2/yr)	Energy Consum	ption (AS) (/m2/yr)				Env imp A1-A3 (/m2/yr)					Envim	p A4 (/m2/yr)						Envi	mp A5 (/m2/yr)		
			PERT (MJ/m2/yr)		PERT (MJ/m2/yr)	GWP (kg CO2-eq./m2/yr)	ADPF (MJ/m2/yr)	ADPE (kg Sb-eq./m2/yr)	AP (kg SO2-eq./m2/yr)	EP (kg Phosphat-eq./m2/yr)	POCP ODP (kg Ethen-eq./m2/yr) q CFC 11-eq./m2	GWP (kg CO2-eq./m2/yr)	ADPF (MJ/m2/yr)	g Sb-eq./m2/y	AP g SO2-eq./m2	EP hosphat-eq./m	POCP Ethen-eq./m2	ODP CFC 11-eq./m2	GWP (kg CO2-eq./m2/yr)	ADPF (MJ/m2/yr)	g Sb-eq./m2/	AP g SO2-eq./m2/	EP hosphat-eq./m	POCP Ethen-eq./m2	ODP a CFC 11-eq./m2/
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0.36713265	2.705187947	0.006608388	0.114004349		0 0.000233806	0.544902144	2.627896862	0 1.33327E-07	0.000842473	0.000270519	0 0 3.07232E-05 6.47313E-09	0.00030600	0 01126170	0 0	1.05165.06	0	0	1.38351E-18	3.4781E-05	0.0004752	0 (4 1.2579E-09	0	0 6.1253E-07	0 2.8984E-08	0 2.24144E-12
0.193744015 0.002227357	0.880043048 0.063137737	0.001467758 6.38757E-05	0.08023742	4.87502E-0	0 3.66939E-06 5 0.002944272	0.064459025	0.798093243	1.24674E-07 2.3124E-10	0.000842473 0.000244626 1.82181E-05	0.000270315 0.000104211 7.90715E-07	2.29949E-05 6.59317E-05 1.59268E-05 2.13669E-10	0.00501483	0.07766884	8.7332E-09	2.9355E-05	5.1372E-06	1.1008E-06	9.61381E-10 3.37934E-11	1.02621E-08	1.2231E-07	7 3.7917E-13	4.5134E-11	1.8469E-10 1.8661E-08	8.7209E-12	6.76392E-16
0.182533395 0.135131586	1.344982914 0.613807931	0.003285601 0.001023724	0.056681423	4.075022.0	0.000116245 0 2.55931E-06	0.270917987	1.306554831	6.62884E-08 8.69568E-08	0.000418866 0.000170621	0.000134498 7.26844E-05	1.52752E-05 3.21835E-05 1.60383E-05 4.59857E-05	0.00416944	0.05648928	2.959E-10	9.7031E-06	2.3345E-06	-3.2376E-06	6.87863E-19	1.72926E-05	0.00023633	6.2542E-10	7.4358E-08	3.0454E-07 1.2882E-10	1.4411E-08	1.11441E-12 4.71766E-16
0.001112448	0.031533986	3.19026E-05	0.001008189	2.43482E-0	5 0.001470509	0.004465238	0.031428674	1.15492E-10	9.09897E-06	3.94921E-07	7.95458E-06 1.06716E-10							1.6878E-11			5 5.3112E-12		9.3201E-09	8.7023E-07	1.57301E-11
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0.8819	5.6387	0.0125	0.3099	0.000	0.0048	0.9386	5.3836	0.0000	0.0017	0.0006	0.0001 0.000	0.021	0.3050	0.0000	0.0001	0.0000	0.0000	0.0000	0.0005	0.005	0.0000	0.0000	0.0000	0.0000	0.0000
1.024663121	0 8.87819033	0	0.000318662		0 2.83675E-05	0.639508462	8.745808456	0 1.60471E-06	0.002820859	0.000413034	0 0.001577311 9.97526E-01	2.36396E-0	0.0025975	0 1.4184E-08	1.8912E-05	3.3095E-07	8.7372E-08	3.07315E-08	4.48207E-07	6.6191E-0	0 (6 1.6548E-11	1.9668E-09	8.0658E-09	0 3.8107E-10	0 2.95968E-14
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3.53908468 0	30.66438788 0	0	0.001100627		9.79787E-05	2.208798731	30.20715403	5.54252E-06 0	0.009742967	0.001426579	0.005447876 3.44536E-0	8.16489E-0	0.0089715	4.8989E-08	6.5319E-05	1.1431E-06 0	3.0177E-07 0	1.06144E-07	1.54806E-06	2.2862E-0	5 5.7154E-11	6.7932E-09 0	2.7859E-08 0	1.3162E-09 0	1.02224E-13 0
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0.829011494 0.172783448	0 6.108505747 0.784833908	0.014922207	0.257429885		0.000981724	1.230427586 0.057485402	5.933977011	3.01062E-07 1.11186E-07	0.001902363 0.000218161	0.000610851 9.29366E-05	0 0 6.93752E-05 1.46168E-08	0.01893636						3.12406E-18					2.5568E-06	1.2086E-07	
0.172783448 0.549732793	0.784833908 2.902794655	0.001308966 0.001649198	0.071556782 0.028514178	0.00018649	0 3.27241E-06 8 0.003236744	0.057485402 0.267159862	0.71175 2.877106207	1.11186E-07 7.5524E-08	0.000218161 0.000768085	9.29366E-05 4.26428E-07	2.05071E-05 5.87987E-05 0.000657624 2.21691E-15							8.57372E-10 3.93033E-19			7 3.3815E-13 4 1.9549E-11		1.6471E-10 3.9046E-07	7.7774E-12 1.102E-06	6.03215E-16 4.4441E-20
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6.1153 0.435800326	49.3387 3.211160298	0.0179	0.3589 0.13532747		2 0.0043	0.646819432	48.4758 3.119412861	0.0000 1.58264E-07	0.0155 0.001000047	0.0025 0.000321116	0.0078 0.0000 3.64696E-05 7.68385E-09	0.025				0.0001 5.5737E-06		0.0000 1.64228E-18	0.0003	0.005	3 0.0000	0.0000	0.0000	0.0000	0.0000
0.433800320 0.108995955 0.089453751	0.495092107 0.199550676	0.000825727	0.13532747 0.045139739 0.103532395		0 2.06432E-06 0 2.263462028	0.036263175 0.015826433	0.44898902 0.199550676	7.01386E-08 1.37621E-08	0.001000047 0.000137621 6.88106E-05	5.86266E-05 0.000137621	1.29364E-05 3.70917E-09 8.25727E-06 3.16529E-10		0.04369472	4.9131E-09	1.6515E-05	2.89E-06	6.193E-07	5.40851E-10 6.88106E-06	5.77321E-05 2.05056E-05		8 2.1331E-13 1 7.5898E-10		1.039E-10	4.9062E-12 1.743E-08	3.80522E-16
0.816 0.234	3.76 0.882	0.000254	0.1838	0.040	2 0.208 0 0.0000648	0.236	3.26 0.8064	0.0000069	0.000588 0.000186	0.0000704 0.00005772	0.0000418 3.94E-08 0.000010032 3.828E-09	0.0121	0.172	5.2E-10	0.0000202	0.00000238	1.006E-06		0.0222	0.160	8 2.08E-07	0.000052	0.00000758 6.432E-09	0.00000362	1.66E-09 2.3616E-14
0.3648 0.3371236	5.0304 8.33085	0.00165495	0.115005	5 25755E.O	0.000072556	0.552	5.0208 8.32711	7.9872E-06	0.0020448 1.13505E-06	0.0001008 0.000100279	0.0014976 4.176E-01 0.001180905 4.41187E-01	0.0315427	0.346944	1.8912E-06	0.00021943	4.3102E-05	0.00011755	3.91872E-05	2.8608E-06	3.9187E-05	5 1.0579E-10 5 2.0851E-11	1.2578E-05	5.1331E-08	2.4326E-09 1.6176E-08	
0.3371130	0	0.0010343	0.115003	0.337332.0	0.000071330	0.155305	0.51711	0	0	0.000100179	0 0	0.007737	0.11500	0 0	0.1510	0	0	(0	7.11702-0	0 0	0	0	0	0
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0.469510861 0.430787499	6.295713816 1.933585834	0.003124991 0.010852319	0.062347384	0.001455789 0.001305584	9 0.015243859 4 0.006775814	0.478657176	5.685959451 1.779339671	4.07011E-07 4.74307E-07	0.001521337 0.000506809	0.000314023 5.21683E-05	7.91156E-05 7.71339E-10 4.22524E-05 1.37169E-09	0.00449693	0.0621949	3.6128E-10 1.245E-09	1.8902E-05 9.1446E-06	4.6951E-06 2.0603E-06	-6.9055E-06 -1.2946E-07	1.50914E-15 2.52303E-16	0.003582307 0.022971661	0.0148780	1 3.0945E-10 6 4.0214E-10	6.0823E-06 3.0078E-06	1.0061E-06 6.6656E-07	-2.0274E-07 2.0107E-07	1.20426E-15 3.14552E-16
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0.051307363 0.039930103	0.230292637 0.261736952	0.001292526 6.12749E-08	0.019223858 0.000507242	0.00015549	7 0.000807008 1 0.030872787	0.024538304 0.019153464	0.211921715 0.257679015	5.64906E-08 2.50375E-06	6.03616E-05 0.000249563	6.21331E-06 1.2539E-05	5.03232E-06 1.6337E-10 0.00011768 1.04289E-09	0.00146897	0.16155866	8.8057E-07	0.00010149	2.029E-05	4.0579E-06	3.00496E-17 1.91129E-06	7.71008E-05	0.0010794	1 2.8487E-09	3.3884E-07	7.9389E-08 1.3838E-06	6.5333E-08	5.07242E-12
0.406241192 0.043461696	0.308472657 0.200264678	1.35285E-05	0.009789534	0.00969668	2 0.003434334 8 0.011078472	-0.004193339 0.012569804	0.27670507 0.173633737	5.90608E-07 3.67507E-07	4.00237E-05 3.1318E-05	8.35902E-06 3.74964E-06	7.89653E-06 2.17987E-14 2.22635E-06 2.09852E-09	0.00064553	0.00920365	2.7696E-11	1.0759E-06	1.2676E-07	5.3581E-08	1.64414E-07	0.001182414	0.0085645	1.1078E-08	2.7696E-06	1.7512E-07 4.0373E-07	1.9281E-07	8.84147E-11
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0 3.9516	0 32.6067	0.0262	1.0141	0.062	0 0 8 2.5419	2.6723	30.9550	0.0000	0.0069	0.0013	0.0032 0.000	0.100	2.472	0.0000	0.0012	0.0002	0.0002	0.0001	0.0556	0.198	0 0.0000	0.0001	0.0000	0.0000	0.0000
1.091505834 1.586161297	4.899214166 21.26898102	0.027497014 0.010557242	0.408965741 0.210629861	0.00330801	6 0.017168186 3 0.051498743	0.522024529 1.617060543	4.508393663 19.20903129	1.20177E-06 1.37502E-06	0.001284125 0.005139575	0.000132181 0.001060874	0.000107057 3.47551E-09 0.000267278 2.60584E-09	0.03042816	0.4075699	3.1545E-09	2.317E-09	5.2202E-06	-3.2801E-07	6.39271E-16 5.09838E-19	0.058204339 0.012102209	0.01549324	4 1.0189E-09 7 1.0454E-09	7.621E-06 2.0548E-05	1.6889E-06 3.3989E-06	5.0946E-07 -6.8493E-07	7.96995E-16 4.0684E-15
0.893391244 0.109627477	4.272563731 1.285287667	0.005164123 0.000494341	0.089664808	0.01942907	1 0.095588181 9 0.087527509	0.352959767	4.032371963 1.116630009	7.78995E-08 1.75346E-08	0.002066056 0.000129401	0.000283141 9.01446E-07	0.00012205 1.13134E-1 0.000179998 3.7221E-0	0.00659509	0.0887488	5.4226E-10	9.7542E-06	2.1251E-06	-2.1882E-06	1.63758E-18 3.05329E-10	0.045066489	0.08970552	2 1.6433E-09	4.5168E-05	6.4404E-06 8.2875E-08	2.7052E-06 2.6084E-05	2.2635E-14 1.92793E-10
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0.131345542 4.3255	0.136960421 34.1953	0.0438	0.9007	0.005900704	0.002089889 0.2584	0.000705607 3.5670			3.75857E-05 0.0091	7.43419E-06 0.0015	0.0008 0.0000	0.672	0.9034	0.0000	0.0001	0.0000	0.0000		0.9434		5.012E-11 9 0.0000	4.6996E-07	1.0657E-07	2.7497E-08	5.39304E-19
0.425649581	1.961326499 0	0.000132494	0.095875482	0.02096950	0.108498913	0.123104536	1.700511805	3.59924E-06 0	0.000306718 0	3.67227E-05 0	2.18041E-05 2.05522E-08) (0		0	0	1.16845E-09		0.0838780	1 1.085E-07	2.7125E-05 0	3.954E-06 0	1.8883E-06 0	8.65905E-10 0
0.18778658 0.320520394	2.931557161 1.53286012	0.000994226 0.001852723	0.014396971 0.032168884	0.02702040	2 0.527888941 4 0.034294002	0.036305405	1.446686945	0 2.79479E-08	7.20892E-05 0.000741235	1.95089E-06 0.000101582	7.32368E-05 4.31909E-10 4.37877E-05 4.0589E-13	0.00236611	0.03184026	1.9455E-10	3.4995E-06	7.6241E-07	-7.8505E-07	1.07456E-16 5.87511E-19	0.016168425				2.3106E-06	3.9435E-05 9.7054E-07	1.64835E-09 8.12073E-15
0.190290401 0.307839951	2.624004473 1.308319791	0.000584326	0.012570131		0.002556782	0.287939422 0.080095395	2.618996831 1.282666461	1.143E-07	0.001066628 0.001094542	5.25802E-05 9.17819E-05	0.000781192 2.17832E-00 5.75775E-05 6.01428E-10	0.0164536 0.0009235	0.18097619	9.8651E-07 7.867E-11	0.00011446 6.7269E-07	2.2483E-05 1.3397E-07	6.1318E-05 -8.6651E-09	2.04412E-05 6.61286E-17	1.49228E-06 0.00215488	0.00245987	5 5.5184E-11 7 1.81E-11	9.1782E-07	2.6776E-08 1.5392E-07	1.2689E-09 -2.6423E-08	1.5563E-16
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0.067818851	0.909389143 0	0.000451392	0.009005815	0.00021028	0.002201911	0.069139998	0.821312713	0	0.000219751	4.53594E-05 0	1.14279E-05 1.11417E-10)	0	5.2185E-11 0	2.7304E-06	6.7819E-07 0	-9.9747E-07	2.17989E-16	0.000517445	0.0021490	6 4.4699E-11	8.7856E-07 0	1.4533E-07 0	-2.9285E-08 0	1.73951E-16 0
0.047343167	0.634828836		0.006286804		0 0	0.048265437	0	4.1041E-08 0	0.000153404	3.16646E-05 0	0 0		0	0		0	0	1.52174E-16			3 3.1203E-11	0	0	-2.0444E-08 0	0
0.146947647 1.9091	15.8023	0.0059	0.014748334	0.077	1 0.015722628 3 1.0533	0.058055871	10.2994		0.0045	0.0004	0.0014 0.0000	0.037	0.427	0.0000	0.0002	0.0000	0.0001	2.69354E-19	0.0716	0.1370	0.0000	0.0001	1.0593E-06 0.0000	0.0001	0.0000
15.2743	121.7794	0.1004		0.113	6 2.8094	11.5813	115.5799	0.0008	0.0332	0.0060	0.0119 0.0000	0.819	4.046	0.0000	0.0016	0.0004	0.0001	0.0001	0.9998	0.445	5 0.0000	0.0002	0.0000	0.0000	



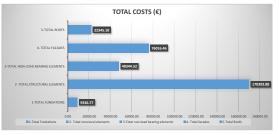


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BIM-LCA Construction Project

