

Straws of Steel
Nepal
Grinnell College
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Overview:

The project aimed to introduce the technique of using straw bales for buildings to the members of the *Manakamana* Cooperative in Shivagadi Village Development Committee of Kapilbastu district in Nepal, an area that frequently faces flash floods, droughts, fires and earthquake disasters. It will be the first time straw bales will be used to construct a building in the country and help promote low cost, efficient and safe buildings while encouraging local people to pursue such interests as an enterprise and promote harmony in the community.

What happened:

ISET-N along with the *Manakamana* Cooperative provided tremendous amount of help in implementation of the project as well as monetary help. The pilot building that was being built in Kathmandu, in the premises of ISET-N's office, was funded by ISET-N as well as the services of their representatives in *Straws of Steel* throughout the timeline of the project. *Manakamana* cooperative also provided help with numerous volunteers and wages of workers that needed to be hired for the completion of the project. As the building was significantly larger than what my budget had defined, both ISET-N and *Manakamana* Cooperative have promised to provide additional funds if those I left behind were insufficient.

I spent my first month in Kathmandu working on a pilot building with ISET-N. We built a small load-bearing straw bale building within the premise of their office, using this new technology for the first time in Nepal. This was mainly a learning process with a lot of trial and error and a lot of improvisation. While working on the pilot I made contact with the members of the *Manakamana* Cooperative and decided on a location for the building and upon the dates for the rest of the project. During the second week of June, on visiting the site, we decided to finish off the building the Cooperative had on their site, a 1200 sq ft. building which already had pillars and a foundation on it. We agreed on completing the building with a frame based system using the pillars, rather than the load-bearing system used in Kathmandu.

On June 28th I went back to Shivagadi along with representatives from ISET-N to teach the locals how to build straw bales and discuss what straw bales are with the larger community. We held a presentation session on the first day, explaining what exactly we were going to do and how we were going to do it. The turnout was better than we hoped for, with at least a hundred people showing up; women at large, due to the greater percentage of the male population having gone elsewhere for employment, and busy in their fields

The monsoon was a huge factor concerning time during the course of the project. All the members of the cooperative were providing their voluntary support towards the project and monsoon was the time for plantation, one of the most important times for a farmer. Hence we were not able to progress as much as we would have liked to. So I had to wait for the farmers to finish with their plantation and also for them to make enough number of bales so that we could start working on the walls.

Building the bales was very laborious and time consuming work. The cooperative had groups of women in *Samuhas* work in making bundles for the bales, and we hired workers to work on compressing and tying the bales.

As soon as enough bales were made, which ended up taking till the first week of August, I headed back to Shivagadi from Kathmandu again, to teach the members of the cooperative how to raise walls. During the visit we helped the cooperative raise an inside wall. This was a different technique than the one we had used in the pilot building in Kathmandu and required a little tweaking of strategies. We managed to raise an inside wall, away from rain that may come inwards, teaching the techniques as well

as sharing ideas. Once the wall was completed I sat down with the cooperative and after a cost analysis, separated funds for an outhouse with a septic tank and a hand pump.

Conclusion:

Other than the delay with the monsoon, the project went very well. The most important aspect of working with straw is not to get it wet and the summer rain did not help. It also presented a challenge for earthen plastering, which needs low humidity, as we saw in the pilot building that takes a long time to dry. The monsoon also meant that straw was scarcer which contributed in raising the cost of the project. The monsoon along with the enormity of the building meant that we could not get the office building completed before the end of summer; however, I did manage to achieve some targeted goals of the project.

The people of the *Manakamana* Cooperative took in the technology well and saw great potential in it. They were able to identify this new technology as a new skill for livelihood development and were even considering making furniture with the bales. They were pleased and somewhat astonished as to how useful these bales could be, even though most of their houses were built of straw, and were quite eager to see the finished product. They were very comfortable with dealing with the straw bales and improvisation during the building process was not uncommon. Some even suggested we use another reed-like plant native to the Village's communal forest, as a substitute for straw, which would be stronger and cheaper. There were countless local reporters and members of nearby villages curious about the project and wanted to see and use the new technology as well. And the cooperative members were also able to pinpoint how this new knowledge could be used as a mechanism for interactions with more people in the area. This new skill and knowledge can now be shared or even exported to different villages and lead to more dialogue and harmony in Southern Nepal.

With such a level of acceptance of a new technology it seems that in time this idea can spread to further parts of Nepal. The building has not been completed yet, and is in the process of being so with the members of the *Manakamana* Cooperative still actively working on it. I, along with ISET-N, will further spread the outcome of the project through various media outlets once the building is done. The next step for forwarding straw bales in Nepal is to make a couple of more pilot projects and have more test cases across varied geographies. Working with people from Shivagadi really did put a positive spin on introducing straw bales to Nepal. Their enthusiasm, ability to learn and improvise with materials so local to them was very uplifting and gave an impression that this idea of straw bale houses in Nepal may have a future.

My thoughts on Peace:

Peace stands for stability and equality. My time in Kapilbastu and Kathmandu, while working on the project, tells me that working for peace means working for the betterment of someone other than yourself. It taught me, above all, of the capacity and the adaptive nature of us as human beings. The people of Shivagadi with their easy acceptance of something so novel made me feel that there is room for much change in our world.

My project has aided the people of Shivagadi village to make an office building using a completely new technology. The project has introduced the idea of straw bales and of straw bales as an enterprise to an area that faces lots of challenges and is in need of much social and economic reform due to the decade long civil war in Nepal. Having only planted a seed in Shivagadi, I believe that the idea will spread and affect neighboring villages as well. This spread of idea will increase interaction and collaboration among villages contributing to faster integration and harmony.

Being able to work with people in an alternate setting was the greatest experience I could get from my project. The project has made me realize the resourcefulness in people and their capacity to learn and given me hope that actions can mean a lot. Though the project may be relatively small in size in comparison to the problems facing Southern Nepal and many regions in South Asia, I can imagine the idea catching on, proving to be the cog in the wheel of development in Nepal and the whole of South Asia.



(Left) Raising an inside wall of the building in Shivagadi



(Right) Women from their *Samuhas* and hired workers making bales



(Left): Members of the *Manakamana* Cooperative during my presentation