Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)
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AHW28-13 Room:103 Time:May 20 14:45-15:00

Basic study on the Life Cycle Assessment of the local wood used in the construction of houses

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In late years of Japan, wood as the natural material is reviewed from the viewpoint of comfort and health maintenances. Maturity advances, and the forest resource in Nagano prefecture area enters felling period. In a condition that the effective profit utilization is done. The forest area of Nagano prefecture occupies approximately 80% of the prefecture soil surface. As the top 3 of wide forest area in Japan, there are Hokkaido (55,380km^2), Iwate (11,740km^2) and Nagano (10,600km^2) , and Nagano prefecture is endowed with forest resource-rich environment. It is essential to use local wood to succeed the local forest of Nagano for sustainable assets in the next generations. Because the achievement is tied to our security, reliable living, it is necessary to promote local production for local consumption of the wood.

The log felled in forest was accumulated to the market, and they were purchased by each sawing factory, and sawing and drying were performed in a factory, and the finished wood was carried in to the building site. It was cleared by a result of the preliminary investigation about the manufacturing process of the timber tree in Nagano. The wood is brought into the spot after a multi-stage process in this way. We understood that the circulation of the wood was divided by each process. It becomes one of the causes that promotion of the wood use does not advance to enough that a prospect of the traffic of the wood is bad.

The life cycle analysis (LCA) to use in this article is the same as technique to evaluate the environmental load in the life cycle of the product mainly. This method is the technique that is important to promote the visualization of the manufacturing process until process of the manufacture and spot import.

One of the medium-and-long term aims in a series of studies including this article is what a construction company and an end user make the decision making tool to change it to the product that there is less the environment load at the time of housing construction and show. Atmospheric carbon is absorbed in wood and is fixed, but the quantity of true fixation does not become clear if carbon released in the manufacturing process is not deducted. We calculated the income and expenditure of the carbon as carbon balance in this study.

The second aim clarifies results level of the traffic of the wood in each process and is to make a part becoming the bottleneck of the wood promotion clear.

We calculated quantity of in the forest of Nagano wood existence and the quantity of felling to idealize as a test. We aim for clarifying real quantity for it in this article.

We clarified the quantity of in the raw wood market handling material volume and quantity of shipment material volume from a sawing factory by hearing investigation. Based on the result, We clarified the technique toward generalization of the carbon balance calculation of the timber tree in this article.

Keywords: Carbon Balance, Local wood, Life cycle Assessment, CO_2 emission, Wooden houses