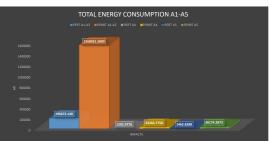
Graphical Results

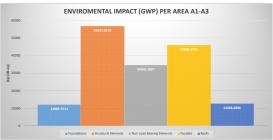
Impacts	Enviromental Impacts									
Eutrophication potential (EP)	Abiotic depletion potential for fossil resources (ADPF)									
Photochemical Ozone Creation Potential (POCP)	Abiotic depletion potential for non fossil resources (ADPE)									
Ozone Depletion Potential (ODP)	Acidification potential (AP)									
	Global warming potential (GWP)									

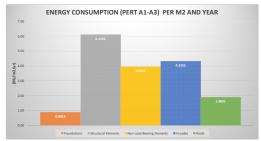


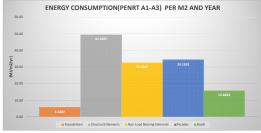


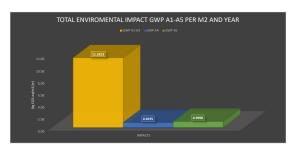














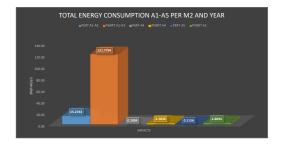


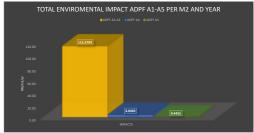
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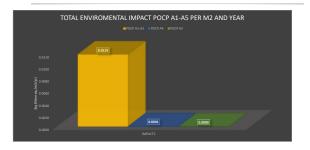
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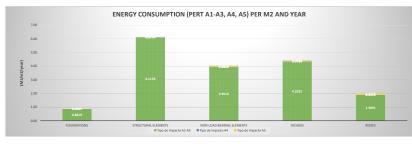
Graphical Results

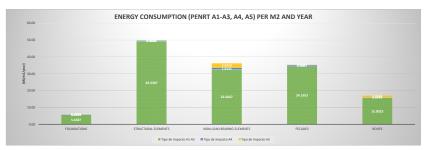
Impacts	Enviromenta							
Eutrophication potential (EP)	Abiotic depletion potential for fossil resources (ADPF							
Photochemical Ozone Creation Potential (POCP)	Abiotic depletion potential for non fossil resources (ADPE)							
Ozone Depletion Potential (ODP)	Acidification potential (AP)							
	Global warming potential (GWP)							

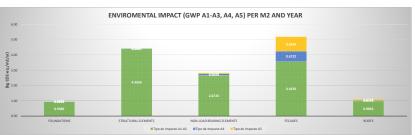


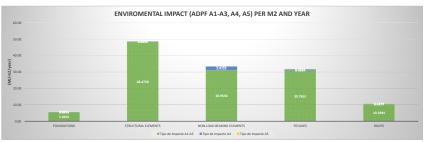














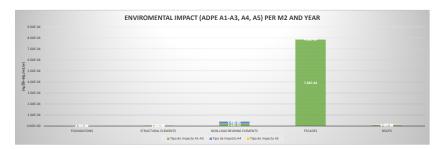


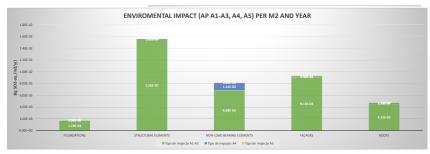
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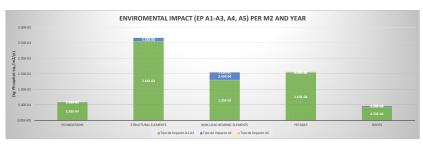
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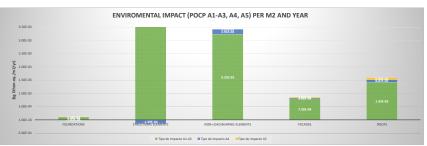
Graphical Results

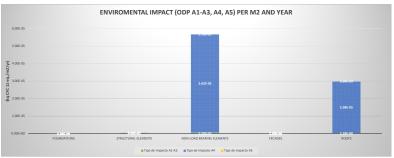
Enviromental	Impacts
Abiotic depletion potential for fossil resources (ADPF)	Eutrophication potential (EP)
Abiotic depletion potential for non fossil resources (ADPE)	Photochemical Ozone Creation Potential (POCP)
Acidification potential (AP)	Ozone Depletion Potential (ODP)
Global warming potential (GWP)	













Spanish case study report



Annex 3. LCA with Excel app of a single-family house in timber





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BIM-LCA Construction Project

Inputs

1- Data of the building

Project Name:	Single-family house in timber (structure, facades and partition								
Building type	Residential								
Address	Street 1								
IndoorFloor area	257.52	m2							
Analysed service life	50	year							
City	Cartagena								
Country	Spain								

Excel Legend

10.80	User input (or parameter readed from IFC file)
23.87	Parameter calculated by app and not editable

2- Areas and volumes in elements of the building - User inputs

Footing volume (m3):	24.83
Volume of Foundation beams (m3):	2.98
Footing plant area (m2):	59.43
Foundation beam plant area (m2):	11.56
Volume of piles (m3):	0.00
Volumen of pile caps (m3):	0.00
Pile cap plant area (m2):	0.00
Foundation slab volume (m3):	0.00
Foundation slab plant area (m2):	0.00
Column volume (m3):	5.76
beam volume (m3):	2.80
Retaining wall volume (m3):	0.00
Area of slabs (including beams) (m2):	351.13
Partition area (m2):	221.66
Facade area (m2):	374.42
Exterior party wall (m2):	0.00
Stairs (m2):	10.80
Ramps (m2):	0.00
Steel volume in stiffening elements (m3):	0.00
Concrete volume in stiffening walls (m3):	0.00
. ,	
Interior door surface (m2):	7.64
Main door surface (m2):	4.00
Exterior glazed door surface (m2):	4.00
Windows surface (m2):	21.54
Flat roof area (m2):	134.33
Inclinated roof area (horizontal projection) (m2):	86.22
roof inclination angle (deg):	20.00
parapets (m2):	26.40
Railing (m):	5.50

Note: $\mbox{IMPORTANT}$ - $\mbox{If any of the previus element is missing in the project enter 0$

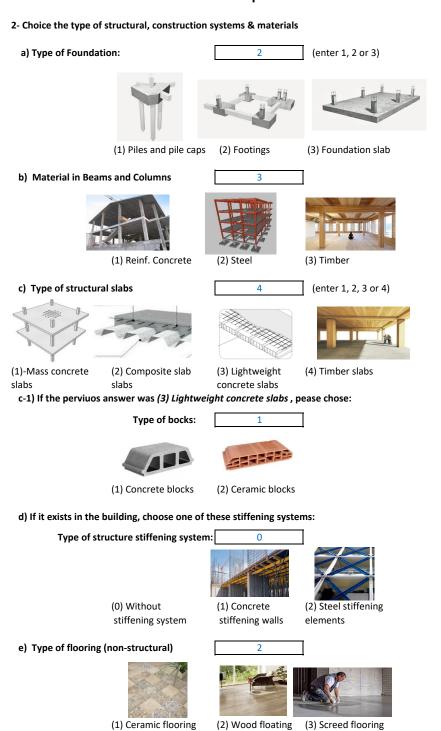
Floor Areas (m2)	Indoor	outdoor	total
Ground floor:	116.52	80.37	196.89
Intermediate floors:	141		
roof type 1:		128.48	
roof tape 2:		5.85	



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BIM-LCA Construction Project

Inputs



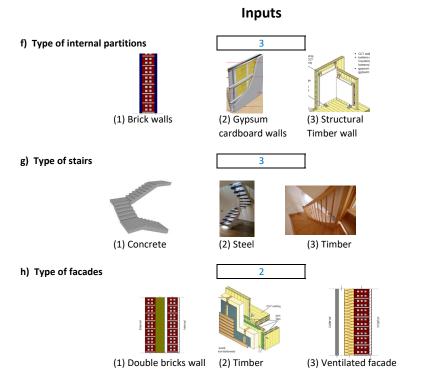
floor



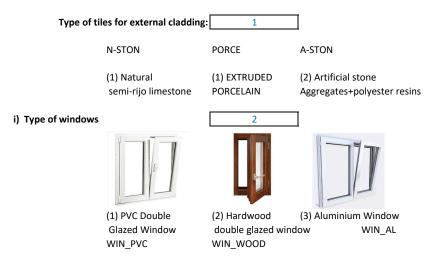


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BIM-LCA Construction Project



h-1) If the perviuos answer was (3) $Ventilated\ facade$, pease chose:



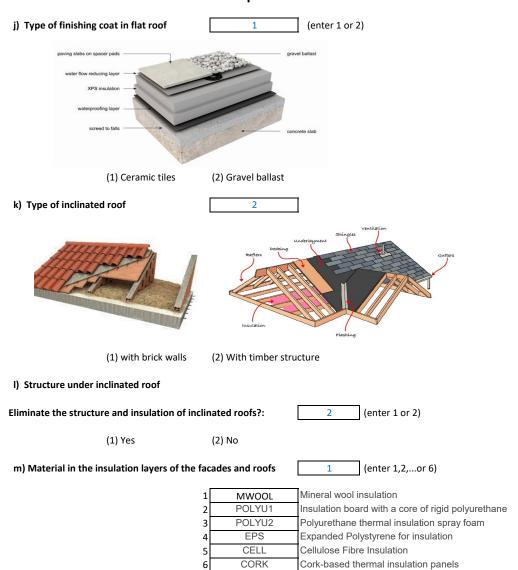




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BIM-LCA Construction Project

Inputs







Erasmus+ Project 2022-1-NO01-KA220-HED-000087893

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Building Material Quantities

Excel Legend

0.80 User input (or parameter readed from IFC file)

Project name: Single-family house in timber (structure, facades and partitions)

23.87 Parameter calculated by app and not editable

30 Parameter loaded by default by app and editable by user

264.62 kg Quantity calculated by the program based on the user inputs and parameters of each material. Not user-editable

MWOOL A type of material or construction element from which one material can be chosen from several alternatives. See note 3, 4 and 5.

									Auxiliary quantiites			1			
						nr.	thickness	density		arameter 1	-	Parameter 2	Mater	ial	7
Building part	Building elen	nent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula
			1.A.1	Concrete	CON1	0			0.00	vol (m3)	ı		0.0	0 m3	Q=nr*Par1
		1.A - Piles	1.A.1	Rebar	REB	0				Kg Rebar/m3 Con				0 kg	Q=nr*Par1*Qcon
			1.A.2 1.B.1.1	Concrete	CON1	0			0.00	vol (m3)	<u> </u>			0 m3	Q=nr*Par1
		1.B.1-Pile Caps	1.B.1.1	Rebar	REB	0			0.00	Kg Rebar/m3 Con	<u> </u>			0 kg	Q=Par1*Qcon
		1.b.1-riie Caps	1.B.1.2	Blinding concrete	CON0	0	0.10		0.00	pile cap area (m2)	1			0 m3	Q=par1*Qcon Q=nr*e*Par1
			1.B.2.1	Concrete	CON1	1	0.10		24.83	footing vol (m3)				3 m3	Q=nr*Par1
		1.B.2-Footings	1.B.2.2	Rebar	REB	1			63.3	Kg Rebar/m3 Con	1		1571.7		Q=Par1*Qcon
		1.B.2-FOOthigs	1.B.2.2	Blinding concrete	CON0	1	0.10		59.43	Footing area (m2)	1			4 m3	Q=rail Qcoil Q=nr*e*Par1
- Foundations	1.B-Basement		1.B.3.1	Concrete	CON1	1	0.10		2.98	beam vol (m3)				8 m3	Q=nr*Par1
		1.B.3-Foundation beams	1.B.3.2	Rebar	REB	1			88.8	Kg Rebar/m3 Con	<u> </u>		264.6		Q=nr*Par1*Qcon
		1.B.3-Foundation beams	1.B.3.3	Blinding concrete	CON0	1	0.10		11.56	Beam area (m2)	1			2 кg 6 m3	Q=nr*e*Par1
			1.B.4.1		CON1	1	0.10		0.00	slab vol (m3)				0 m3	Q=nr*Par1
		1.B.4-Foundation slab	1.B.4.1	Concrete Rebar	REB	0			0.00	Kg Rebar/m3 Con	ļ			0 kg	Q=III Pari
		1.B.4-FOURIDATION SIDD	1.B.4.2		CON0	0	0.10		0.00	Slab area (m2)	ļ			0 m3	O=e*Par1
		I	1.B.4.3	Blinding concrete Concrete	CON0 CON3	- 0	0.10		0.00	,	 			0 m3	Q=e*Par1 Q=nr*Par1
	1	.C - Retaining walls	1.C.1	Rebar	RFB	1			0.00	Kg Rebar/m3 Con	ł			0 kg	Q=nr*Par1 Q=Par1*Qcon
			1.C.2	neuai	KEB	1			90	vR vengi/ilip cou	 		0.0	o kg	Q-rall'QCOII
		T	2 4 1 1	Gulam Timber	GLT	- 1			2.00	beam volume (m3)			2.0	0 m3	Q=nr*Par1
				Steel in timber connec. (galvanized)	ST-G	1			2.80	kg Steel/m3 timber	<u> </u>		22.4		Q=nr*Par1*Q CLT
		2.A.1-Beams (Timber, steel or				1		7850	2.00			4			
		concrete)			ST	0		/850	2.80	beam volume (m3)	1.1	due to connections		0 kg	Q=nr*Par1*d*Par2
				CON3 REB	U			2.80	beam volume (m3)				0 m3	Q=nr*Par1	
			2.A.1.5	Rebar		U			137.6	Kg Rebar/m3 Con				0 kg	Q=Par1*Q Con
			2.A.2.1	Gulam Timber	GLT	1			5.76	column vol (m3)				6 m3	Q=nr*Par1
		2.A.2-Columns (Timber, steel or	2.A.2.2	Steel in timber connect. (galvanized)	ST-G	1			8	kg Steel/m3 timber			46.0		Q=nr*Par1*Q CLT
		concrete	2.A.2.3	Structural steel	ST	0		7850	5.76	column vol (m3)	1.1	due to connections		0 kg	Q=nr*Par1*d*Par2
			2.A.2.4	Concrete	CON3	0			5.76	column vol (m3)				0 m3	Q=nr*Par1
			2.A.2.5	Rebar	REB	0			202.3	Kg Rebar/m3 Con				0 kg	
	2.A-Frames	2.A.3-Mass concrete slabs or	2.A.3.1	Concrete	CON2	0	0.25		339.93	Slab area (m2)				0 m3	Q=nr*e*Par1
Load bearing			2.A.3.2	Rebar	REB	0			90	Kg Rebar/m3 Con				0 kg	
structural			2.A.4.1	Concrete	CON2	0	0.16		351.13	Slab area (m2)				0 m3	Q=nr*e*Par1
frame		2.A.4-Composite slabs or	2.A.4.2	Rebar	REB	0			25	Kg Rebar/m3 Con			0.0		Q=Par1*Q Con
			2.A.4.3	Galvanized steel plates	ST-G	0	0.001	7850	351.13	Slab area (m2)		m2 plates/m2 slab		0 kg	Q=nr*e*Par1*Par2*d
			2.A.5.1	Concrete blocks or	CONB	0	0.25		339.93	Slab area (m2)	0.820	m3 block/m2 slab		0 m3	Q=nr*e*Par1*Par2
			2.A.5.2	Ceramic blocks	CERB	0	0.25	320	339.93	Slab area (m2)	0.820	m3 block/m2 slab	0.0		Q=nr*e*Par1*Par2*d
		2.A.5-Lightweight concrete slabs or	2.A.5.3	Precast concrete beams	CONBEAM	0		2500	339.93	Slab area (m2)	0.038	m2 beam cross sec		0 kg	Q=nr*(Par1/0.8)*Par2*d
			2.A.5.4	Concrete (cast in place)	CON2	0	0.05		339.93	Slab area (m2)				0 m3	Q=nr*Par1*e
			2.A.5.5	Rebar	REB	0			25	Kg Rebar/m3 Con				0 kg	Q=Par1*Q Con
		2.A.6-Mass timber structural floors	2.A.6.1	Cross Laminated Timber (CLT) panels	CLT	1	0.16		351.13	foor area (m2)				8 m3	Q=nr*Par1*e
			2.A.6.2	Steel in timber connect. (galvanized)	ST-G	1			4	kg Steel/m3 CLT			224.7		Q=nr*Par1*Q CLT
			2.B.1	Structural steel	ST	0		7850	0.00	steel volume (m3)	1.1	due to connections		0 kg	Q=nr*Par1*d*Par2
	2.B-Concrete stiffen	ing walls/steel in stiffening elements	2.B.2	Concrete	CON3	0			0.00	concrete vol (m3)				0 m3	Q=nr*Par1
			2.B.3	rebar	REB	0			140	Kg Rebar/m3 Con			0.0	0 kg	Q=Par1*Qcon
											<u> </u>				
		3.A.1-Ground floor slab (non-	3.A.1.1	Concrete	CON1	1	0.15			Slab area (m2)	ļ			3 m3	Q=nr*Par1*e
		structural)	3.A.1.2	rebar	REB	1				Kg Rebar/m3 Con			886.0		Q=Par1*Qcon
		Str detailer,		Graded aggregate	AGG	1	0.25	1800	196.89	Slab area (m2)]		88600.5		Q=nr*Par1*e*d
			3.A.2.1	Ceramic tiles	CEFT	0			257.52	Floor area (m2)				0 m2	Q=nr*Par1
		3.A.2-Flooring Type I: Ceramic	3.A.2.2	Tile bond coat (adhesive)	ADH	0			257.52	Floor area (m2)	6.00	kg/m2	1545.1	2 kg	Q=nr*Par1*Par2
	3.A-Horizontal	flooring or	3.A.2.3	Mortar bed	MOR	0	0.03	1600	257.52	Floor area (m2)			0.0	0 kg	Q=nr*e*Par1*d
	elements		3.A.2.4	Cleavage membrane	POLY	0	0.005		257.52	Floor area (m2)	Ì		0.0	0 m3	Q=nr*e*Par1
	elements		3.A.3.1	Laminated wood flooring	WFL	1			257.52	Floor area (m2)			257.5	2 m2	Q=nr*Par1
		3.A.3-Flooring Type II: Wood floating	3.A.3.2	Chipboard flooring (plywood)	PLYW	1	0.03		257.52	Floor area (m2)			7.7	3 m3	Q=nr*Par1*e





