

How Pakistan built back better: Owner-driven reconstruction after the 2005 earthquake



Islamic Development Bank Group


What became known to the world as the Kashmir earthquake was one of the worst disasters in the modern history of South Asia and the worst ever in Pakistan. The epicentre, near the city of Muzaffarabad, was in Pakistani-administered Kashmir, where the Eurasian and Indian tectonic plates collide.

The 7.6-magnitude quake on 8 October 2005 shook three countries – Afghanistan, India and Pakistan – but the great majority of casualties and damage were in Pakistan. The government in Islamabad said more than 73,000 people died and 3.5 million more were made homeless; the country itself was left with a multibillion-dollar reconstruction task.

Nine districts were particularly badly affected by the earthquake, four of them in Azad Jammu and

Kashmir (AJK) and five in Khyber Pakhtunkhwa (KPK). Like so many earthquake disasters in the developing world, this one was aggravated by an almost complete lack of seismically safe building methods. In one AJK district, Bagh, 95 per cent of homes were damaged or destroyed.

The quake struck with the Himalayan winter a few weeks away and, in the difficult, mountainous terrain, shelter very quickly became an urgent priority.



Muhammad Aqil Khan and his daughter Fakhra, 18, one of six siblings, in their new quake-resistant house – part of the ERRA reconstruction programme near Bagh, Kashmir. They built it themselves on the site of their old home – completely destroyed in the 2005 earthquake. It's some 200 metres above the nearest road, and all the bricks and timber had to be carried up the hillside.

The world joins hands

Many global, regional, national and local partners came together to bring relief to Pakistan and the other countries affected by the quake, including multilateral and bilateral donors, the UN system, the Red Cross and Red Crescent Movement, local and international charities and NGOs, the general public and philanthropists.

The sequence of response – as with all disasters that leave large numbers of people homeless – was for initial emergency-shelter relief (tents, tarpaulins and other temporary structures), then ‘transitional shelters’ to accommodate people for a few years at most, and finally the permanent structures in whose construction the Islamic Development Bank (IsDB) played such an important role.

Within days of the quake and with a global relief effort gathering pace, the Pakistani Government set up the Earthquake Reconstruction and Rehabilitation Authority (ERRA) – a federal body under the prime minister’s office charged with planning and coordinating reconstruction that was to become a highly effective operating partner for IsDB, according to the Bank’s project completion report. ERRA is highly decentralized, emphasizing

the priority placed on local ownership, structured with headquarters, provincial, district and local offices.

Three weeks after ERRA opened its doors, an IsDB Group emergency assistance package to Pakistan worth just over half a billion dollars was approved for the newly homeless people – now at the centre of a major humanitarian emergency as winter bore down on them – as well as reconstruction and rehabilitation. This included – as a first phase that was successfully concluded in late 2009 – US\$80 million in soft loans for the building of 30,800 homes in Bagh, Muzaffarabad, Neelum and Rawalakot/Poonch, the single biggest concessionary finance agreement in IsDB history. The half billion dollars included US\$200m for trade financing.

In the second phase, a further US\$127m of istisna’a financing¹ was allocated in 2007 for 42,500 new homes in the KPK districts of Abbottabad, Battagram, Kohistan, Mansehra and Shangla; a further 15,000 homes were added after savings were made from fluctuations in exchange rates. The third phase worth US\$93m was agreed after the acknowledged success of the first two, and included schools and health facilities, roads, bridges and electricity generation.



Kali Jan, a 60-year-old widow, who has a daughter but no sons, was helped by her brothers and IsDB-supported cash grants to build the new house behind her in Mir Purmaira village, near Abbottabad. They built it in one year, she emphasizes, but the first stage was to clear the rubble. It’s the most impressive of the houses on her street.



Khan Mohammed (left), 50, and his near neighbour Muhammed Nazir, a 45-year-old builder by trade, who both rebuilt (background) their completely destroyed homes in Mir Purmaira village, near Abbottabad. Between them they have nine sons and daughters; all those born at the time survived the earthquake. "There has been a massive spin-off from this programme," says Muhammad, who estimates he personally helped construct 50 ERRA-funded houses. "There used to be around ten builders in this village – now there could be 100 people making a living in building." Khan, a retired officer in the 5 Probyn's Horse armoured regiment of the Pakistan Army, is thankful that the only casualties his family suffered in 2005 were one buffalo and one calf.

The third phase worth US\$93 million was agreed after the acknowledged **SUCCESS of the first two**

Owner-driven reconstruction

The Pakistani army was key to accurately assessing the damage wrought by the quake, according to Lieutenant-Colonel Aamir Rauf Kayani, Director of Rural Housing at ERRA headquarters in Islamabad. "Damage and eligibility assessments were carried out by more than 600 teams from the Pakistan Army," he says. UN Habitat was also involved. Houses were sorted into three categories according to the level of damage: minor, partial or completely destroyed; the latter comprised 76 per cent of the houses. The final rebuilding target came to just over 611,000 houses.

