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Data Article

Global or local construction materials for post-disaster reconstruction? Sustainability assessment of 20 post-disaster shelter designs

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ABSTRACT

This data article presents the life cycle inventories of 20 transitional shelter solutions. The data was gathered from the reports 8 shelter designs [1]; 10 post-disaster shelter designs [2]; the environmental impact of brick production outside of Europe [3]; and the optimization of bamboo-based post-disaster housing units for tropical and subtropical regions using LCA methodologies [4]. These reports include bill of quantities, plans, performance analysis, and lifespan of the studied shelters. The data from these reports was used to develop the Life Cycle Inventories (LCI). All the amounts were converted from their original units (length, volume and amount) into mass (kg) units and the transport distance into ton × km. These LCIs represent the production phases of each shelter and the transportation distances for the construction materials. Two types of distances were included, local (road) and international (freight ship), which were estimated based on the area of the country of study. Furthermore, the digital visualization of the shelters is presented for each of the 20 designs. Moreover, this data article presents a summary of the results for the categories Environment, Cost and Risk and the contribution to the environmental impact from the different building components of each shelter. These results are related to the article "Global or

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local construction materials for post-disaster reconstruction? Sustainability assessment of 20 post-disaster shelter designs"[5]

1. Specifications table

Subject area	*Sustainability*
More specific subject area	*Life cycle assessment, sustainable construction*
Type of data	*Tables*
How data was acquired	*Literature review*
Data format	*analysed*
Experimental factors	*None*
Experimental features	*None*
Data source location	*Worldwide*
Data accessibility	*The data is available at http://www.ifrc.org/PageFiles/95186/900300-Transitional%20Shelters-Eight%20designs-EN-LR.pdf*

2. Value of the data

- Describe the material demand (life cycle inventories) of several transitional shelters.
- The data comes from experiences on the field.
- Describes the cost and technical performance of transitional shelter, which is needed for their assessment.

3. Data, materials and methods

Three types of data are presented in this data article and are available in Supplementary files. First the lifecycle inventories for each shelter, this data represents the amount of construction material need to construct each shelter. Moreover this data present the transport distance that each amount of material was transported form its production site to the construction site. Second, Assessment results: this data presents the performance of each shelter on the proposed assessment categories Environment, Cost, and Risk and are associated to the article "Global or local construction materials for post-disaster reconstruction? Sustainability assessment of 20 post-disaster shelter designs" [5]. Finally, the contribution to environmental impacts. This data represent the contribution that each building component, foundation, structure, walls, roof and transport of construction material produces on the overall environmental impact and it is related to the article article "Global or local construction materials for post-disaster reconstruction? Sustainability assessment of 20 post-disaster shelter designs" [5]. Finally, a digital representation of the shelters is provided.

3.1. B1 Afghanistan bamboo

This shelter was built to act as a shell to protect occupants living in tents. Each shelter contains one tent, erected inside the structure. It is rectangular in plan and has 1.8 m tall side walls and a gable roof. The covered floor area is approximately 9 m $\times$ 4.3 m. The frames are constructed from bamboo poles. The frames are connected using plywood gusset plates and bolts. The walls and roof are plastic sheeting, and are supported on the bamboo frame and purlins. The floor is compacted soil. The shelter frames were shop fabricated in the camp and transported to the construction site. The frames are embedded into the ground for support [2].