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Building Material Quantities

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Jser input (or parameter readed from IFC file)

Project name: Single-family house in timber (structure, facades and partitions)

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					-				Auxiliary quantiites					-
					nr.	thickness	density		arameter 1		Parameter 2	Materia		
ilding part	Building elen	nent types / building elements	Ref. Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula
	Ì	floor or	3.A.3.3 Insulation layer	MW00L 4	1	0.04		257.52	Floor area (m2)			10.30	m3	Q=nr*Par1*e
			3.A.3.4 Timber battens	GLT	1			257.52	Floor area (m2)	0.045	m3 timb/m2 floor	11.59	m3	Q=nr*Par1*Par2
		3.A.4-Flooring Type III: Screed	3.A.4.1 Wet screed (cement mostar	MOR	0	0.05		257.52	Floor area (m2)				m4	Q=nr*Par1*e
		flooring	3.A.4.2 Sound insulation layer	POLY	0	0.005		257.52	Floor area (m2)			0.00	m3	Q=nr*e*Par1
		3.B.1-Internal partition Type I: Brick	3.B.1.1 Brick wall	CERB	0	0.110	805	221.66	Wall area (m2)			0.00	kg	Q=nr*e*Par1*d
		walls	3.B.1.2 Finishing coat (plastering me	rtars) PLASM	0	0.02	1600	221.66	Wall area (m2)			0.00	kg	Q=nr*e*Par1*d
			3.B.2.1 Gypsum cardboard or fiberb	oard GYP_F	0			221.66	Wall area (m2)			0.00	m2	Q=nr*Par1
		3.B.2-Internal partition Type II:	3.B.2.2 Galvanized steel (U, C) chan	nel studs ST-GC	0			221.66	Wall area (m2)	3:040	kg ST /m2 wall	0.00	kg	Q=nr*Par1*Par2
		Gypsum cardboard walls	3.B.2.3 Insulation layer	MWOOL	0	0.05		221.66	Wall area (m2)			0.00	m3	Q=nr*Par1
			3.B.3.1 Cross Laminated Timber (CL) panels CLT	1	0.100		221.66	Wall area (m2)			22.17	m3	Q=nr*Par1*e
		3 B 3 Internal continue Toron III.	3.B.3.2 Steel in timber connect. (gal	ranized) ST-G	1			4	kg Steel/m3 CLT			88.66	kg	Q=nr*Par1*Q CLT
- Non-load	3.B-Vertical	3.B.3-Internal partition Type III: Structural Timber wall	3.B.3.3 Insulation layer	MWOOL	1	0.050		221.66	Wall area (m2)			11.08	m3	Q=nr*Par1*e
bearing	elements	Structural filliber wall	3.B.3.4 Timber battens	GLT	1			221.66	Wall area (m2)	0.045	m3 timb/m2 wall	9.97	m3	Q=nr*Par1*Par2
elements	elements		3.B.3.5 Gypsum plasterboard	GYP_P	1			221.66	Wall area (m2)	2	number or boards	443.32	m2	Q=nr*Par1*Par2
			3.B.4.1 Concrete blocks	CONB	4-1	0.20		0.00	Wall area (m2)			0.00	m3	Q=nr*Par1*e
		3.B.4-External party walls	3.B.4.2 Insulation layer	MWOOL	1	0.05		0.00	Wall area (m2)			0.00	m3	Q=nr*Par1*e
			3.B.4.3 Finishing coat (plastering me	rtars) PLASM	1	0.04	1600	0.00	Wall area (m2)			0.00	kg	Q=nr*e*Par1*d
		3.B.5-Parapets	3.B.5.1 Brick wall	CERB	1	0.110	805	26.40	Wall area (m2)			2337.72	kg	Q=nr*e*Par1*d
			3.B.5.2 Finishing coat (plastering me		1	0.02	1600	26.40	Wall area (m2)			844.80	kg	Q=nr*e*Par1*d
		3.B.6-Railings	3.B.6 Railings	ST-SL	1			5.50	long (m)	9.50	kg ST/m railing	52.25	kg	Q=nr*Par1*Par2
		3.B.7-Interior doors	3.B.7 Interior doors	WDOOR	1			7.64	door (m2)			7.64		Q=nr*Par1
			3.C.1.1 Ceramic tiles	CEFT	1			10.80	stairs area (m2)	1.27	m2 title/m2 stairs	13.72	m2	Q=nr*Par1*Par2
			3.C.1.2 Tile bond coat (adhesive)	ADH	1			6.00	kg/m2 title			82.30	kg	Q=nr*Par1*m2 title
			3.C.1.3 Mostar	MOR	1		1600	10.80	stairs area (m2)	0.0715	m3 mor/m2 stairs		kg	Q=nr*Par1*Par2*d
		3.C.1-Stairs	3.C.1.4 Concrete	CON3	0	0.20		10.80	stairs area (m2)			0.00	m3	Q=nr*Par1*e
		0.0.2 0.0	3.C.1.5 Rebar	REB	0			137.6	Kg Rebar/m3 Con			0.00	kg	Q=nr*Par1*Qcon
	3.C-Inclined		3.C.1.6 Structural steel	ST	0			10.80	stairs area (m2)	21.33	kg ST/m2 Stairs	0.00	kg	Q=nr*Par1*Par2
	elements		3.C.1.7 Cross Laminated Timber (CL		1	0.160		10.80	stairs area (m2)			1.73	m3	Q=nr*Par1*e
			3.C.1.8 Steel in timber connect. (gal		0)		4.00	kg Steel/m3 CLT			0.00	kg	Q=nr*Par1*Q CLT
			3.C.2.1 Ceramic tiles	CEFT	1			0.00	ramp area (m2)			0.00	m2	Q=nr*Par1
		2.6.2.0	3.C.2.2 Tile bond coat (adhesive) 3.C.2.3 Mostar	ADH MOR	1	0.03	1600	0.00	ramp area (m2) ramp area (m2)	6.00	kg/m2 title	0.00	kg	Q=nr*Par1*Par2 Q=nr*e*Par1*d
		3.C.2-Ramps		CON3	1	0.03	1600	0.00	,			0.00	ŭ	Q=nr*e*Par1*d Q=nr*e*Par1
			3.C.2.4 Concrete 3.C.2.5 Rebar	REB	1	0.10		0.00	ramp area (m2) Kg Rebar/m3 Con			0.00	ms l.a	Q=Par1*Qcon
	l		3.C.2.5 Rebai	KEB	1			30	ng Rebai/ilis Coli			0.00	кg	Q=Pari Qcon
			4.A.1.1 External finish	PLASM	0	0.03	1600	374.42	Wall area (m2)			0.00	ka	Q=nr*e*Par1*d
		4.A.1-Facade type I:	4.A.1.2 Brick walls	CERB	0	0.03	805	374.42	Wall area (m2)				kg	Q=nr*e*Par1*d
		with bricks or,	4.A.1.3 Insulation layer	MWOOL	0	0.07	152	374.42	Wall area (m2)			0.00	0	Q=nr*Par1*e
		with britis or,	4.A.1.4 Interior finish	GYP P	0	0.07	132	374.42	Wall area (m2)				m2	Q=nr*Par1
			4.A.2.1 Gypsum plasterboard	GYP P	1			374.42	Wall area (m2)			374.42		Q=nr*Par1
			4.A.2.2 Cross Laminated Timber (CL		1	0.100		374.42	Wall area (m2)	1		_	m3	Q=nr*Par1*e
	4.A-External wall	4.A.2-Facade type II: Timber panels	3.B.3.2 Steel in timber connect (gal		1	0.100		374.42 4	kg Steel/m3 CLT	1			kg	Q=nr*Par1*Q CLT
	systems	or,	4.A.2.3 Insulation layer	MWOOL	1	0.05		374.42	Wall area (m2)	1		18.72	Ū	Q=nr*Par1*e
- Facades	-,	,	4.A.2.4 Timber battens	GLT	1	0.03		374.42	Wall area (m2)	0.045	m3 timb/m2 wall		m3	Q=nr*Par1*Par2
			4.A.2.5 External wooden cladding	WCLA	1	1		374.42	Wall area (m2)	0.043	Gillo/iliz wdli	374.42		Q=nr*Par1
			4.A.3.1 Gypsum plasterboard	GYP P	0			374.42	Wall area (m2)			0.00		Q=nr*Par1
		4.A.3-Facade type III:	4.A.3.2 Brick wall	CERB	0	0.12	1000	374.42	Wall area (m2)				kg	Q=nr*e*Par1*d
		Ventilated facade	4.A.3.3 Insulation layer	MWOOL	0	0.05		374.42	Wall area (m2)			0.00		Q=nr*Par1*e
		Territorea racade	4.A.3.4 Tiles for external cladding	N-STON 4	n	0.03	2750	374.42	Wall area (m2)			0.00	kg	Q=nr*Par1*e*d
		4.B.1-Windows	4.B.1 Windows	WIN WOO	1	0.03	2730		Surface (m2)	1		21.54	0	Q=nr*Par1
	4.B-Facade openings	4.B.1-Williauws	4.B.2.1 Exterior glazed doors	DOOR GL	1			4.00	Surface (m2)	1		4.00		Q=nr*Par2
	+.p-racaue openings	4.B.2-Exterior doors	4.B.2.1 Exterior glazed doors 4.B.2.2 Exterior front doors	DOOR_GL DOOR W	1	1	 	4.00	Surface (m2)				m3 m3	Q=nr*Par3
	l		T.D.Z.Z EXCEIDI ITOTIL GOOTS	DOOK_W	1	1		4.00	Juliace (IIIZ)		l .	4.00	****3	Q-111 F813





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						nr.	thickness	density	P	arameter 1	F	Parameter 2	Materia	al	Ī
Building part	Building eleme	ent types / building elements	Ref.	Type of Material	Mat Code	1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula
			5.A.1.1	Ceramic tiles or	CEFT	- 1		2300	134.33	roof area (m2)			134.33	m2	Q=nr*Par1
		5.A.1-Finishing coat		Gravel ballast	GRAV	0	0.15			roof area (m2)			0.00		Q=nr*Par1*e*d
	5.A-Roof Type I: Flat roof or	5.A.2-Waterproofing layer	5.A.2	Waterproofing layer	WP	1			134.33	roof area (m2)			134.33	m2	Q=nr*Par1
	roor or	5.A.3-Insulation layer	5.A.3	Insulation layer	MWOOL	1	0.07		134.33	Wall area (m2)			9.40	m3	Q=nr*Par1*e
		5.A.4-Screed to falls	5.A.4	Cement mostar	MOR	1	0.03	1600	134.33	Wall area (m2)			6447.84	kg	Q=nr*e*Par1*d
		5.B.1-Roof tiles	5.B.1	Roof tiles	RTIL	1			86.22	roof tiles area (m2)	40	kg/m2	3670.14	kg	Q=nr*Par1*Par2/cos(Par3)
5 - Roof		5.B.2-Mostar	5.B.2	Cement mostar	MOR	1	0.02	1600	86.22	roof tiles area (m2)			2936.11	kg	Q=nr*e*Par1*d/cos(Par3)
		5.B.3-Waterproofing layer	5.B.3	Waterproofing layer	WP	1			86.22	roof tiles area (m2)			91.75	m2	Q=nr*Par1/cos(Par3)
	5.B-Roof type II:	5.B.4-Decking	5.B.4	Ceramic deck or	CERB	0	0.03	1030	86.22	roof tiles area (m2)			0.00	kg	Q=nr*e*Par1*d/cos(Par3)
	Inclinated tiled roof	3.B.4-Decking	5.B.5	wooden deck (plywood)	PLYW	1	0.03		86.22	roof tiles area (m2)			2.59	m3	Q=nr*Par1*e
		5.B.5-Structure	5.B.6	Brick walls or	CERB	0	0.045	483	86.22	roof tiles area (m2)	0.80	wall separation (m)	0.00	kg	Q=nr*e*(Par1^0.5/Par2)*(tg(Pa
		5.B.5-Structure	5.B.7	Gulam timber beams	GLT	1	0.05		86.22	roof tiles area (m2)	0.60	wall separation (m)	1.25	m3	Q=nr*e*0.05*(((Par1^0.5)/cos(F
		5.B.6-Insulation layer	5.B.8	Insulation layer	MWOOL	1	0.05		86.22	roof tiles area (m2)			4.31	m3	Q=nr*Par1*e





and partitions)

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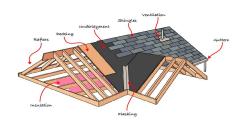
Building Material Quantities

	Excel Legend		
10.80	User input (or parameter readed from IFC file)	Project name:	Single-family house in timber (structure, facades a
23.87	Parameter calculated by app and not editable		
30	Parameter loaded by default by app and editable by user		
264.62	kg Quantity calculated by the program based on the user inputs and parameters of each material. Not ι	user-editable	
MWOOL	A type of material or construction element from which one material can be chosen from several alterna	atives. See note 3, 4 ar	nd 5.

												_	
			г	r. thickness	density	P	arameter 1	F	arameter 2	Materi	al	1	
Building part	Building element types / building elements	Ref. Type of Material	Mat Code 1	/0 e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q)	Unit	Formula	



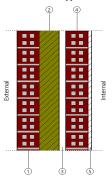
5.B - Tiled roof with timber structure



5.B - Tiled roof
Tiled roof with brick walls



4.A.1 - Facade Type I: Facade with double brick wall

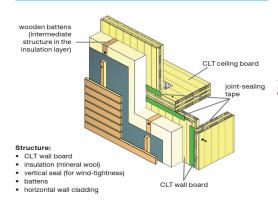


1 - M01 - 100 mm brick: 10.16 cm

- 2 104 89 mm batt insulation: 8.94 cm 3 - F04 - Wall air space resistance: 3.00 cm
- 4 M01 100 mm brick: 10.16 cm 5 - G01 - 16 mm gyp board: 1.59 cm Total thickness: 33.85 cm

Thermal description Heat transfer coefficient (U): 0.39 W/(m²·K) Thermal capacity: 51975.29 J/m².K

4.A.2 - Facade Type II: with Timber walls External wall Insulation with mineral wool



4.A.3 - Facade Type III: Ventilated facade

... 1 - Caliza muy dura [2200 < d < 2590]: 2.00 cm 2 - Cámara de aire: 5.00 cm ...

