Overview

The Kosi river rises in the Tibetan plateau of China and flows across Nepal into Bihar, joining the Ganges near Kursela, India. On 18th August 2008, the Kosi breached its embankments at Kusaha in Nepal’s Sunsari district, resulting in massive floods across Nepal and Bihar. The Kosi floods were subsequently declared a national calamity by the Government of India (GoI).

Over 330,000 housing units were damaged and significant structural impairments to roads, culverts, and bridges were reported in 412 panchayats. Approximately 284,000 ha of agricultural land in the five affected districts were exposed to the deposition of coarse sediment. The Kosi floods affected more than 3 million people, most of whom lived below the poverty line and/or came from landless households.

With assistance from the World Bank, the Government of Bihar’s (GoB) launched the Bihar Kosi Flood Recovery Project (BKFRP) to support flood recovery and risk reduction efforts in the affected region through i) the reconstruction of damaged houses, ii) the construction of road and bridge infrastructure, iii) the strengthening of the flood management capacity in the Kosi basin, iv) the enhancement of livelihood opportunities to all those affected, and v) the improvement of the emergency response capacity for future disasters. BKFRP was given a USD 220 million IDA credit that became effective on 08 March 2011 and the GoB created the Bihar Aapada Punarwas Evam Punarnirman Society (BAPEPS) for implementing the project.

Owner Driven Housing Reconstruction

The Kosi basin in Northeast Bihar is prone to natural hazards. For example, the district of Supaul, Madhepura, and Saharsa all fell into Earthquake Zone V, are exposed to annual floods\(^1\) and face high wind velocities\(^2\).

\(^1\) BMTPC Vulnerability Atlas of India.
\(^2\) IS:875 (Part 3) for Bihar State.

Photo above: Amirka Devi, a widow with no family support was at the mercy of her neighbours after her house was damaged in the Kosi floods. As a home owner under the BKFRP, it was the support extended by the KSK team that helped her complete the construction of her home. As a proud owner, Amirka Devi says that the KSK Social Workers are like sons to her. She is seen here with Pankaj, one of the social workers.

www.gfdr.org
The wealthy residents in the area build brick homes with reinforced cement concrete (RCC) roofs. The quality of RCC is poor and buildings rarely follow earthquake safety requirements. On the other hand, the poor build incrementally, starting with a foundation and plinth in bricks. Bamboo, cement poles, or brick columns make up the walls. The material for the roof ranges from thatch to corrugated galvanized iron (CGI) sheets to clay tiles. In neighbouring flood prone Madhubani district, houses have bamboo lofts used for storage and shelter in times of floods.

The rich tradition of bamboo construction, the availability of skills, the types of culturally acceptable houses, and the costs of such materials have informed the BKFRP Reconstruction effort in this multi-hazard exposed region.

**A New Approach for Reconstruction**

Owner Driven Housing Reconstruction (ODR) programs have been successfully implemented after numerous disaster events. The most notable examples include efforts in post-earthquake Gujarat (2001) and Pakistan (2005) and post-tsunami Sri Lanka and Thailand (2004). ODR is often cited for its high satisfaction levels among affected communities and its quick and cost-effective implementation.

In ODR, external agencies provide financial and technical assistance to homeowners to reconstruct their own properties. ODR allows people to reconstruct according to their needs, strengthens local building capacities, and encourages incremental construction allowing for early occupancy. In addition, ODR gainfully employs community members, preserves cultural heritage and housing traditions, and builds confidence among people traumatized by a disaster. Occupancy rates are also significantly higher than contractor driven models.

In order to succeed, ODR needs an adequate regulatory framework, enforcement of building codes, access to quality materials, and technical guidance to ensure the safety of homes being reconstructed. Adequate support mechanisms need to be in place for vulnerable groups such as widows, families headed by single woman, and the elderly. With sufficient assistance, self-built houses are likely to be more sustainable and families will be in a better position to make extensions and repairs.

**BKFRP Model**

ODR is one of the six components of BKFRP and aims to reduce the vulnerability of flood-affected population by reconstructing 100,000 damaged houses in the districts of Madhepura, Saharsa, and Supaul. The estimated cost of this component is $75 million and its planned completion date is September 2014. The GoB has issued a policy directive to adopt the ODR approach and BAPEPS is responsible for the implementation of this component of the project.

A multi-layered support and monitoring system has been put in place by BAPEPS. A field based Chief Program Officer oversees the housing program, and each district has a District Magistrate Support Unit (DMSU) supervised by a rural management specialist and a disaster risk management specialist. At the sub-district level, support hubs known as Kosi Setu Kendras (KSK) oversee roughly 4,000 houses each. The KSKs provide training to bamboo and brick masons, organize the community, facilitate bank transactions, monitor the quality of work, and act as an interface between the government and the house owners. Each KSK has a Coordinator, Civil Engineer, Senior Social Worker, and Information Facilitator. They are supported in the field by Social Workers, Brick Masons, and Bamboo Craftsmen. Gram Panchayat Engineers (GPE) working under the KSK Engineer oversee roughly 1,000 houses each.

Earthquake, flood, and high wind velocity resistant house designs measuring 215 sq. ft. have been approved by a technical committee appointed by GoB. Broadly speaking, there are three types of designs: i) brick super structure with a RCC roof, ii) brick super structure with a CGI roof and iii) treated bamboo super structure with a CGI roof (Figures 1-3). The designs have common features such as a plinth raised above the average annual flood level and a useable loft, which serves as shelter during floods. The loft and roof super structure is built with treated bamboo, but foundation details vary based on the soil types below the houses. The technical team and the masons are well trained and the construction is carefully monitored to assure that all details are properly executed.

