

Responsibly Sourced Materials in a Circular Built Environment Project Template

The Sustainable Buildings and Construction Programme (SBC) aims at improving the knowledge of sustainable construction and to support and mainstream sustainable building solutions. Through the programme, all major sustainable construction activities can be brought together under the same umbrella. The work involves sharing good practices, launching implementation projects, creating cooperation networks and committing actors around the world to sustainable construction. The purpose of this template is to capture, report and publish case studies related to circular economy in the built environment for the purpose of knowledge and information sharing including cross collaboration.

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The SBC Programme is one of six programmes under the One Planet Network (UN 10YFP).



One planet
build with care

Please give us more information on the project.

1. Title of project (e.g. Circular Economy Ownership Models: A view from South Africa Industry). *

Sustainable Community Reconstruction: Local produced Building Materials

2. Region(s) of project *

- Africa
- Asia/Pacific
- Europe and Central Asia
- Latin America
- Middle East
- North America
- Central America
- Caribbean
- Global/All regions

3. Country/countries of project(s). (e.g. South Africa) *

Nepal

4. Your name *

Beth Huggins

5. Your organisation *

Conscious Impact

6. Other than the SBC Programme, is this project related to any of the other 10YFP/One Planet Network Programmes? *

- Sustainable Tourism Programme
- Consumer Information for SCP
- Sustainable Food Systems
- Sustainable Lifestyles and Education
- Sustainable Public Procurement
- Not related

7. If this case study is related to any other program, please list the program. *

Involving Volunteers in Rural Life, Plantation of coffee, fruit and other trees to enhance agriculture based income in rural Nepal

8. Overview/Summary (1000 characters). (e.g. Waste materials are not remanufactured, reused or recycled successfully. This study focuses on the South African industry's view on composite waste. The study found that cost reduction was a major driver and sustainer for recycling of composites). *

The 2015 devastating earthquakes left hundreds of thousands homeless in rural Sindhupalchok, Nepal with little to no options for affordable, sustainable home reconstruction. This project developed localized production of sustainable materials, Compressed Stabilized Earth Bricks, to be used for community and individual rebuilding.

9. Keywords *

- Policies promoting circularity
- Construction and demolition waste management
- Design for disassembly, reuse and easy to recycle
- Adaptability, flexibility and refurbishment of buildings and neighbourhoods
- Sharing and multi-use of spaces
- Use of reused or recycled content in new products and buildings
- Circular water
- Circular energy
- Financing circular processes
- Reconstruction

9.1 If the keywords above are not adequate, please specify other keywords. *

N/A

10. Life Cycle Phase(s) *

- (re-)Manufacturing of building materials
- (re-)Design
- (re-)Build
- (re-)Use
- (re-)Purpose
- Dismantling

11. What do you want other people to know about your project? (e.g. To develop appropriate national models for circular economy, it is important to reduce cost for recycling composites to encourage South African companies to transition towards circular economy). *

Local-led, social initiatives have the capacity to respond, recover and rebuild after times of crisis or disaster. It was important to develop a solution for rebuilding which provided affordable, earthquake safe building materials, while also addressing the financial crisis of families losing their homes. Locally produced, environmentally sustainable Compressed Stabilized Earth Bricks reduced the overall financial and environmental cost of rebuilding and invested the majority of money spent for rebuilding in the local economy.

12. What is the aim of the project (50 words/350 characters)?(e.g. To identify the drivers and sustainers for the South African industry to consider reuse and recycling of production waste materials). *

to support the development of social enterprises or socially driven community projects and sustainably rebuild post earthquake

13. Explain what is special/unique about this case? (1000 characters) (e.g. This case study focuses solely on composites. Apart from the general reuses of recycled composites in a circular economy, it is also a good strategy to avoid or reduce high energy demand linked with the production of raw materials). *

This project led early rebuilding of community structures and individual homes in rural Sindhupalchok.

14. Year of delivery or ongoing?(e.g. 2018 or ongoing). *

2015-2018 primarily, ongoing

15. What did the project achieve (1000 characters)? Please give an example.(e.g. The study identified that a large number of companies in the South African industry experience a small percentage of composite production scrap material and that quality assurance of recycle and product certification for the composites was a major barrier.With these key identifications, the SA industry can conduct future research on how to overcome this barrier and would ensure the use of materials more efficiently to reduce production costs). *

The project supported the reconstruction of more than 100 household projects and is still supporting communities with low cost, environmentally sustainable, earthquake resistant building materials. Additionally the project reconstructed two primary schools, 10 community centers, and two children's homes. The investment of more than \$100,000 into the community, supporting the regeneration of local economy, environment and livelihoods of local people. The development of a community-led social enterprise and training center for the production of sustainable construction materials.