- 3 URSA TERRA Vento Plus P8792 80mm: 8.00 cm
- 4 1/2 pie LP métrico o catalán 40 mm< G < 60 mm; 12.00 cm
- 5 Enlucido de yeso 1000 < d < 1300: 2.00 cm

Espesor total: 29.00 cm

Caracterización térmica

Transmitancia térmica (U): 0.33 W/(m²·K) Capacidad térmica: 61992.71 J/m²-K





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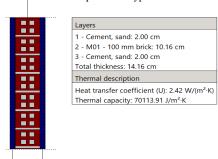
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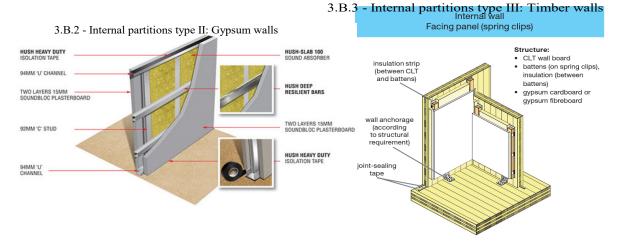
Building Material Quantities

	Excel Legend		
10.80	User input (or parameter readed from IFC file)	Project name: Single-family house in to	mber (structure, facades and partitions)
23.87	Parameter calculated by app and not editable		
	Parameter loaded by default by app and editable by user		
264.62	kg Quantity calculated by the program based on the user inputs	and parameters of each material. Not user-editable	
MWOOL	A type of material or construction element from which one mate	rial can be chosen from several alternatives. See note 3, 4 and 5.	
		Auxiliary quantiites	

											_
			nr.	thickness	density	P	arameter 1	Parameter 2		Material	
Building part	Building element types / building elements	Ref. Type of Material	Mat Code 1/0	e (m)	d (kg/m3)	Par. Value	Par. name (unit)	Par. Value	Par. name (unit)	Quantities (Q) Unit	Formula







3.A.2 - Flooring Type I: Ceramic flooring

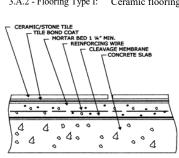
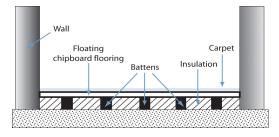
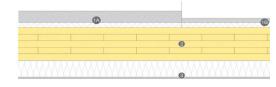


FIGURE F

3.A.3 - Flooring Type II: Wooden floating floor



3.A.4 - Flooring Type III:Screed flooring



- 1A. Wet screed (50-70 mm) with impact sound insulation (20-30 mm).
- 1B. Dry screed (25 mm) with impact sound insulation (20-30 mm).
- 2. CLT floor 220 mm (140 mm or thicker).
- 3. Mineral wool and suspended ceiling (~70 mm) with single layer gypsum board ceiling.





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BIM-LCA Construction Project

Description of Materials and Impact Data

Project name: Single-family house in timber (structure, facades and partitions)

		ı		-	1	1		
nr.	Building part	Type of Material	Mat Code	Material Name	Description	Quant. Studied in EPD	Unit	Cost €
1	Under foundation	Blinding concrete	CON0	Concrete C16/20	C16/20 ECOPact Prime concrete produced in the plant of Greenwich of Aggregate Industries for use as ready-mixed concrete of normal building construction and civil engineering.	1	m3	87.54
2	Structure	Concrete	CON1	Ready mixed concrete (C30/37, C35/45 SCC) - C30/37 (Foundation)	1m3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 206 DK NA. The SPD has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	118.28
3	Structure	Concrete	CON2	Ready mixed concrete (C30/37, C35/45 SCC) - C35/45 SCC (Floor)	Im3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 260 EN NA. The SP0 has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	244.28
4	Structure	Concrete	CON3	Ready mixed concrete (C30/37, C35/45 SCC) - C30/37 (Inner wall, Column and Beams)	1m3 factory concrete for use in exposure classes XC2, XC3, XC4, XF1 and XA1. This corresponds to concrete exposed to moderate environmental impact as defined in DS/EN 260 B NA. The SPD has been prepared on the basis of weighted average data from several manufacturers (average product, Industry level). The producers who provide data for the EPD cover approx. 80% of the total Danish production of factory concrete.	1	m3	408
5	Structure	Rebar	REB	STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT	STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT are used to reinforce concrete in building constructions	1000	kg	1800
6	Structure	Structural steel	ST	Hot rolled steel profiles	The hot rolled steel profiles are made of steel bloom produced in electric arc furnace (EAF) process using 100% of iron scrap. The profiles constitute intermediate products commonly used for construction of power poles, roads, steel structures, supporting structures for buildings, load-bearing structures of buildings, load-bearing structures of buildings such industrial halls and warehouses as well as in railway, mining and shipbuilding industry. A specific product technical data is available at manufacturer website: www.wostsa.pl.	1000	kg	2690
7	Structure / Pattitions /roof stucture	Gulam Timber / Timber battens	GLT	Glued laminated timber	This EPD is based on a declared unit of 1 m³ of glued laminated timber (moisture of 10% at a raw density of 464 kg/m³). The results refer to a representative average of Rubner glued laminated timber including standard beams as well as sophisticated 30 beam components. The LCA covers 100% of the Rubner group's production referring to its sites located at Rohrbach (Austria), Ober-Grafendorf (Austria), Brixen (Italy) and Calitri (Italy).		m3	1134
8	Composite steel-concrete slabs	Galvanized steel plates	ST-G	Galvanized Structural Steel	The declaration covers galvanized structural steel produced at the production site in Brande, Denmark. The declaration covers all life cycle modules from A1-A5, C1-C4 and D and is based on product-specific data provided by Give Steel A/S and background data from GaBI professional 2020 and Ecoinvent V3.6.	1000	kg	2500
9	Walls and Lightweight concrete slabs	Concrete o ceramic blocks	CONB	Concrete blocks	Autoclaved aerated concrete blocks with a dry density of 375 kg/m3 , also called Planstein PP 2/040	1	m3	261.76
10	Walls / Lightweight concrete slabs / Inclinated roof	Ceramic blocks / brick wall /ceramic deck	CERB	Red bricks or ceramic blocks	Bricks such as "RT Ultima 150" and "RT 550 Unika" are used to build walls, pillars and partitions.	1000	kg	420
11	Lightweight concrete slabs	Precast concrete beams	CONBEAM	Precast concrete elements of structures	Precast concrete structures: filigree slabs, shell/double walls, one/three layer walls,	1	kg	0.3
12					porcomes, scans, columns, beams and other precast concrete products		_	
12	Walls, slabs	Cross Laminated Timber (CLT)	CLT	Cross Laminated Timber - CLT	balconies, stairs, columns, beams and other precast concrete products Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3	1	m3	1355.7
13	Walls, slabs Under the Ground slab		CLT	Cross Laminated Timber - CLT Aggregates	Datconies, stairs, columns, beams and other precast concrete products Cross Laminated Timber - CLT - Gross Density: 424.0 kg/m^3 Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300	1 1000		1355.7
13		panels		Aggregates	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3 Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150,		m3	
13	Under the Ground slab	panels Graded aggregate	AGG	Aggregates Roof tiles (produced using natural gas) - Red	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m ³ Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using	1000	m3 kg	50
13 14 15 16	Under the Ground slab Roof Flooting, roof Roof, fooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive)	AGG RTIL CEFT ADH	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3 Aggregates from Uddevalia quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cerment and building limes	1000	m3 kg	50 3100
13 14 15 16	Under the Ground slab Roof Flooting, roof	panels Graded aggregate Roof tiles Ceramic tiles	AGG RTIL CEFT	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40®	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3 Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates	1000	m3 kg kg m2	50 3100 32.21
13 14 15 16	Under the Ground slab Roof Flooting, roof Roof, fooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive)	AGG RTIL CEFT ADH	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3 Aggregates from Uddevalia quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cerment and building limes	1000 1000 1 1	m3 kg kg m2	50 3100 32.21 0.6
13 14 15 16	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound	AGG RTIL CEFT ADH MOR POLY	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortars POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring	Cross Laminated Timber - CLT -Gross Density: 424.0 kg/m^3 Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 150/300 Macadam 150/300 Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against scratches damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against her after foam products in the form of rolls,	1000 1000 1 1 1	m3 kg kg m2 kg	50 3100 32.21 0.6
13 14 15 16 17 18	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insuclation layer Laminated wood flooring Chipboard flooring (plywood)	AGG RTIL CEFT ADH MOR POLY WFL	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cerment mortans POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring S-P-02010 SELEX® Plywood	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) Ceramic Floor Tiles 1 kg/m2 The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against scratches damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against heat loss. Polyethylene foam products in the form of rolls, sheets and bags. Dens-935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area. 30 of plywood products produced in Chile and installed across different countries across the world	1000 1000 1 1 1 1 0.001069519	m3 kg kg m2 kg m3	50 3100 32.21 0.6 0.25
13 14 15 16 17 18	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insudation layer Laminated wood flooring	AGG RTIL CEFT ADH MOR POLY	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adhesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortars POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against scratches damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against heat loss. Polyethylene foam products in the form of rolls, sheets and bags. Dens=935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area. 30 of plywood products produced in Chile and installed across different countries	1000 1000 1 1 1 0.001069519	m3 kg kg m2 kg m3 m4	50 3100 32.21 0.6 0.25
13 14 15 16 17 18 19 20 21	Under the Ground slab Roof Flooting, roof Roof, fooring Roof, flooring Flooring Flooring	panels Graded aggregate Roof tiles Ceramic tiles Tile bond coat (adhesive) Mortar bed / Wet screed Cleavage membrane / Sound insuclation layer Laminated wood flooring Chipboard flooring (plywood)	AGG RTIL CEFT ADH MOR POLY WFL	Aggregates Roof tiles (produced using natural gas) - Red tile Ceramic Floor Tiles Mineral adnesives H40® Gel, Bioflex®, H40® Sin Limites® & H40® Sem Limites Cement mortans POLYETHYLENE FOAM BASED PRODUCTS Multi-layered engineered wood flooring S-P-02010 SELEX® Plywood Mineral wool insulation (high bulk density	Aggregates from Uddevalla quarry - Glimmingen. Product variation: Sub base 0/150, Macadam 100/250, Macadam 150/300 The product is produced using certified green electricity and natural gas. The declared unit is in tonnes - the mass required for roofing must be calculated using information from producer (dens-40 kg/m2) The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Aggregates The International EPD System: Construction products / Cement and building limes Cement mortars (1600 kg/m3) This product is a flexible material made mostly of polyethylene. It is soft and resilient and gives the impression of being a soundproofing and cushioning material. Foamed polyethylene packaging protects against stractions damage during transport moisture, including sea moisture. Foam also has insulating properties, which means that it protects against heat loss. Polyethylene foam products in the form of rolls, sheets and bags. Dens-935 kg/m3 Multi-layered engineered wood floors are floor coverings in accordance with EN 13489 for private and commercial use in interior areas, which are either laid "floating" on screed or on other existing floors such as wood or tiles, in connection with suitable underlay materials, or are glued to the screed across the whole floor area. Mileral wool is the generic term for insulating materials, which consist mainly of amorphous fibres obtained from a silicate melt. The mineral wool is the generic term for insulating materials, which consist mainly of amorphous fibres obtained from a silicate melt.	1000 1000 1 1 1 0.001069519	m3 kg kg m2 kg m3 m3	50 3100 32.21 0.6 0.25 1.73





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BIM-LCA Construction Project

Description of Materials and Impact Data

Project name: Single-family house in timber (structure, facades and partitions)

_		1	1	. 2		4		6
nr.	Building part	Type of Material	Mat Code	Material Name	Description	Quant. Studied in EPD	Unit	Cost €
24	•	Insulation layer	EPS	EUROTHERM EPS INSULATION (white); 0,035-0,039 W/mK	Expanded polystyrene foam EPS, wall insulation, External Thermal Insulation Composite System (ETICS), pitched roof insulation and ceiling insulation. Gross density: 16.0 kg/m ³	1	m3	114.5
25	Flooring, partition, facades, roof	Insulation layer	CELL	Cellulose Fibre Insulation - Thermal insulation for use in pitched roofs, walls and floor spaces in dwellings.	One m ² of installed in-situ insulation, thickness 300mm with an R-value of 9.09 m ² K/W, at a density of 37 kg/m ³ . Reference service life of 50 years	0.3	m3	203.13
26	Flooring, partition, facades, roof	Insulation layer	CORK	S-P-02315 Cork-based thermal insulation panels: Slim and Lisoflex	Cork-based thermal insulation panels: grammage (kg/m^2): 3.3 grammage (kg/m^2): layer thickness (m): 0.02 layer thickness (m); thermal resistance (m2k/w): 0.465 Thermal Resistance (m2k/W).	0.02	m3	53.84
27	Partition walls	Finishing coat (plastering mortars) / Esternal finishing //Interior finishing	PLASM	Mineral pre-made mortar: rendering and plastering mortar – normal/finishing render or plaster with special properties	Rendering and plastering mortars produced in the factory for use as a base coat or finishing render/plaster on walls, ceilings, piers, and separating walls of structures which comply with the applicable standards or on similar backgrounds. 1600 kg/m3	1	kg	1.5
28	Partition walls	Gypsum cardboard or fiberboard	GYP_F	Gypsum fibreboards 12,5 mm	conversion factor to 1kg: 16.66 - gross density: 1175.0 kg/m/3 layer thickness: 0.0125 m grammage: 16.66 kg/m/2	1	m2	36.9
29	Partition walls, facades	Gypsum plasterboard	GYP_P	STANDARD GYPSUM PLASTERBOARD STD 12,5 mm	grammage (kg/m^2): 8.6 grammage (kg/m^2) thermal conductivity (w/m.k): 0.21 Thermal Conductivity (W/m.K) thermal resistance (m2k/w): 0.06 Thermal Resistance (m2k/W) layer thickness (m): 0.0125 layer thickness (m)	1	m2	36.9
30	Partition walls	Galvanized steel (U, C) channel studs	ST-GC	Cold-rolled steel profiles for framing and partition systems	The raw material is hot dipped sheet rolled galvanised steel, grade DX51D+Z steel for forming. The steel profile sections are manufactured in accordance with EN 14195:2014 Metal framing components for gypsum board systems.	1000	kg	2820
31	Railings	Railings	ST-SL	Welded and Pickled Stainless Steel Products	Products from Øglænd System AS that are made from stainless steel, and then machined, welded and pickled. Stainless steel forms a protective chromium oxide layer when the alloy is exposed to air, hindering direct contact between the alloy and the corrosive environment.	1	kg	14.47
32	Interior doors	Interior doors	WDOOR	Wooden interior doors	This FPD describes an average of the doors produced by the member companies of the VHI. In addition to standard doors, the member companies of the VHI also produce so-called functional doors. These offer additional functions such as moisture, smoke, fire, sound, burglary and radiation protection. For these purposes, the doors are given a modified design.	2.6814	m2	394.28
33	Facades	External wooden cladding	WCLA	Wood Plastic Composite products: Cladding: WEO 35	FIBERDECK wood plastic composite combines the proven strength of high-density, recycled polyethylene plastic and realistic wood fibers with an outer shell of polymer that completely encapsulates the board in an impermeable layer of protection from weather, sun, water, scuffs and scrapes	50.75	m2	2869.79
34	Facades	Tiles for external cladding	N-STON	Slabs for façade claddings and for interior claddings and flooring in natural semi-rijo limestone:	Slabs for façade claddings and for interior claddings and flooring in natural semi-rijo limestone. Dens: 2750 kg/m3	1	kg	2.5
35	Facades	Tiles for external cladding	PORCE	EXTRUDED PORCELAIN VENTILATED FAÇADE GA16 & GA20	EXTRUDED PORCELAIN VENTILATED FAÇADE GA16 & GA20. 324 kg/m2	324	kg	560
36	Facades	Tiles for external cladding	A-STON	S-P-07728 STONEO Ventilated Facade Panels	The engineering stone facade panels are made of a high-quality material comprising a seetcted combination of aggregates, bound by stable polyester resins. The panels are used for facade cladding and are mounted as a component of ventilated facades (rainscreen claddings).	1	kg	2.25
37	Windows	Windows	WIN_PVC	Passiv PVC Double Glazed Window	The Passiv PVC windows cover a range of different sizes and shapes of windows. The LCA has been executed based on a Double-glazed 1230 mm x 1480 mm window, with a thermal performance of U window = 1.2 W/m2K, U glass = 1.2 W/m2K and a life expectancy of 50 years. After which the results have been scaled back to a functional unit of 1m2.	1	m2	146.96
38	Windows	Windows	WIN_WOOD	Hardwood double glazed window	The raw materials for the Hardwood windows comprise glass, argon, hardwood/softwood profiles, warm edge spacer and associated hardware (hinges, handles, recievers and gears).	1	m2	299.17
	Windows	Windows	WIN_AL	Aluminium Windows	The aluminium windows are assembled with extruded aluminium profiles and comes in different frame widths of 45 mm - 50 mm and 70 mm - 75 mm. They consist of an aluminium profile frame and an aluminium profile sash with an insulating glass unit (IGU). The aluminium profiles are powder coated and thermally broken with a reinforced polyamide strip.	1	m2	127.72
40	Facades	Exterior glazed doors	DOOR_GL	Exterior facade folding doors with thermally modified beech and double glazing, painted	Folding door in the facade of buildings, for renovation and in new buildings	1	m2	150.14
41	Facades	Exterior front doors	DOOR_W	Wooden full doors	Exterior doors manufactured by Porta KMI Poland Sp. z o. o. Sp. k. are dedicated for communication in domestic as well as commercial premises. Among company's products, wooden and steel doorsare distinguish. Depending on the customer's needs, doors possess various functionalities and can be produced from a wide range of materials.	2.307	m2	632.54
42	Roof	Gravel ballast	GRAV	S-P-05225 Aggregates from Nyrand gravel pit-Svebølle	S-P-05225 Aggregates from Nyrand gravel pit-Svebølle	1000	kg	123.75
43	Roof	Waterproofing layer	WP	PTM reinforced bitumen membrane for roof waterproofing	System of PTM reinforced bitumen membrane for roof waterproofing: -PTM BituFlex (top layer) & PTM DuraFlex Kombi (bottom layer) .	1	m2	4.2