Home owners are provided house reconstruction grants worth Rs. 60,000 in three tranches. The first tranche of Rs. 35,000 is used for the foundation, plinth, and walls up to the lintel level in brick houses and the entire superstructure in bamboo houses. The completed construction is certified by the GPE and approved by the Block Development Officer (BDO), and the second tranche of Rs. 20,000 is then disseminated. The third tranche of Rs 5,000 is released upon certification of house completion. This serves as an incentive for home owners to complete their houses and they are encouraged to buy solar panels.

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3 Barenstein J. D., 2008, “From Gujarat to Tamil Nadu: Owner-driven vs. contractor-driven housing reconstruction in India.”
lamps with these funds since electricity coverage is quite poor in these districts.

In addition to house reconstruction grants, landless beneficiaries are provided a grant by the GoB to secure land. The project encourages collaboration with other schemes such as Indira Awas Yojana (IAY), which provides Rs. 45,000 for house construction to Below Poverty Line (BPL) families and the Total Sanitation Campaign (TSC), which provides Rs. 3500 per household for toilets.

The Results

As of August 2012, funds had been issued for over 50,500 home owners. Close to 39,000 home owners had withdrawn their first tranche and about 31,600 had commenced construction. Over 12,500 have been issued their second tranche and over 7000 houses have been completed and owners have moved into their homes.

Of the total houses under construction, approximately 87% are brick homes with CGI sheet roofing, 10% are brick homes with RCC roof and 3% are bamboo homes.

Now we have a house!

Babita Devi, is a differently abled woman who heads a family of six. In addition to the BKFRP grant, she recovered 2,000 bricks from her in laws’ old house and sold some land to raise a total of Rs. 100,000. She has built a three room house and says that this would not have been possible without the government program and the KSK staff.

Improved social status

Sharmaji, a BKFRP home owner smiled and said, “We grew rice, but the floods destroyed our houses and filled our fields with four feet of sand. We migrated after the tragedy but now we have a house and we live well. Before girls would not want to get married into our village. Our social status has improved—from poor we have become rich, and people identify our houses from afar. There is a greater sense of community in Rampur now.”

Why would I want to go back to Delhi?

Naresh Kumar Sharma, a mason from neighbouring Purnea, was building skyscrapers in Gurgaon until recently. Trained through BKFRP, he has learned valuable skills in house design. When asked whether he would like to return to Delhi he said, “There are all these houses to be built and even after this is done, there will be work to plaster these houses and extend them. Here I get a lot of respect and people pay me in advance. Why would I want to go back to Delhi?”

Involving the community

This region is densely populated with a significant number of landless individuals and small land owners. Though all legal papers are in place, conflicts over land ownership typically arise when the construction work commences. The KSK approach has shifted the onus of resolving the issues to the home owner and the community, as they are the only ones who can find a solution.

“Are all these houses to be built and even after this is done would there not be work of plastering these houses, extending them?”

Two brothers, Jogi Choudhary under the BKFRP and Mahavir Choudhary under the Indira Awas Yojna (IAY) programme are constructing two houses with a shared wall in the Rampur Gram Panchayat (ward no 5) of Murliganj Block, Madhepura. The KSK team convinced the older brother, Mahavir Choudhary, to also build a safe house and follow the technical norms of BKFRP, though the same standards were not mandatory under IAY. There are several examples where households, other than the beneficiaries of BKFRP, have followed the technical norms set by the project as they were convinced by the field staff that that these safety features will be advantageous and cost effective during any disaster event.
There has been a unique story in this project. The KSK team motivated Waseem Ahmed, a landlord from Bishanpur Sundar Ward who donated land for 25 landless and extremely poor Mushahar families. This case has been featured in the local press and is a matter of great pride for the KSK team.

Challenges

Lack of infrastructure, damaged infrastructure and the remote location of the Kosi basin has made transport difficult, thus hiking up prices for materials. Through BKFRP, access has been improved and alternative routes have been provided through Government support. The KSK team has also mobilised the communities to rebuild and repair damaged roads and culverts, thus empowering communities.

Some of the technical challenges include beam shuttering, poor tying of steel bars, and fixing CGI sheets with nails as opposed to the prescribed J hooks. In some cases, people want to make changes in the plan of the house after constructing upto plinth level and at times home owners do not want to respect the Government guidelines. The project has found that these issues are best addressed by training, talking to the people involved, and regular supervision and monitoring.

One of the important lessons from this project is, “The more social mobilisation there is and the earlier it starts, the less conflict there is and the more progress is made. Where there are few social workers, progress is slow and conflict is widespread.” Bank funds are more effective where KSK teams are already interacting with home owners and placing masons in the village in advance of actual construction.

The Owner Driven Housing Reconstruction component of the Bihar Kosi Flood Recovery project is not only fulfilling its primary objective of reducing vulnerability by reconstructing flood damaged houses, but also building long term capacity in the larger community that includes the Mushahar community at one end of the spectrum and the rich landlords at the other. By involving entire communities, including masons, landlords, Government authorities, engineers, and social workers, it is contributing to the larger and long term project objective of enhancing disaster management capacity at the state level.

A film, “A Home of One’s Own” on this theme can be viewed at http://tinyurl.com/A-Home-of-Ones-Own

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