After an initial 25,000 Pakistani rupees (about US\$380) for immediate humanitarian relief, beneficiary households received three more grants of 75,000 (US\$1,150), 25,000 and 50,000 (US\$770) rupees, respectively, for start-up and laying foundations and roofs – all inspected and verified before the next payment was made. People rebuilt homes with their own hands or hired skilled local labour.

The guiding principles included combining new quake-resistant construction with the best traditional methods; rebuilding in situ on family plots; no means testing; limiting the new urbanization inherent in large-scale reconstruction; and complementing building work with social and livelihood support. The success of the project testifies to the skill and resourcefulness of the householders affected by the quake.

More than 720,000 people were successfully mobilized as part of this national effort; over 200,000 builders, masons, carpenters, electricians, plumbers, plasterers and fixers were trained, with a special emphasis on women (see Success factors, page 7). "The community has been given a sense of participation," says Akhtar Muhammed Dar, Planning Officer at the District Reconstruction Unit (DRU) in ERRA's Bagh office.

A 'cascade of training' began, with agreed curricula for training coordinators, running through 150 master trainers from partners organizations,



Two-year-old Saliha Sattar: her father Abdul built the new house behind her after the 2005 quake as part of the ERRA programme. She has five brothers and sisters, and the only one born at the time survived the earthquake unhurt, although their old house was completely destroyed. A key feature is the light corrugated iron roof – far less dangerous in an earthquake than flat heavy roofs typical of the houses that collapsed in 2005. It was completed well within the first year of the project, with help from their extended family network.

650 mobile teams, and finally thousands of individual craftspeople and communities.

The reconstruction programme also included livelihood support and the development of social infrastructure. Dar adds: “Education improved, livelihoods improved, health improved, sanitation improved.”

Dar’s Bagh DRU colleague, Alamgir Khan, agrees with the last point especially: “Water and sanitation have significantly improved,” he says. For the first time in the reconstruction zones, many people had proper toilets, kitchens, bathrooms and separate

bedrooms in their new houses, which cluster on the beautiful hillsides of the Kashmir Valley, built, for the most part, exactly where their ruined predecessors stood.

Building back better

The standard home of some 400 square feet (37 m²) houses up to seven people and consists of two main rooms, a bathroom, kitchen and verandah. But ERRA guided beneficiaries through a building ‘menu’ of five quake-resistant construction methods to take account of the local availability of raw materials and transport links. Householders were also free to add to their new homes using their own resources, on top of the reconstruction grants.

The traditional *kacha* houses that collapsed in seconds in the earthquake tended to be built

Social structures were built back better too

from big timber beams with thick stone walls and a heavy mud roof – all potentially lethal when the ground shakes beneath them. The *dhajji* building method, successfully deployed during reconstruction and far safer seismically, consists of a lightweight lattice filled in with mud or small stones for the walls, and an equally light corrugated iron roof.

The foundations of *dhajji* houses were to be at least a foot and half deep, depending on the soil type, and timber corners were braced using an overlapping dovetail. The wood used was young, durable kail or knot-free pine, treated for longevity.

And it was not just physical structures that were ‘built back better’ – social structures were too. Part of the rationale behind awarding everyone the same reconstruction grant, regardless of means, was to reduce some of the acute inequality that pre-dated the disaster. The most vulnerable people affected were given 3,000 rupees (US\$50) a month for six months after the earthquake, and widows like Kali Jan (photo, page 2) also received special consideration.

In the shadow of the Himalayas

The challenges thrown up by the mountainous environment and the post-disaster context, even some years on, were considerable. Some



Young Pakistanis work on rebuilding their home in an ERRA-supported reconstruction programme.

‘Future-safe’ building methods were observed

areas could only be reached on foot, meaning building material had to be carried uphill from the nearest road. As with most post-earthquake relief

ERRA was one of the winners of the 2011 UN Sasakawa Award for Disaster Risk reduction, joining cities like San Francisco and Vancouver. The award is a compelling measure of the degree of international recognition the authority has gained.



A further bonus was that overcrowding was reduced

operations, construction materials and labour were in short supply in areas where nearly the entire housing stock needed to be replaced; transport links had been seriously damaged in the quake and would have been difficult during the winter months anyway.

In addition, the need for assessment, inspection, transparency and compliance – to make sure resources went to the right people in the right way – all took time and generated delay. The first phase took somewhat longer than planned, but the second incorporated lessons learned, and overall the project was successfully implemented within the planned 36 months. An extension of a year was given to complete an additional 15,000

houses, made possible by savings from the rate of exchange for the dollar.

Of ERRA's own assessed total of just over 611,000 houses destroyed or damaged in the earthquake, it has now supported the rebuilding of 600,000 – overwhelmingly by the people who live in them. The construction of new permanent housing in Pakistan after the 2005 earthquake must rank among the most successful programmes of its kind anywhere in the world (see Success factors, opposite).

The programme to which IsDB contributed generated many other firsts as well. This was the first time the international humanitarian community had been involved on any scale in work in AJK. For the first time, as part of the ERRA programme, internationally recognized standards of quake-resistant, 'future-safe' building methods were observed. A further bonus was that domestic overcrowding was reduced.

Quake reconstruction by numbers...