♠ BIM-LCA

Co-funded by the European Union

LCA - Enviromental Impact results

		Pr	oiect name:	Single-family house in timl	nber (structure, fa	cades and pa	rtitions)			Total use of non re	newable primary energy resource (PENR'	IMPACTS AS	INSTALLATION																					
			-,		(,		_		Energy Consu	mption (A1-A3)	UNIT IMPACTS * QUANT Energy Consumption (A4) PERT PENRT (MJ) (MJ)	Energy Cons	sumption (AS)				Env impacts a	A1-A3						Env impacts A4							Env impacts AS			
Module Building pa	t Building elem	nent types / building elements	Ref.	Type of Material	Mat Code Q	Quantities (Q) Unit	t	Cost (Euros)	PERT (MJ)	PENRT (MJ)	PERT PENRT (MJ)	PERT (MJ)	PENRT (MJ)	GWP (kg CO2-eq)	ADPF (MJ)	ADPE (kg Sb-eq)	AP (kg SO2-eq.)	EP (kg Phosphat-eq.)	POCP (kg Ethen-eq)	ODP (kq CFC 11-eq)	GWP (kg CO2-eq.)	ADPF (MJ)	ADPE (kg Sb-eq)	AP (kg SO2-eq.)	EP (kg Phosphat-eq.)	POCP (kg Ethen-eq)	ODP (kq CFC 11-eq)	GWP (kg CO2-eq.)	ADPF (MJ)	ADPE (kg Sb-eq)	AP (kg SO2-eq.)	EP (kg Phosphat-eq.)	POCP (kg Ethen-eq)	ODP (kq CFC 11-eq)
		1.A - Piles	1.A.1 1.A.2		CON1	0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 (0	0	0	0	0	0	0	0	0	0	0
			1.A.2 1.B.1.1	Rebar Concrete	CON1	0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		1.B.1-Pile Caps	1.B.1.2 1.B.1.3	Concrete Rebar Blinding concrete Concrete	CON0	0.00 m3 0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		1.B.2-Footings	1.B.2.1 1.B.2.2		CON1 REB	24.83 m3 1571.74 kg		2936.89 2829.13	4717.7 2489.634576	34762 11308.66211	84.9186 1464.9 18.860868 1031.06078	7 0 4 0	3.004 0.047152	43 7002.06 17 828.306453	6 33768.8 3 10255.59698	0.00171327 0.001602074	10.82588 3.143478	3.4762 1.339121628	0.394793	7 8.31805E-05 2 8.4723E-05	107.7622 64.441299	1460.0 998.0542	7.64764E-08 65 0.00011222	0.250783 0.37721736	0.0603369 0.066013038	-0.0836771 0.014145651	1.77783E-14 1.23539E-05	0.44694 0.000131869	6.10818 0.001571739	1.61643E-05 4.87239E-09	0.001921842 5.79972E-07	0.00787111 2.37333E-06	0.00037245 1.12065E-07	2.88028E-08 8.69172E-12
1- Foundat	1.B-Basement		1.B.2.3 1.B.3.1	Blinding concrete Concrete	CON1	1571.74 kg 5.94 m3 2.98 m3		520.25 352.47	188.33367 566.2	5338.5969 4172	5.4009984 170.6829 10.1916 175.8	6 4.1220648 2 0	248.952 0.360	58 840.36		0.00020562	1.5404256 1.29928	0.06685875 0.4172	1.3466838 0.047382	8 1.80667E-05 2 0.000009983	12.099948 12.9332	170.682 175.2	96 7.87448E-07 24 9.1784E-07	0.030077523 0.030098	8.9561E-05 0.0072414	0.014887215 -0.0100426	2.85739E-06 2.13368E-15	23.421363 0.05364	248.65512 0.73308	8.99176E-07 1.93998E-06	0.13264776 0.000230652	0.001577867 0.00094466	0.14732697 0.0000447	2.66306E-06 3.4568E-09
		1.B.3-Foundation beams	1.B.3.2 1.B.3.3	Rebar Blinding concrete	REB CON0	264.62 kg 1.16 m3		476.32 101.20	419.164416 36.63364	1903.96968 1038.4348	3.175488 173.59334 1.0505728 33.2003	0.8018016	0.007938 48.424	72 139.456848 84 147.0432	8 1726.6716 2 1034.9668	0.000269731 3.80324E-06	0.529248 0.2996352	0.225459648 0.013005	0.049749312	2 1.42643E-05 6 3.51424E-06	10.849584 2.353616	168.036 33.200	1.88942E-03 32 1.5317E-03	0.06350976 0.005850516	0.011114208 1.74209E-05	0.002381616 0.00289578	2.07994E-06 5.55805E-07	2.2202E-05 4.555796	0.000264624 48.36704	8.20334E-10 1.74903E-07	9.76463E-08 0.02580192	3.99582E-07 0.000306918	1.88677E-08 0.02865724	1.46337E-12 5.18004E-07
		1.B.4-Foundation slab	1.B.4.1 1.B.4.2	Concrete	CON1 REB	0.00 m3 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
	1	C - Retaining walls	1.8.4.3 1.C.1 1.C.2	Blinding concrete Concrete	CON0 CON3	0.00 m3 0.00 m3 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
	-			1-Total Fundations	REB				8417.6663	58523.6635	0 123.5981 3049.327	4 4.9239	300.79	0 0 72 9713.1761	1 56159.6033	0.0038	17.6379	5.5378	2.3960	0 0.0002	210.4398	3005.20	18 0.000	0.7575	0.1448	-0.0594	0.0000	28.4779	303.8653	0.0000	0.1606	0.0107	0.1764	0.0000
			2.A.1.2	Gulam Timber Steel in timber connect (galvanized)	GLT ST-G	2.80 m3 22.40 kg		3175.20 56.00	31696 47.936	4208.4 253.12	0 3133.0 0.143808 2.486	0.0162624	0.02 0.282	52 -1809.64 24 23.296	4 3766 6 250.88	0.0002842 6.5856E-06	2.35088 0.066976	0.47628 0.000037184	0.28756 0.057344	6 0.00007182 4 1.93312E-13	231.8456 0.187936	25503.08 2.48	04 0.14 64 1.50752E-08	16.2288	3.2452 0.00030688	0.8568 0.00059808	0.3024 3.4272E-17	0.0028 0.0147392	0.0504 0.28224	1.2964E-07 1.70464E-09	0.000015428 0.000076384	0.000063 0.000034048	0.00002968	2.3128E-10 3.8752E-18
		2.A.1-Beams	2.A.1.3 2.A.1.4	Structural steel Concrete	ST CON3	0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
			2.A.1.5 2.A.2.1	Rebar Gulam Timber	REB GLT	0.00 kg 5.76 m3		0.00 6531.84		0 8657.28	0 0 6445.15	0 0	0.051	0 0 84 -3722.688		0.00058464	0 4.836096	0.979776	0.591552	0 0.000147744	0 476.93952	52463.479	0 0	33.38496	6.67584	0 1.76256	0.62208	0.00576	0.10368	2.66688E-07	0 3.17376E-05	0.0001296	6.1056E-06	4.75776E-10
		2.A.2-Columns	2.A.2.2 2.A.2.3	Steel in timber connect (galvanized) Structural steel	ST-G ST	46.08 kg 0.00 kg		115.20 0.00	98.6112	520.704 0	0.2958336 5.1148 0	0.03345408	0.5806	08 47.9232 0 0	2 516.096 0 0	1.35475E-05 0	0.1377792	7.64928E-05 0	0.1179648	8 3.9767E-13 0 0	0.3866112 0	5.114	88 3.10118E-08	0.0013824	0.000631296	0.001230336 0	7.05024E-17 0	0.03032064	0.580608	3.50669E-09 0	0.000157133 0	7.00416E-05 0	0.000197683	7.97184E-18 0
			2.A.2.4 2.A.2.5	Concrete Rebar	CON3 REB	0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
	2.A-Frames	2.A.3-Mass concrete slabs o	2.A.3.1 2.A.3.2 2.A.4.1	Concrete Rebar	CON2 REB	0.00 kg 0.00 m3 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
2 - Load be		2.A.4-Composite slabs or	2.A.4.1 2.A.4.2	Concrete Rebar	CON2 REB	0.00 kg 0.00 m3 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
structural f			2.A.4.3 2.A.5.1	Rebar Galvanized steel plates Concrete blocks or Ceramic blocks	ST-G CONB	0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0		0 0	0		0 0	0 0	0	0	0	0	0	0	0	0	0	0
		2.A.5-Lightweight concrete sla	2.A.5.2 2.A.5.3	Ceramic blocks Precast concrete beams	CERB	0.00 kg 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		OF .	2.A.5.5	Precast concrete beams Concrete (cast in place) Rebar	CON2 REB	0.00 m3 0.00 kg 56 18 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0		0 0	0		0 0	0 0	0	0	0	0	0	0	0	0	0	0
		2.A.6-Mass timber structura	2.A.6.1 2.A.6.2	Cross Laminated Timber (CLT) panels Steel in timber connect (galvanized)	CLT ST-G	56.18 m3 kg		76164.31 0.00	452030.7168 0	143485.7632 0	95.3388176 6488.882 0	0.24017292	13.73620	0 -34983.78416 0 0	6 57192.0544 0 0	0.008382175 0	23.48919248 0	5.293354976 0	5.898984	0.000527819 0 0	405.5691952 0	6140.561	0.00095732	2.10678	0.462367984 0	0.075338453 0	1.74554E-05 0	88.6533024 0	12.99461904 0	9.32601E-07 0	0.008713642 0	0.00286185	0.00014607	8.85971E-08 0
		floors	2.A.6.3 2.B.1	Steel in connections (galvanized) Structural steel	ST-G ST	224.72 kg 0.00 kg		561.81 0.00	480.907648 0	2539.37216 0	1.442722944 24.944275 0	0.163149043	2.831512	32 233.712128 0 0	8 2516.89984 0 0	6.60686E-05 0	0.671922368	0.000373041	0.575291392	2 1.93936E-12 0 0	1.885427648 0	24.94427	52 1.51239E-07 0 (0.006741696	0.003078708 0	0.006000109	3.43826E-16 0	0.147867866 0	2.83151232 0	1.71014E-08 0	0.000766306	0.000341579	0.000964063	3.88771E-17 0
	2.6	B-Load-bearing walls	2.B.2 2.B.3	Concrete rebar	CON3 REB	0.00 m3 0.00 kg	\dashv	0.00	0	0	0	0 0		0 0	0 0	0	0	0		0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
			2-	Total structural elements Concrete	CON1	29.53 m3				159664.6394 41346.9	97.2212 16099.640 101.00457 1742.476	0.4530	17.50 3.57355	76 -40211.1808 35 8328.447	7 71989.1302 7 40165.56	0.0093	31.5528 12.876606	6.7499 4.13469	7.5287 0.46958265	7 0.0007 5 9.89372E-05	1116.8143 128.17539	84139.66 1736.56	71 0.4290 98 9.09632E-00	51.7293 0.29828835	10.3874	2.7025 -0.099527895	0.9245 2.1146E-14	88.8548 0.531603	16.8431 7.265241	0.0000 1.92263E-05	0.0098	0.0035 0.00936212	0.0014	0.0000 3.42589E-08
		3.A.1-Ground floor slab (non-structural)	3.A.1.2 3.A.1.3	rebar Graded aggregate	REB AGG	886.01 kg 88600.50 kg		3493.22 1594.81 4430.03	1403.43192 1151.8065	6374.805975 2569.4145	10.63206 581.2192 0 1333.08312	8 0 3 0	0.026580 29144.337	15 466.924635 07 203.78115	5 5781.182625 5 2569.4145		1.77201 0.886005	0.75487626 1.77201	0.16656894	4 4.77592E-05 6 4.07562E-06	36.326205 116.5096575	562.6131 10851.346	75 6.32608E-01 24 0.059185134	0.2126412 6.910839	0.03721221 1.417608	0.007974045 0.354402	6.964E-06 0.0886005	7.43358E-05 0.26402949	0.000886005 37.389411	2.74662E-09 9.77264E-06	3.26936E-07 0.001159781	1.33787E-06 0.004752176	6.31722E-08 0.000224425	4.89961E-12 1.74543E-08
		3.A.2-Flooring Type I:	3.A.2.1	Ceramic tiles Tile bond coat (adhesive)	CEFT	0.00 m2 1545.12 kg		0.00 927.07	0	0	0 2085.91	0 0	0.83436	0 0	0 0 8 10383.2064	0	2,394936	0.74320272	0.12917203	0 0 2 4.92893E-05	0 38.318976	4244.1356	0	0 2.472192	0 0.540173952	0 0.142769088	0.050185498	0.004604458	0.064276992	0 1.70581E-07	0 2.0272E-05	0 8.28184E-05	0 3.91224E-06	0 3.0408E-10
	3.A-Horizontal	Ceramic flooring or	3.A.2.3	Mortar bed Cleavage membrane	MOR	0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
	elements	3.A.3-Flooring Type II: Woor	3.A.3.1 3.A.3.2	Laminated wood flooring Chipboard flooring (plywood)	WFL	257.52 m2 7.73 m3		7650.92 11052.78	72491.88 105608.952	23573.3808 63118.152	14.3902176 250.97899 145.936584 12948.105	2 3.2988312 6 3.1636332	24.0266 14.74044	16 -1751.90856 48 -3571.54488	6 23537.328 8 58814.9928	0.00431861 0.005180015	7.2723648 32.0535144	0.042413544 889.98912	10.6664784	4 2.82499E-05 6 0.000179466	18.9096936 901.57752	250.051 12198.72	92 1.66409E-08	0.021853147 15.9997176	5.57788E-05 1.54589256	0.019223868 10.7617608	3.70571E-15 0.000180702	241.450752 2.21879232	23.9828376 13.8365496	1.95303E-07 3.27102E-06	0.011704284 0.008444081	3.40956E-06 0.003831125	0.008003722 0.005862185	8.56512E-15 6.81784E-08
		floating floor or	3.A.3.3	Insulation layer Timber battens	MWOOL	10.30 m3 11.59 m3		994.03 13141.25	4521.02112 131180.688	21621.3792 17417.3652	26.1331296 453.7502 0 12966.8401	98.321136	483.7255 0.10429	68 1786.15872 56 -7489 58292	8 58814.9928 2 20405.8848 2 15586.398	0.000394212	10.455312 9.72962064	1.43284128 1.97118684	0.617635968	8 5.72518E-09 8 0.000297242	33.374592 959.5426968	449.114 105549.96	24 0.003347503 88 2.74413E-08 32 0.57942	0.049361434 67.1663664	0.010754035	-0.01107336 3.5460504	8.28699E-15 1.2515472	228.059712	453.956256 0.2085912	8.31584E-06 5.36543F-07	0.228574752 6.38521F-05	0.032591731	0.013689763 1 22837F-05	1.14545E-10 9.57202E-10
		3.A.4-Flooring Type III: Scree flooring	d 3.A.4.1	Wet screed (cement mostar)	MOR	0.00 m4 0.00 m3		0.00		0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		3.B.1-Internal partition Type Brick walls	I: 3.8.1.1 3.8.1.2	Sound insulation layer Brick wall Finishing coat (plastering mortars)	CERB PLASM	0.00 kg 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		3.B.2-Internal partition Type	3.B.2.1	Finishing coat (plastering mortars) Gypsum cardboard or fiberboard Galvanized steel (U, C) channel studs	GYP_F ST-GC	0.00 m2		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
A1-A3		Gypsum cardboard walls	3.B.2.3 3.B.3.1	Insulation layer Cross Laminated Timber (CLT) panels	MWOOL	0.00 kg 0.00 m3 22 17 m3		0.00 30050.45	0	0 56611 964	0 37.615702 2560.17	0 0	5 4195	0 0 87 -13802 7682	0 0 2 22564.988	0 003307167	9 2676046	2 08848052	2 3274	0 0	160 016354	2422.74	0 0 38 0.000377709	0 831225	0.18242618	0 029724606	0 6.88698E-06	0 34 977948	5 1269958	3 679565-07	0 003437947	0.001129136	0 5 76316F-05	0 3 49558F-08
		3.B.3-Internal partition Type I	3.B.3.2	Steel in timber connect (galvanized) Insulation layer	ST-G MWOOI	88.66 kg		221.66			0.56922288 9.84170 28.117571 488.2061	0.064370064 105.787235	1.11716 520.457	64 92.21056 68 1921 7922	6 993.0368 2 21955.423	2.60672E-05	0.26510536 11.249245	0.000147182 1.5416453	0.22697984	4 7.6517E-13 8 6.15993F-09	0.74389096 35.90892	9.8417 483.21	04 5.96709E-08 88 2.95251E-01		0.001214697 0.011570652	0.002367329 -0.011914225	1.35656E-16 8.91627E-15	0.058340912 245.37762	1.1171664 488 42781	6.74733E-09 8.94731E-06	0.000302344	0.000134769	0.000380369	1.53389E-17
