Climate Resilient and Low-Carbon Housing Reconstruction in Sindh

Submitted By: IOM / UN Migration



Organization Profile

Organization Name: IOM

Organization Type: United Nations entity

Website: https://pakistan.iom.int/

Practice Details

Country(ies): Pakistan

City(ies): Mirpurkhas

Start Year: 2022 **Ongoing:** No **End Year:** 2024

Main Adequate Housing Components:



Housing Thematic Areas:

- Communal & Self-Build Housing
- Housing Rights & Social Inclusion
- Housing & Climate Mitigation
- Housing & Climate Adaptation

Relevant SDGs:



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Problem & Context

In 2022, Pakistan experienced the worst flooding in its history, displacing 7.9 million people and damaging 2.5 million houses, with Sindh the most severely hit (24 of 30 districts declared “calamity-hit”). From PDNA, over 1.44m houses were destroyed & 0.65m partially damaged; 88% of affected families still live in temporary shelters. The floods compounded chronic challenges: Pakistan has the highest child stunting rate in Asia, with open defecation common in 56% of Sindh’s flood-affected villages. Later verification after floods confirmed 2.1 million housing damage only in Sindh province. Women and girls bear disproportionate WASH burdens, further deepening inequality. Policy gaps include the absence of flood-resilient housing standards, weak land tenure protections, limited WASH integration in housing recovery, and reliance on permanent houses with high-carbon fired bricks, risking material shortages, price inflation, and 13Mt CO_2 emissions if 2.1m houses are rebuilt conventionally.

Solution Developed

IOM adopted an owner-driven, cash-based housing reconstruction model, empowering households to choose among six designs: standard SPHF flat-roof, double-pitched roof, and chora (circular) shelters, with variants in cement-stabilised mud brick. These vernacular designs are flood-resilient, cost 20–40% less and required fewer bricks. After orientation sessions, 98% of beneficiaries opted for double pitched roof or chowra designs, enabling 20% cost savings that were reinvested into WASH and community infrastructure. Each household received PKR 159,500 in four tranches, linked to construction milestones. A village-wide tranche system fostered peer accountability and timely progress. This integrated approach combined social innovation (whole-village accountability), technological adaptation (mobile wallets), and environmental sustainability (reduced fired brick use), while strengthening household agency and local ownership. Target beneficiaries were flood-affected low-income families, especially women and marginalized groups.

Implementation

From Oct 2023–Jun 2024, IOM and SEAD Foundation implemented a pilot in 44 villages of Mirpurkhas. Village selection targeted areas where all houses were destroyed and no other reconstruction support was available. Beneficiaries were identified through needs assessments, with priority to vulnerable households (female-headed, elderly, large, or chronically ill). Communities chose among four vernacular, DRR-compliant designs; model houses trained masons and beneficiaries. Implementation combined cash assistance, technical guidance, and community mobilization. Progress was measured village-wide to encourage solidarity. Technical training (masonry, use of cement-stabilised bricks, safe construction) was provided. Actors - SPHF: Led policy and financing framework, SHRRP: Coordination and standardization of the technical guidelines, IOM: Provided technical design, oversight, beneficiary orientation, and monitoring, SEAD NGO: Mobilised communities, delivered trainings and implemented the project

on ground, Financial Service Providers: Mobile-wallet disbursement and Communities: owner-driven construction. Resources: Funding came from Greta Thunberg Foundation in initial phase in 2023 and upscaled by ECHO in 2024.

IOM support complemented $1.2B SPHF investments (World Bank, ADB, IsDB, GoS). Per household, average $1,330 covered shelter, WASH, and infrastructure, with savings reinvested into community projects. Partnerships with local masons & committees ensured sustainability.

Enablers & Obstacles

Key enablers included: alignment with SPHF, political buy-in from Sindh authorities, strong community engagement through Village/WASH Committees, and use of mobile wallets ensuring transparent cash flows. CAP deepened ownership, while masonry training built local skills.

Obstacles included: land tenure insecurity (requiring negotiations with landlords for permissions), inflation in construction materials, and mobile wallet transaction limits that necessitated splitting tranches. Budget constraints restricted community infrastructure to 4 villages. Some smaller or landless households struggled to fully benefit. These challenges were mitigated through negotiated land-use agreements, peer pressure mechanisms for tranche releases, and diversification of designs to allow cost savings for reinvestment in WASH/community facilities.

Results & Impact

CGIAR conducted an independent evaluation in 2024 for IOM's project. Survey data show intervention households reported 45.6% higher resilience compared to non-participants. This included stronger abilities to anticipate (+51.8%), withstand (+48.8%), recover (+33.8%), and adapt transformatively to floods. Durable shelters with raised plinths enhanced environmental security, reduced repair costs, and enabled safer mobility and work, boosting economic security.

WASH access improved hygiene, privacy, and dignity, especially for women, and created leadership opportunities through WASH Committees. Community roads and pathways improved mobility during floods. Household savings from reduced repair costs and lower shelter design costs were reinvested in WASH and communal assets. For low-income and marginalized groups (notably Hindu minorities and women-headed households), the intervention reduced vulnerability and strengthened agency.

Longer-term impacts include improved social cohesion via collective CAP processes, enhanced local governance through Village Committees, and reduced carbon emissions by shifting from flat to pitched/chowra designs. However, persistent poverty, insecure land tenure, and degraded agricultural lands remain structural barriers.

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Replication & Scale Up

The approach was replicated in Sindh's Mirpurkhas district, where 89% of households chose pitched roof designs. The model has been integrated into SPHF guidance, ensuring uptake across the province. Key factors enabling replication included political buy-in, cultural familiarity of designs, and successful demonstration of cost savings and resilience benefits.

Scaling requires mainstreaming vernacular, low-carbon typologies within national housing policy, expanding mobile-cash transfers nationwide, and aligning with microfinance to reach landless or excluded households. Integrating WASH and DRR into shelter standards and strengthening local material supply chains will expand scope and reduce climate and market risks.

Policy Uptake

This housing practice has informed or been partially integrated into policy discussions, strategies, or pilot-level policy instruments.

The project informed SPHF design guidance by demonstrating the feasibility of pitched roof and chora shelters. It influenced discussions on low-carbon construction, WASH integration, and community-led reconstruction. Elements of the whole-village and cash-based accountability model are now considered in broader recovery frameworks, bridging humanitarian response with resilience-building.

Lessons & Takeaways

Future efforts should strengthen financial literacy, especially for women, and ensure equitable access for landless households. Local material supply chains need reinforcement to avoid shortages. Greater upfront integration of WASH in housing design could improve long-term health outcomes. Retaining the peer-pressure accountability mechanism is essential, while expanding technical training can enhance quality and sustainability.