73,338 Lives lost in Pakistan in the quake (official figure)

3.5 million People made homeless

611,000 Houses needing replacement

5,700 State schools and colleges destroyed

600 Health facilities destroyed

-15°C Mean minimum mid-winter temperature in Kashmir Valley

US\$6 billion Estimated global pledges of aid to Pakistan

US\$502 million Total IsDB Group package for Pakistan

1.5 million Door-to-door assessments by ERRA

88,360 Houses supported by IsDB

7 Maximum family size accommodated by standard-design houses

(Sources: ERRA, IsDB completion reports, Wikipedia. Some figures have been rounded.)

Success factors

Accurate assessment

The reconstruction programme began with a thorough, accurate assessment, carried out by committees usually comprising four components: the army, a local government figure – often a teacher, a member of the revenue department which handles land records, and a traditional *lumberdar* or community leader. Put succinctly, these people knew what they were talking about.

Ownership – by government, by people

IsDB's project completion report is worth quoting at length. The owner-driven strategy pioneered by ERRA, it says, gave rise to a "new paradigm of development – one led by the people which can readily be replicated not only for post-disaster reconstruction but also for overall development, with reasonable chances of success ... The programme leaves behind safer houses, wiser communities and informed local government machinery to take over the job." To that must be added the undoubted political will at the highest levels of government, embodied by the creation and success of ERRA itself.

Monitoring and evaluation

A unique feature of the reconstruction programme was independent monitoring and evaluation by IsDB contractors – crucial in maintaining a robust database of the 88,360 houses financed by IsDB. This database has also been highly significant for processing disbursements. ERRA also used the National Database and Registration Authority to digitize all household survey information. For checks and balances the IsDB consultants verified construction to three levels: plinth (foundations), lintel (completion of walls), and roof. Field monitoring teams were also instrumental in motivating people to build.

Involvement of women

The rural reconstruction programme – especially in its training and capacity-building components – went to great lengths to involve women. And the data bear this out. More than 55,000 houses were completed by female-headed households, according to ERRA figures, broadly in line with the proportion of the grant money that went to women, proving that they were indeed 'holding their own' against men on the building sites of the quake zone. Within just two years of the quake, ERRA had established a target of just under 3,000 for the number of Village Reconstruction Committees (VRCs) to be female-led; at that time 30 per cent of VRC members were women.

Capacity-building

There is no doubt that despite the terrible human losses a decade ago, after a strong focus on local capacity-building the areas affected by the disaster have been left stronger in terms of infrastructure, disaster risk, livelihoods, and the educational and professional opportunities open to women. As well as the masons and other craftspeople who were trained to help rebuild, vulnerable families and female-headed households were given special consideration.

Virtually all the houses funded through the ERRA programme are quake-resistant. Skills acquired for the programme were retained and continue to be used.

Transparency

The highest level of transparency was maintained throughout reconstruction – in the initial damage assessments, in transacting the multi-stage cash grant in a traceable way through people's bank accounts (rather than in cash, which is open to abuse), and in the long-term acquisition and storage of household data. An efficient mechanism for redressing grievances was instituted, providing rapid adjudication for people with complaints, including mobile teams able to hear cases and make decisions on the spot. Most legal issues were also resolved quickly on site.

Sustainability

Using the maximum amount of salvaged material possible, new construction in quake-affected areas reduced environmental impact. The principles of disaster risk reduction were "mainstreamed throughout the entire project"; according to IsDB evaluators, who observed that "earthquakes don't kill people, poor construction does." Economic activity in the project areas rose as reconstruction funds trickled down through procurement and wages. Policy was central, backed by the "unflinching" political will on the part of ERRA, but implemented in a decentralized fashion.

Communications

After its initial 40-page manual for rebuilding was found to be too technical for mass consumption, ERRA published simpler 'bite-size' design guidelines. Posters were printed, for example, flagging ten easy steps for 'future-safe' reconstruction and distributed in the communities undertaking the work. As a separate exercise in external communications, Pakistani media consultants were hired to produce leaflets for the public, as well as supervise a broadcast public information effort to bolster awareness of seismic issues.

Recognition

Such was the international recognition of its success that ERRA was among winners of the 2011 UN Sasakawa Award, joining cities like San Francisco and Vancouver. The ERRA-UN Habitat rural reconstruction programme was, in 2010, "without any shadow of doubt, the most impressive earthquake-resistant low-cost housing programme thus far built in any country," wrote Ian Davis, Professor of Disaster Risk Management for Sustainable Development at Lund University, in his letter of nomination. He described the ERRA-led programmes as "a benchmark of excellence in giving safety to literally hundreds of thousands of families". According to Major General Azeem Asif, ERRA's Deputy Chairman, in 2014: "IsDB has been instrumental in enabling us to achieve world recognition and the UN award for building seismically safe and resilient houses in earthquake affected-areas of Pakistan."

IsDB has been instrumental in enabling us to achieve world recognition

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¹ A sale in which an asset is transacted before it comes into existence. A purchaser orders a manufacturer to manufacture a specific asset according to the purchaser's specifications at a pre-agreed price, which is payable either in a lump sum or in instalments at any time as agreed.

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