3 - Non-lo bearing	elements	Structural Timber wall	3.B.3.4	Timber battens	GLT GYP P	9.97 m3 443.32 m2		11311.31 16358.51	112913.604	14991.9741	0 11161.1905 7.53644 2877.146	7 0	0.08977	23 -6446.64861 32 962.0044	1 13415.9715	0.001012432	8.37475812 1.972774	1.69669647 0.01374292	1.02440169	9 0.000255851	825.9251094 216.78348	90851.991 2859.4	45 0.498731 14 7.44778E-0	57.8133612 0.6029152	11.5606773 0.000169792	3.0522582 0.9354052	1.0772676 4.65486E-06	0.0099747	0.1795446	4.61829E-07	5.49606E-05 0.2748584	0.000224431	1.05732E-05 0.39765804	8.2391E-10 2.93921E-06
elemen	s	3.B.4-External party walls	3.B.4.1 3.B.4.2	Gypsum plasterboard Concrete blocks Insulation layer	CONB	0.00 m3 0.00 m3		0.00		0	0	0 0		0 0	0 0	0	0	0	(0 0	0	20001	0 0	0	0	0	0	0	0	0	0	0	0	0
				Finishing coat (plastering mortars)	PLASM CERB	0.00 kg 2337.72 kg		0.00 981.84	720.01776	9654.7836	0 4.792326 95.61274	0 0 0	23.37	0 0 72 734.04408	0 0 8 8719.6956	0.000624171	0 2.33304456	0 0.48157032	0.121327668	0 0 8 1.18289E-06	0 6.896274	95.3789	0 0 76 5.5404E-0	0.028987728	0.007200178	-0.010589872	0 2.31434E-12	0 5.493642	22.8161472	0 4,74557E-07	0.009327503	0.001542895	-0.000310917	0 1.8468E-12
		3.B.5-Parapets 3.B.6-Railings	3.B.5.2 3.B.6	Finishing coat (plastering mortars) Railings Interior doors	PLASM ST-SL	844.80 kg 52.25 kg		1267.20 756.06	660.6336 514.14	2965.248	16.64256 247.526 0.000788975 6.5312	2.002176 98.7525	10.391 397.5	04 315.9552 18 246.62	2 2728.704 2 3317.875	0.000727373	0.777216 3.213375	0.08000256	0.06479616	6 2.10355E-06 5 1.34283E-05	18.41664 18.9145	246.68 2080.229	16 1.90925E-00 25 0.01133825	0.01402368 1.30625	0.003159552 0.26125	-0.000198528 0.05225	3.86918E-13 0.02460975	35.22816 0.99275	9.37728 13.8985	6.16704E-07 3.66795E-05	0.004612608 0.004362875	0.001022208 0.01781725	0.000308352 0.000841225	4.82381E-13 6.53125E-08
		3.8.6-Railings 3.8.7-Interior doors	3.B.7 3.C.1.1	Interior doors Ceramic tiles	WDOOR	7.64 m2 13.72 m2		1123.41 441.79	514.14 5230.761587 559.6128	3971.893936 2578.608	0 0.1741932 126.0500	124.854479	44.220481 142.64		6 3562.854479 8 2235.708		0.515345267	0.1614525 0.107630715 0.04828032	0.101675766	5 1.34283E-05 6 2.8068E-10 4 2.70205E-05	1.626926233 8.311896	179.04451 118.506	41 0.000977299 24 3.56616E-0	0.113970314 0.01385316	0.022794063 0.001632204	0.005698516 0.000689915	0.002116999 1.53619E-06	30.31610353 15.22476	9.163213247	1.06049E-06	0.00994391	0.002254903	0.000581818	1.14113E-14 1.13843E-06
			3.C.1.2	Ceramic tiles Tile bond coat (adhesive) Mostar	ADH MOR	82.30 kg		49.38	559.6128 160.4772 469.4976	604.8756 6474.1248	0 111.099	6 0	0.044439	84 42.300144 0 710.424	8 2235.708 4 553.02912 4 6461.7696	4.75671E-05 0.010279526	0.4032504 0.1275588 2.6316576	0.039584376 0.1297296	0.006879946	6 2.62524E-06 2 5.37451E-05	2.0409408	226.05065 446.5169	28 0.0076041 28 0.00243397	0.1316736	0.028770682	0.00760415	0.002672974 0.050433926	0.000245242	0.003423514	9.08548E-09 1.36154E-07	1.07972E-06 0.016187783	4.41107E-06 6.60633E-05	2.08373E-07 3.13081E-06	1.61959E-11 2.43027E-10
		3.C.1-Stairs	3.C.1.3 3.C.1.4 3.C.1.5	Concrete Rebar	CON3 REB	0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
	3.C-Inclined		3.C.1.6 3.C.1.7	Rebar Structural steel Cross Laminated Timber (CLT) panels	ST CLT	0.00 kg 1.73 m3		0.00 2342.65	13903.488	0 4413.312	0 2.932416 199.58	0 0	0.4224	0 0 96 -1076.0256	0 0 6 1759.104	0.000257818	0.7224768	0.16281216	0.1814	0 0 4 1.62346E-05	0 12.474432	188.87	0 0 04 2.94451E-0	0.0648	0.01422144	0.002317248	0 5.3689E-07	0 2.726784	0.3996864	0 2.86848E-08	0.000268013	0 8.80243E-05	0 4.4928E-06	0 2.72506E-09
	elements		3.C.1.8 3.C.2.1	Cross Laminated Timber (CLT) panels Steel in timber connect. (galvanized) Ceramic tiles Tile bond coat (adhesive)	ST-G CEFT	0.00 kg 0.00 m2		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		3.C.2-Ramps	3.C.2.2 3.C.2.3	Tile bond coat (adhesive) Mostar	ADH MOR	0.00 kg 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
			3.C.2.4 3.C.2.5	Concrete Rebar	CON3 REB	0.00 m3 0.00 kg		0.00	0	0	0	0 0		0 0	0 0	0	0	0		0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
			3-Tot	al non-load bearing elements	PLASM	0.00 kg 0.00 kg		109566.74 0.00	645187.3831 0	336874.8029 0	396.4778 50245.328 0	2 717.9539 0 0	32151.46	60 -17425.7696 0 0	6 282535.6142 0 0	0.0766 0	119.2938 0	907.3921	40.6282	2 0.0013 0 0	3581.3896 0	236051.00	0 1.306	154.3905 0	29.2050 0	18.9385 0	2.5476 0	949.7913 0	2381.2053 0	0.0002	0.8572 0	0.1167	0.4450	0.0000
		4.A.1-Facade type I: with bricks or,	4.A.1.2 4.A.1.3	External finish Brick walls Insulation layer Interior finish	CERB MWOOL	0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0		0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
			4421	Gypsum plasterboard	GYP_P GYP_P	0.00 m2 374.42 m2		0.00 13816.10	0 1411.5634	0 16549.364	0 6.36514 2429.985	0 8 212.67056	1127.00	0 0 42 812.4914	0 0 4 14377.728	0.000225775	0 1.666169	0.01160702	2.3176598	0 0 8 4.79258E-05	0 183.09138	2415.0	0 (09 6.29026E-0	0.5092112	0.000143403	0.7900262	0 3.93141E-06	90.23522	999.7014	9.32306E-06	0 0.2321404	0.001067097	0.33585474	0 2.4824E-06
	4.A-External wall	4.A.2-Facade type II: Timber	4.A.2.2 4.A.2.3	Cross Laminated Timber (CLT) panels Steel in timber connect (galvanized)	CLT ST-G	37.44 m3 149.77 kg		50760.12	301258.332	95626.868	63.539074 4324.55	0.16006455 0.108731568	9.1545 1.88707	69 -23315.1334 68 155.75872	4 38115.956 2 1677.4016	0.005586346 4.40318E-05		3.52778524 0.000248615	3.93141 0.38340608	1 0.000351768 8 1.2925E-12	270.293798 1.25655352	4092.41 16.6242	06 0.000638012 48 1.00794E-07	1.404075 0.00449304	0.30814766 0.002051822	0.050209722 0.003998806	1.16332E-05 2.29145E-16	59.083476 0.098547344	8.6603346 1.8870768	6.21537E-07 1.13973E-08	0.005807254 0.000510709	0.001907295 0.000227647	9.73492E-05 0.000642505	5.9046E-08 2.59099E-17
	systems	panels or,	4.A.2.4 4.A.2.5	Insulation layer Timber battens	MW00L GLT	18.72 m3		1806.58 19106.65	8216.6469 190729.548	1692.3784 39295.379 25323.8967	47.495177 824.6600 0 18853.0766	5 178.691945 6 0	879.138 0.15164	16 3246.2214	4 37086.301 7 22661.7705 6 209527.6453	0.000716453	19.001815	2.6040911 2.86599789	1.12251116	6 1.04051E-08 3 0.000432174	60.65604 1395.122618	816.23 153463.87	56 4.98727E-08	0.089711032 97.6562244	0.019544724 19.5278751	-0.020125075 5.1557634	1.5061E-14 1.8196812	414.48294 0.0168489	825.03447 0.3032802	1.51135E-05 7.80104E-07	0.41541899 9.28374E-05	0.059233244 0.0003791	0.024880209 1.78598E-05	2.08178E-10 1.39172E-09
4 - Facad	5				WCLA GYP_P	16.85 m3 374.42 m2 0.00 m2				25323.8967 223545.3399 0	154.1946404 17706.5615 0	8 176.3278424 0 0	1873.9444	33 11583.04236 0 0	6 209527.6453	0.055628114	58.0627665	14.82924532 0	5.95383133	3 0.000826306 0 0	1239.45931 0	16673.678	55 0.84244 82 0.00303224 0 0	28.62560788	0.061972966 0	1.268970246	0.000254532	136.4880788 0	1741.145222 0	0.000585054	0.449304	0.056734774	0.027592725	1.93297E-05 0
		4.A.3-Facade type III: Ventilated facade	4.A.3.2 4.A.3.3	Brick wall Insulation layer	CERB MWOOL	0.00 kg 0.00 m3		0.00	0	0	0	0 0		0 0	0 0	0	0	0	(0 0	0		0 0	0	0	0	0	0	0	0	0	0	0	0
		4.B.1-Windows	4.A.3.4 4.B.1	Tiles for external cladding Windows	N-STON WIN_WOOD	0.00 kg 21.54 m ²	-1	0.00	0 36175.15914	0 24366.048	0 6.84972 620.35	0 0 2 5.44962	158 96	0 0 52 1712.2146	0 0 0	7.3460016	7.267596	0.8807706	0.8499684	0 0 4 3.67257F-05	0 38.5566	581	0 (0.0921912	0.01462566	0.01826592	0 6.91434E-06	0 3,4464	151.6416	0 1,92568E-05	0.02039838	0.00260634	0.00286482	0 1.44964E-06
	4.B-Facade openings	4.B.2-Exterior doors	4.B.2.1 4 B 2 2	external wooden cadoning Oppsum plasterboard Brick wall Insulation layer Tiles for external cladding Windows Exterior glazed doors Exterior front doors	DOOR_GL DOOR_W	0.00 kg 21.54 m2 4.00 m3 4.00 m4				4080 1763.502384	1.228 22.0	8 4.04 0 75.9774599	13.	56 172 16 9 085392294	2 0	0.002990377	1.372	0.00564	0.888	8 0.00000528 5 4.03988E-06	1.668 0.990030342	108.95361	0 (0.00532	0.00000492 0.013870828	0.0048	2.116E-16 0.001288253	62.8	5,576072922	6.45345.07	0.02532	0.000001568 0.001372172	0.02876	7.24E-15 6.94408F-15
		1	5 4 1 1	4- Total facades Ceramic tiles or	CEFT	134.33 m2		115177 02	E80063 6360	422242 7764	280.6333 44797.891 1.705991 1234.492	3 653.4262	4090.71	47 -16513.7636	6 349379.2865 4 21895.79	7.4129	118.1029	24.8211 0.4728416	17.446	5 0.0017	3191.0943 81.40398	178168.36	74 0.8469 12 3.49258E-00	128.4562	19.9482 0.01598527	7.2754	1.8212 1.5045E-05	785.0997 149.1062	3733.9495	0.0006	1.1550	0.1235	0.4211	0.0000 1.11494F-05
	5.A-Roof Type I: Fla	5.A.1-Finishing coat 5.A.2-Waterproofing layer	5.A.1.2	Gravel ballast Waterproofing laver	GRAV	0.00 kg 134.33 m2		0.00	5480.664 0 2417.94 4127.02059	0 37746 73	0 12.801649 185.375	0 0	6707.0	0 0 98 467.4684	0 0	0	0 9282203	0 002511021	0.200745	0 0	12 97023	1200.01	0 0	0.1550-55	0.01558527 0 5.02394F-05	0.000756755	1.3836E-12	255 227	0	0	0.5452700	0 007750941	0 5077674	2 122415-05
	roof or	5.A.3-Insulation layer	5.A.3	Insulation layer	MWOOL	9.40 m3		907.40	4127.02059	19737.1069	23.8556647 414.20655	89.7525895	441.5695	76 1630,49754	4 18627.5411	0.000359857	9.5441465	1.30797121	0.563809876	6 5.22624E-09	30.466044	409.975	16 2.50499E-0		0.009816836	-0.010108333	7.56479E-15	208.184634	414.394617	7.59112E-06	0.208654789	0.007750841	0.01249672	1.04562E-10
		5.A.4-Screed to falls 5.B.1-Roof tiles	5.A.4 5.B.1	Cement mostar Roof tiles	MOR RTIL	6447.84 kg 3670.14 kg		1611.96	2450.1792 3963.747206	33786.6816 16845.92562	7.523779419 161.853010	9 3.780240391	32.921122	63 1031.308301	8 33722.2032 1 16515.61336	0.053646029	13.7338992	0.6770232 1.181783889	10.0586304 0.741367533	4 0.000280481 3 7.74399E-06	211.8566789 11.89124162	2330.2493 160.38495	64 1.01296E-0		0.28949512 0.001724964		0.263200829 8.51472E-13	0.019214563 27.74623044		7.10552E-07 2.33054E-07	0.0844796 0.011817839	0.000344766 0.001981874	1.63388E-05 -0.000340222	1.26829E-09 2.00389E-12
5 - Roo		5.B.2-Mostar 5.B.3-Waterproofing layer	5.B.2 5.B.3	Cement mostar Waterproofing layer	WP CEAR	2936.11 kg 91.75 m2		734.03 385.36	1115.721436 1651.561336	15385.21138 25782.70752	0 8.744099739 126.619702	0 4 237.6413255	4642.7224	22 319.3018582	9 15355.85029	0.024428427	6.253912258 0.634016046	0.308291449 0.017157887	4.580330105 0.64410892	5 0.000127721 1 3.79859E-06	96.47173477 9.542354384	1061.1098	0 0.005784135	0.671106444 0.010735149	0.131825424 3.43158E-05	0.35952068 0.009267094	0.119851971 9.4506E-13	0.008749605 174.3314743	0.119851971	3.23559E-07 0	0.038468901 0.372518835	0.000156994 0.005294172	7.4401E-06 0.346827881	5.77533E-10 1.4497E-05
	5.B-Roof type II: Inclinated tiled roof	f 5.B.4-Decking	5.B.4 5.B.5	Waterproofing layer Ceramic deck or wooden deck (plywood) Brick walls or Gulam timber beams	PLYW	0.00 kg 2.59 m3		3700.57	35358.822	21132.522	0 48.860874 4335.141	0 6 1.0592127	4.93523		0 8 19691.7858		10.7318034	297.97632	5.4732456	0 0 6 6.00867E-05	0 301.85622	4084.24	0 0.001120774	5.3568486	0.51757866	0 3.6031338	6.05006E-05	0.74287152	4.6326006	1.09517E-06	0.002827154	0.001282695	0.001962712	0 2.28267E-08
		5.B.5-Structure	5.8.6 5.8.7	Brick walls or Gulam timber beams	GLT CERB	0.00 kg 1.25 m3 4.31 m3		0.00 1414.60	14121.07819	0 1874.90994	0 0 1395.82866	0 0	0.0112270	06 -806.2237488	0 0 8 1677.813619	0.000126616	1.047354881	0.212190406	0.128112609	0 0 9 3.1997E-05	0 103.2909467	11362.032	0 0.062372254	7.230191626	0 1.445788836	0.381718191	0 0.134724068	0.001247445	0.022454011	0 5.77567E-08	6.87342E-06	0 2.80675E-05	0 1.32229E-06	0 1.03039E-10
		5.8.6-Insulation layer	5.8.8	Insulation layer	MWOOL	4.31 m3		416.01 25438.31	1892.0979 72578.8319	9048.789 206594.6240 987305.8821	10.937007 189.8995 114.4291 8043.417 897.9304 114192.186	41.148495 2 991.2999	202.444 13518.73	56 747.5274	4 8540.091	0.000164982	4.375665	0.5996601	0.25848756 23.6718 67.9994	6 2.39605E-09 8 0.0008	13.96764 874.7172	187.95 20756.56 501364.24	96 1.14845E-08 43 0.0820	0.020658312 14.9684 335.3336			3.4682E-15 0.5179 5.2934	95.44554 910.8133	189.98577 1721.1050 6435.8631	3.48027E-06 0.0014 0.0009	0.09566109 1.7091 2.1826	0.013640004 0.1111	0.005729319 0.8988	4.79383E-11 0.0000
		-	Total bu	ailding (A1-A5)	·	_		344003.51	1784126.057	987305.8821	897.9304 114192.186	1376.7571	36560.48	-64437.5380	760063.6342	7.5027	286.5875	944.5010	67.9994	4 0.0040	8099.7380	501364.24	18 2.5823	335.3336	59.6855	28.8570	5.2934	1852.2237	6435.8631	0.0009	2.1826	0.2544	1.0439	0.0000