16. Who was involved/who were your stakeholders, and what was their contribution? Please list the entire supply chain of stakeholders/actors. (e.g. Directors and senior managers in South African composite material users sector). *

Earthquake victims of rural Indrawati Gaunpalika, Sindhupalchok

17. What were the output(s)/outcome(s)? Please list examples of any outcomes achieved. (e.g. A purely theoretical study, but outcomes are: 1. Identification of cost reduction as the biggest driver. 2. Sustainers for a circular economy cannot be assumed from a global perspective but have to consider the local environment. 3. The different ownership models could be assessed though detailed knowledge of the supply chain and composite volumes. 4. The need for quality assurance of recycle and to certify products incorporating recycle composites. 5. A large number of companies experience a relatively small percentage of composite production scrap material). *

(1) Effective sustainable reconstruction requires education and awareness building provided by collaborations between the government and community-based organizations. (2) Community-wide trainings and meetings to develop understanding of new technology is required especially when using a new technology to respond to a traumatic event such as an earthquake. (3) Establishment of cooperative run social enterprise to deliver the produced building materials so there is established trust within the community. (4) Government and organizations lead in rebuilding with new technology.

18. Is the project replicable? If yes, how? (1000 characters) (e.g. Yes, with the application of similar cost reduction methods in different countries). *

Yes. Actually this model has been widely replicated in rural Nepal through Build Up Nepal's projects and work.

19. Is the project scalable? If so, please explain (1000 characters)? (e.g. Yes, it has not been implemented in South Africa yet as this is a purely theoretical study). *

Yes. This project requires low investment, high training, and the outcome is a self-sustaining enterprise or cooperative that can produce building materials. Evidence for scale can be found from Build Up Nepal organization.

20. What are the 3 main challenges (1000 characters) you encountered? And why?(e.g. Quality assurance of recycle and to certify products incorporating recycle composites, no consensus in the survey of composite manufacturing companies, government, local authority, product retailers/distributors, end users or third parties, should take responsibility for managing end-of-life product waste. Lack of QA for recycle and product certification incorporating recycle composites was a hindrance). *

(1) Government acceptance, approval and support for CSEB building in earthquake reconstruction. (2) Community perception of CSEBs and understanding of new technology mostly due to trauma from an earthquake and lack of government support for the technology. (3) Rigid existing supply chains in support for traditional fire bricks due to centuries of building evidence in more developed locations.

21. What are the 3 main successes (1000 characters) of this study? And why?(e.g. 1. Circularity can be progressed in SA. 2. Identification of cost reduction as a driver and sustainer for CE. 3. Quality assurance for recycle and product certification). *

(1) Social enterprise supplying local jobs to more than 30 people in various supply chain levels. (2) Building and reconstruction cost reduction of individuals and community both financially and environmentally. (3) Reduction of imported steel and cement for local reconstruction.

22. Please indicate the cost of the project in USD. *

100000

23. Would you like to add any other relevant information (1120 characters)?(e.g. While this study is purely theoretical, it mainly identified the drivers and sustainers in CE for composite material users and also elements that would encourage the adoption of CE in South Africa). *

Not that I can think of currently.

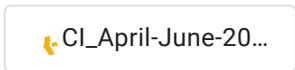
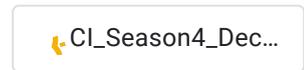
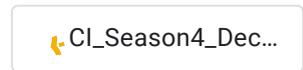
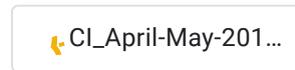
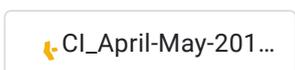
24. Are there any additional sources or websites for this project? If yes, please state. *

<https://www.consciousimpact.org/rebuilding#cseb>

25. Has this project been verified? If yes, please state. If verification is ongoing, please indicate how long this may take.(e.g. Journal paper through RMIT University online library resources. Verified by one of the authors, namely Al Amin Mohamed Sultan). *

Verified by US NGO Conscious Impact

26. Please upload any relevant images for the project. Please acknowledge credits for the photographer or source of images.

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