Co-funded by the European Union

BIM-LCA Construction Project

LCA - Enviromental Impact results

Project name: Single-family house in timber (structure, facades and partitions)

dule	Building part	Building eleme	ent types / building elements	Ref.	Type of Material	Mat Code	Quantities (Q)	Unit	Cost (Euros)
			1.A - Piles	1.A.1	Concrete	CON1	0.00	m3	
				1.A.2 1.B.1.1	Rebar Concrete	REB CON1	0.00	kg m3	
			1.B.1-Pile Caps	1.B.1.2	Rebar	REB	0.00		
				1.B.1.3 1.B.2.1	Blinding concrete Concrete	CON0 CON1	0.00 24.83		2931
			1.B.2-Footings	1.B.2.2	Rebar	REB	1571.74	kg	2829
	1- Foundations	1.B-Basement		1.B.2.3 1.B.3.1	Blinding concrete Concrete	CON0 CON1	5.94 2.98		520 352
			1.8.3-Foundation beams	1.B.3.2	Rebar	REB	264.62	kg	476
				1.B.3.3 1.B.4.1	Blinding concrete Concrete	CON0 CON1	1.16	m3 m3	10:
			1.B.4-Foundation slab	1.B.4.2	Rebar	REB	0.00	kg	
				1.B.4.3 1.C.1	Blinding concrete Concrete	CON0 CON3	0.00		-
		1.0	- Retaining walls	1.C.2	Rebar	REB	0.00		
				2.A.1.1	1-Total Fundations Gulam Timber	GLT	2.80	m3	7216 3175
				2.A.1.2	Steel in timber connect (galvanized)	ST-G	22.40	kg	56
			2.A.1-Beams	2.A.1.3 2.A.1.4	Structural steel Concrete	ST CON3	0.00		- 0
				2.A.1.5	Rebar Gulam Timber	REB	0.00	kg	
				2.A.2.1 2.A.2.2	Steel in timber connect (galvanized)	GLT ST-G	5.76 46.08	m3 kg	653
			2.A.2-Columns	2.A.2.3	Structural steel	ST	0.00	kg	
				2.A.2.4 2.A.2.5	Concrete Rebar	CON3 REB	0.00		
			2.A.3-Mass concrete slabs or	2.A.3.1	Concrete	CON2	0.00	m3	
	2 - Load bearing	2.A-Frames		2.A.3.2 2.A.4.1	Rebar Concrete	REB CON2	0.00	m3	
	2 - Load bearing structural frame		2.A.4-Composite slabs or	2.A.4.2	Rebar	REB	0.00	kg	
				2.A.4.3 2.A.5.1	Galvanized steel plates Concrete blocks or	ST-G CONB	0.00	kg m3	
			2.A.5-Lightweight concrete slabs	2.A.5.2	Ceramic blocks	CERB	0.00	kg	
			or	2.A.5.3 2.A.5.4	Precast concrete beams Concrete (cast in place)	CONBEAM CON2	0.00		- 0
				2.A.5.5	Rebar	REB	0.00	kg	-
			2.A.6-Mass timber structural	2.A.6.1 2.A.6.2	Cross Laminated Timber (CLT) panels Steel in timber connect (galvanized)	CLT ST-G	56.18	m3 kg	7616
			floors	2.A.6.3	Steel in connections (galvanized)	ST-G	224.72	kg	561
		2.B-	Load-bearing walls	2.B.1 2.B.2	Structural steel Concrete	CON3	0.00	kg m3	-
				2.B.3	rebar	REB	0.00	kg	
				3.A.1.1	- Total structural elements Concrete	CON1	29.53	m2	3493
			3.A.1-Ground floor slab (non-structural)	3.A.1.2	rebar	REB	886.01	kg	1594
			(3.A.1.3 3.A.2.1	Graded aggregate Ceramic tiles	CEFT	88600.50 0.00		4430
			3.A.2-Flooring Type I:	3.A.2.2	Tile bond coat (adhesive)	ADH	1545.12	kg	927
		3.A-Horizontal	Ceramic flooring or	3.A.2.3 3.A.2.4	Mortar bed Cleavage membrane	MOR	0.00	kg m3	
		elements		3.A.3.1	Laminated wood flooring	WFL	257.52	m2	7650
			3.A.3-Flooring Type II: Wood floating floor or	3.A.3.2 3.A.3.3	Chipboard flooring (plywood) Insulation layer	PLYW	7.73		11052
				3.A.3.4	Timber battens	GLT	11.59	m3	1314:
			3.A.4-Flooring Type III: Screed flooring	3.A.4.1 3.A.4.2	Wet screed (cement mostar) Sound insulation layer	MOR	0.00		-
			3.B.1-Internal partition Type I:	3.B.1.1	Brick wall	CERB	0.00	kg	-
			Brick walls	3.B.1.2 3.B.2.1	Finishing coat (plastering mortars) Gypsum cardboard or fiberboard	PLASM GYP F	0.00	kg m2	
A1-A3			3.B.2-Internal partition Type II: Gypsum cardboard walls	3.B.2.2	Galvanized steel (U, C) channel studs	ST-GC	0.00	kg	
				3.B.2.3 3.B.3.1	Insulation layer Cross Laminated Timber (CLT) panels	CLT	22.17		30050
			3.8.3-Internal partition Type III:	3.B.3.2	Steel in timber connect (galvanized)	ST-G	88.66	kg	22:
	3 - Non-load	3.B-Vertical	Structural Timber wall	3.B.3.3 3.B.3.4	Insulation layer Timber battens	MWOOL	11.08		1069
	bearing elements	elements		3.B.3.5	Gypsum plasterboard	GYP_P	443.32	m2	16358
			3.B.4-External party walls	3.B.4.1 3.B.4.2	Concrete blocks Insulation layer	CONB	0.00		- 0
				3.B.4.3	Finishing coat (plastering mortars)	PLASM	0.00	kg	
			3.B.5-Parapets	3.B.5.1 3.B.5.2	Brick wall Finishing coat (plastering mortars)	PLASM	2337.72 844.80		98:
			3.B.6-Railings	3.B.6	Railings	ST-SL	52.25	kg	750
			3.B.7-Interior doors	3.B.7 3.C.1.1	Interior doors Ceramic tiles	WDOOR	7.64		112
				3.C.1.2	Tile bond coat (adhesive)	ADH	82.30	kg	45
				3.C.1.3 3.C.1.4	Mostar Concrete	MOR CON3	1235.52		301
	1		3.C.1-Stairs	3.C.1.5	Rebar	REB	0.00	kg	
	1	3.C-Inclined		3.C.1.6 3.C.1.7	Structural steel Cross Laminated Timber (CLT) panels	CLT	0.00	m3	234
		elements		3.C.1.8	Steel in timber connect. (galvanized)	ST-G	0.00	kg	
				3.C.2.1 3.C.2.2	Ceramic tiles Tile bond coat (adhesive)	CEFT	0.00	kg	
			3.C.2-Ramps	3.C.2.3	Mostar	MOR	0.00	kg	
				3.C.2.4 3.C.2.5	Concrete Rebar	CON3 REB	0.00		
				3-To:	tal non-load bearing elements				10956
	1		4.A.1-Facade type I:	4.A.1.1 4.A.1.2	External finish Brick walls	PLASM	0.00		
			with bricks or,	4.A.1.3	Insulation layer	MWOOL CVD D	0.00	m3	
				4.A.1.4 4.A.2.1	Interior finish Gypsum plasterboard	GYP_P GYP_P	0.00 374.42		1381
				4.A.2.2	Cross Laminated Timber (CLT) panels	CLT	37.44	m3	50760
	1	4.A-External wall systems	 4.A.2-Facade type II: Timber panels or, 	4.A.2.3 4.A.2.4	Steel in timber connect (galvanized) Insulation layer	ST-G MWOOL	149.77	m3	180
	4 - Facades	.,		4.A.2.5	Timber battens	GLT	16.85	m3	1910
				4.A.2.6 4.A.3.1	External wooden cladding Gypsum plasterboard	WCLA GYP P	374.42		2117
			4.A.3-Facade type III:	4.A.3.2	Brick wall	CERB	0.00	kg	
			Ventilated facade	4.A.3.3 4.A.3.4	Insulation layer Tiles for external cladding	MWOOL N-STON	0.00		
		4.B-Facade	4.B.1-Windows	4.B.1	Windows	WIN_WOOD	21.54	m2	6444
		4.B-Facade openings	4.B.2-Exterior doors	4.B.2.1 4.B.2.2	Exterior glazed doors Exterior front doors	DOOR_GL	4.00	m3 m4	109
	1			7.3.2.2	4- Total facades	DOOR_W	4.00	p. 177	11517
			5.A.1-Finishing coat	5.A.1.1	Ceramic tiles or	CEFT	134.33		432
	1	5.A-Roof Type I: Flat	5.A.2-Waterproofing layer	5.A.1.2 5.A.2	Gravel ballast Waterproofing layer	GRAV WP	134.33	m2	564
	1	roof or	5.A.3-Insulation layer	5.A.3	Insulation layer	MWOOL	9.40	m3	90
			5.A.4-Screed to falls 5.B.1-Roof tiles	5.A.4 5.B.1	Cement mostar Roof tiles	MOR RTIL	6447.84 3670.14	kg	161:
	5 - Roof		5.B.2-Mostar	5.B.2	Cement mostar	MOR	2936.11	kg	734
	3 - KOOT	E D Deer's	5.B.3-Waterproofing layer	5.B.3 5.B.4	Waterproofing layer Ceramic deck or	WP CERB	91.75	m2	385
		5.8-Roof type II: Inclinated tiled roof	5.B.4-Decking	5.B.4 5.B.5	wooden deck (plywood)	PLYW	2.59	m3	370
	1		5.B.5-Structure	5.B.6	Brick walls or	CERB	0.00		
	1		5.B.6-Insulation layer	5.B.7 5.B.8	Gulam timber beams Insulation layer	GLT MWOOL	1.25	m3 m3	1414
					5-Total Roofs				

Energy Consump	tion (A1-A3) (/m2/yr) PERT	Energy Consump	tion (A4) (/m2/yr)	Energy Consump	otion (A5) (/m2/yr)				Env imp A1-A3 (/m2/yr)						Env im	p A4 (/m2/yr)						Env ir	np A5 (/m2/yr)			
	(MJ/m2/yr)			PERT (MJ/m2/yr)	PERT (MJ/m2/yr)	GWP (kg CO2-eq./m2/yr)	ADPF (MJ/m2/yr)	ADPE (kg Sb-eq./m2/yr)	AP (kg SO2-eq./m2/yr)	EP (kg Phosphat-eq./m2/yr)	POCP (kg Ethen-eq./m2/yr)	ODP CFC 11-eq./m2/	GWP (kg CO2-eq./m2/yr)	(MJ/m2/yr)	g Sb-eq./m2/y	AP g SO2-eq./m2,	hosphat-eq./i	POCP m Ethen-eq./m2	ODP CFC 11-eq./m2	GWP (kg CO2-eq./m2/yr)	ADPF (MJ/m2/yr)	g Sb-eq./m2/y	AP SO2-eq./m2/	EP hosphat-eq./m	POCP Ethen-eq./m2,	ODP CFC 11-eq./m2/
	0 0	0	0	0		0	0	0	0	0	0	0		0 0	0 0	0		0 0	0		0	0	0	0	0	0
	0 0	0	0	0	0 0	0 0	0	0	0	0	0	0	(0 0	0 0	0		0 0	0		0 0	0	0	0	0	0
	0 0	0	0	0) (0 0	0	0	0	0	0	0	(0 0	0 0	0		0 0	0		0 0	0	0	0	0	0
0.36639484 0.19335465	3 2.699751476 8 0.878274472	0.006595107 0.001464808	0.113775241 0.080076171	0	0.000233336 0 3.66202E-06	6 0.543807083 6 0.064329485	2.622615719 0.796489358	1.33059E-07 1.24423E-07	0.00084078 0.000244135	0.000269975 0.000104001	3.06615E-05 2.29487E-05	6.46012E-09 6.57992E-09	0.00500476	0.07751276	6 8.7156E-09	2.9296E-05	5.1268E-0	6 -6.4987E-06 6 1.0986E-06	9.59449E-10	1.02414E-08		1.2554E-09 3.7841E-13	4.5043E-11	1.8432E-10	2.8926E-08 8.7034E-12	6.75032E-16
0.01462672 0.04397328		0.000419462	0.013255899 0.013654862	0.000320136	0.019334597 0 2.8004E-05	7 0.058709972 5 0.06526561	0.413231431 0.314756135	1.51852E-09 1.59692E-08	0.000119635 0.000100907	5.19251E-06 3.24014E-05	0.000104589 3.67987E-06	1.40313E-09 7.75318E-10	0.001004442	0.0136085	7.1283E-11	2.3375E-06	5.624E-0		1.6571E-19	4.16589E-06	5.6934E-05	1.5067E-10	1.7913E-08		3.4716E-09	2.68468E-13
0.03255393 0.0028451	1 0.147869655 1 0.080648866	0.000246621 8.15916E-05	0.013481931 0.002578465	6.2271E-05	6.16552E-07 6.003760861	7 0.010830759 1 0.011419944	0.1341 0.080379528	2.09484E-08 2.95374E-10	4.11034E-05 2.32708E-05	1.75101E-05 1.01002E-06	3.86372E-06 2.0344E-05	1.10782E-09 2.72929E-10						7 1.8497E-07 9 2.249E-07	1.61537E-10 4.3166E-11		2.0552E-08 1 0.00375637	6.371E-14 1.3584E-11	7.5836E-12 2.0039E-06	3.1033E-11 2.3836E-08	1.4653E-12 2.2256E-06	1.13651E-16 4.02302E-11
	0 0	0	0	0		0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0		0 0	0	0	0	0	0
	0 0	0	0	0	0 0	0 (0	0	0	0	0	0		0 0	0 0	0		0 0	0	0	0 0	0	0	0	0	0
0.653	0 0 7 4 5452	0.0096	0 2368	0.0004	0.0234	0 0	0 4 3616	0.0000	0.0014	0.0004	0.0002	0.0000	0.016	0 0	0 0000	0.0001	0.000	0 0 0000	0.0000	0.0022	0.0236	0.0000	0.0000	0.0000	0.0000	0.0000
2.46163404 0.00372289	8 0.326840634 5 0.019658279	1.11687E-05	0.243325567 0.000193103	1.263E-06	1.95713E-06 2.19199E-05	6 -0.140543647 5 0.001809258	0.292482137 0.019484312	2.20721E-08 5.11463E-10	0.000182578 5.20162E-06	3.69897E-05 2.88785E-09	2.2333E-05 4.45356E-06	5.57782E-09 1.50134E-17	0.018006027	7 1.98066794	4 1.0873E-05	0.00126039	0.0002520	3 6.6542E-05	2.34856E-05 2.6617E-21	2.17459E-07	3.9143E-06	1.0068E-11	1.1982E-09	4.8928E-09 2.6443E-09	2.3051E-10 7.4622E-00	1.79621E-14
0.00372203	0 0	0	0.000155105	0) 1.151552-0.	0 0	0.013404312	0	0	0	0	0	1.455502.0	0 0	0 0	0.2252.00	2.30332-0	0 0	0	1.144/2.00	0 0	0	0	0	0	0
F 06303300	0 0	0	0	0	1 00045 04	0 0	0	0	0	0	0	0	0.0070.4000	0 (0 0	0	0.0005404	0 0	0	4.47344E-07	0 0	0	0	0	0	0
5.06393289 0.00765852	8 0.672357875 7 0.040439888	2.29756E-05	0.500555452 0.000397241	2.59817E-06	4.0261E-06 4.50923E-05	6 -0.28911836 5 0.003721901	0.60167754 0.040082013	4.54054E-08 1.05215E-09	0.00037559 1.07005E-05	7.60932E-05 5.94073E-09	4.59422E-05 9.1616E-06	1.14744E-08 3.08846E-17	3.00257E-05	5 0.00039724	2.4085E-12	1.0736E-07	4.9029E-0	9.5553E-08	4.83131E-05 5.47549E-21	2.35482E-06		2.7234E-13	1.2204E-08	5.4397E-09	1.5353E-08	6.19124E-22
	0 0	0	0	0	0 0	0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0	0	0 0	0	0	0	0	0
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	0 0	0	0	0	0 0	0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0	0	0 0	0	0	0	0	0
35.1064551	0 0 7 11.14365977	0.007404382	0.503951724	1.86528E-05	0.001066807	0 (7 -2.716976092	4.441756322	6.50992E-07	0.001824262	0.000411102	0.000458138	0 4.09924E-08	0.031498074	0.4768997	7 7.4349E-08	0.00016362	3.5909E-0	0 5 5.8511E-06	1.35565E-09	0.006885159	0.00100921	7.2429E-11	6.7674E-07	0 2.2226E-07	0 1.1344E-08	6.8808E-12
0.03734914	0 0.197217471	0.000112047	0.001937269	1.26708E-05	0.000219906	0.018150989	0.195472184	5.13114E-09	5.21841E-05	0 2.89718E-08	4.46794E-05	1.50618E-16	0.00014643	3 0.0019372	7 1.1746E-11	5.2359E-07	2.391E-0	0 7 4.6599E-07	2.67029E-20	1.1484E-05	0.00021991	1.3282E-12	5.9514E-08	0 2.6528E-08	7.4873E-08	3.01935E-21
	0 0	0	0	0	0 0	0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0	0	0 0	0	0	0	0	0
42.680		0.0076	0 1.2504	0.0000	0.0014					0.0005	0.0006	0.0000	0.086	7 6.534	0.0000	0.0040	0.000	0 0 8 0.0002	0.0001	0.0069	0.0013	0.0000	0.0000	0.0000	0.0000	0.0000
0.43580032 0.10899595	6 3.211160298 5 0.495092107	0.007844406 0.000825727	0.13532747 0.045139739	0	0.000277536 2.06432E-06	6 0.646819432 6 0.036263175	3.119412861 0.44898902	1.58264E-07 7.01386E-08	0.001000047 0.000137621	0.000321116 5.86266E-05	3.64696E-05 1.29364E-05	7.68385E-09 3.70917E-09	0.002821234	4 0.04369472	2 4.9131E-09	1.6515E-05	2.89E-0	6 -7.7297E-06 6 6.193E-07	5.40851E-10		0.00056425 6.8811E-08	1.4932E-09 2.1331E-13	1.7753E-07 2.5391E-11	7.271E-07 1.039E-10	3.4405E-08 4.9062E-12	2.66068E-12 3.80522E-16
0.08945375	1 0.199550676 0 0	0	0.103532395 0	0	2.263462028	0.015826433	0.199550676	1.37621E-08	6.88106E-05 0	0.000137621 0	8.25727E-06 0	3.16529E-10 0	0.009048593	0.8427575	5 4.5965E-06	0.00053672	0.000110	1 2.7524E-05 0 0	6.88106E-06		0.00290381	0	9.0073E-08 0	3.6907E-07	1.743E-08 0	1.35557E-12 0
0.23	4 0.882	0	0.162	0	0.0000648	0.06168	0.8064	6.936E-08	0.000186	0.00005772	0.000010032	3.828E-09	0.002976	0.329610	6 1.1088E-05	0.000192	4.1952E-0	5 1.1088E-05	3.8976E-06	3.576E-07	4.992E-06	1.3248E-11	1.5744E-09	6.432E-09	3.0384E-10	2.3616E-14
5.6	0 0	0.0011176	0.019492	0.0002562	0.001866	0 (6 -0.13606	1.828	0 3.354E-07	0.0005648	0.000003294	0.0008284	0 2.194E-09	0.0014686	0 0	0 0 2 1 2924F-10	1 6972F-06	4 332F-0	0 0 9 1 493F-06	2.878E-19	0.018752	0.0018626	0 1.5168E-11	9.09E-07	0 2 648F-10	6.216E-07	0 6.652E-19
8.20 0.3511	2 4.902	0.011334 0.0020296	1.0056 0.03524	0.0002457 0.007636	7 0.0011448 0.037568	8 -0.27738 8 0.13872	4.5678 1.5848	4.023E-07 3.0616E-08	0.0024894 0.000812	0.06912 0.00011128	0.0012696 0.000047968	1.3938E-08 4.4464E-13	0.07002	0.9474		0.0012426	0.0001200	6 0.0008358	1.4034E-08 6.436E-19		0.0010746	2.5404E-10	6.558E-07 1.7752E-05	2.9754E-07	4.5528E-07	5.295E-12 8.896E-15
10.18	8 1.3527	0.0020230	1.007055	0.007030	0.0000081	1 -0.58167	1.2105	9.135E-08	0.00075564	0.00015309	0.00009243	2.3085E-08		8 8.197418	7 0.000045			1 0.0002754		0.0000009	0.0000162	4.167E-11	4.959E-09	2.025E-08		7.434E-14
	0 0	0	0	0		0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0		0 0	0	0	0	0	0
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	0 0	0	0	0	0 0	0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0	0	0 0	0	0	0	0	0
13.8511677 0.01473601	5 4.396704256	0.002921381	0.198832945	7.3594E-06 4.99923E-06	0.000420906	6 -1.071976406	1.752484312	2.56847E-07	0.000719758	0.000162199	0.000180757	1.61735E-08	0.012427489	9 0.1881596	6 2.9334E-08	6.4556E-05	1.4168E-0	5 2.3085E-06	5.34869E-10	0.002716523	0.00039818	2.8577E-11		8.7693E-08		2.7148E-12
0.37778259	7 0.077811681 6 1.806711479	4.42081E-05 0.002183719	0.037915979	0.008215846	8.67635E-05 0.040420758	0.007161429 0.149253821	0.077123082 1.705143135	2.02448E-09 3.29409E-08	2.05891E-05 0.00087366	1.14307E-08 0.00011973	1.76281E-05 5.16105E-05		0.002788826	6 0.03752864	4 2.293E-10	4.1247E-06	8.9862E-0	8 1.8386E-07 7 -9.253E-07	6.92472E-19	0.019056976	0.03793319	6.9488E-10	1.91E-05	1.0467E-08 2.7234E-06	1.1439E-06	9.57153E-15
8.76930754 0.12980090	9 1.164334739 1 1.521803666	0.000585309	0.866821262 0.223450357	0.01955621	6.97206E-06 0.103634141	6 -0.500671685 1 0.074712985	1.041936277 1.322109972	7.86294E-08 2.07613E-08	0.000650416 0.000153213	0.000131772 1.06733E-06	7.9559E-05 0.000213121								8.36648E-05 3.61514E-10	7.74674E-07 0.008297617	1.3944E-05 0.09192796	3.5867E-11 8.5731E-10	4.2685E-09 2.1347E-05	1.743E-08 9.8125E-08	8.2115E-10 3.0884E-05	6.39881E-14 2.28271E-10
	0 0	0	0	0) (0 0	0	0	0	0	0	0		0 0	0 0	0		0 0	0		0 0	0	0	0	0	0
0.05591936	0 0.749827866	0.000372191		0.000173386	0.001815564	0.057008705	0.677205312	4.84756E-08	0.000181193	0 3.74006E-05	9.42278E-06	9.18675E-11						0 0 7 -8.2245E-07		0.000426658	0.00177199	3.6856E-11	7.2441E-07	0 1.1983E-07	-2.4147E-08	0 1.4343E-16
0.05130736 0.03993010	3 0.230292637 3 0.261736952	0.001292526 6.12749E-08	0.019223858 0.000507242	0.000155497 0.007669501	0.000807008	8 0.024538304 7 0.019153464	0.211921715 0.257679015	5.64906E-08 2.50375E-06	6.03616E-05 0.000249563	6.21331E-06 1.2539E-05	5.03232E-06 0.00011768	1.04289E-09	0.001468973	0.1615586	6 8.8057E-07	0.00010145	2.029E-0	5 4.0579E-06	3.00496E-17 1.91129E-06	7.71008E-05	0.00072828	2.8487E-09	3.3884E-07	1.3838E-06		5.07242E-12
0.40624119 0.04346169	2 0.308472657 6 0.200264678	1.35285E-05	0.009789534	0.009696682 0.002141128	0.003434334	-0.004193339 0.012569804	0.27670507 0.173633737	5.90608E-07 3.67507E-07	4.00237E-05 3.1318E-05	8.35902E-06 3.74964E-06	7.89653E-06 2.22635E-06	2.09852E-09	0.000645534	4 0.00920365	5 2.7696E-11	1.0759E-06	1.2676E-0	6 4.4257E-07 7 5.3581E-08	1.19307E-10	0.001182414	0.00856451	1.1078E-08	2.7696E-06	1.7512E-07 4.0373E-07	1.9281E-07	8.84147E-11
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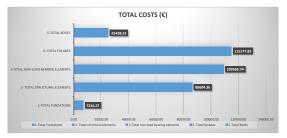
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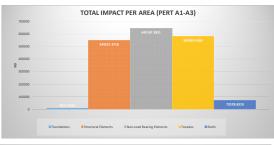
BIM-LCA Construction Project

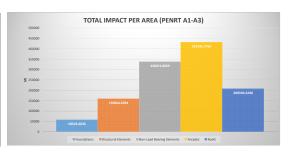
Graphical Results

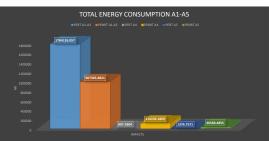
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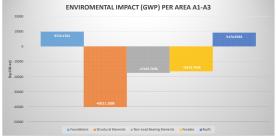
Impacts	Enviromental
Eutrophication potential (EP)	Abiotic depletion potential for fossil resources (ADPF)
Photochemical Ozone Creation Potential (POCP)	Abiotic depletion potential for non fossil resources (ADPE)
Ozone Depletion Potential (ODP)	Acidification potential (AP)
	Global warming potential (GWP)

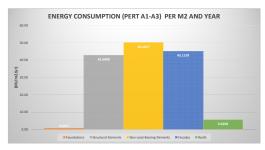


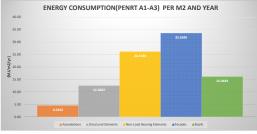


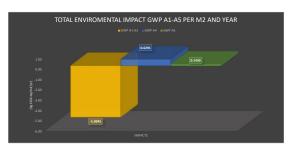
















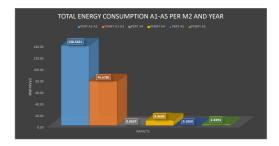
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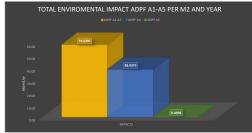
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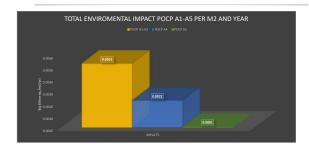
Graphical Results

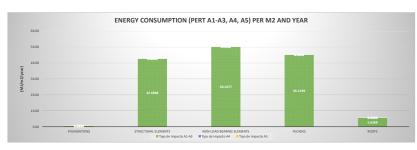
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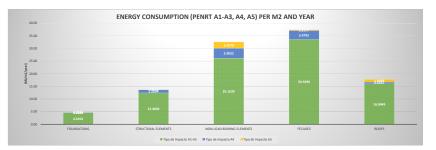
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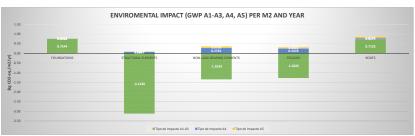


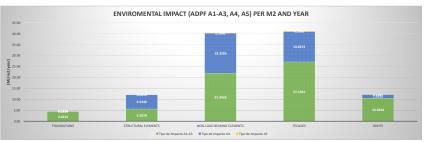
















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BIM-LCA Construction Project

Graphical Results

Project name: Single-family house in timber (structure, facades and

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