THE UTTE APPROACH FOR CLIMATE RESILIENCE

Building Resilient Communities
Empower's approach to sustainable housing

Urban Think Tank Empower (UTTE) is addressing South Africa's housing crisis with the Empower Upgrade Model, which not only provides safe and dignified housing but also enhances climate resilience. By incorporating renewable energy, water management systems, and resilient green infrastructure, Empower's housing developments ensure that vulnerable communities can withstand the increasing impacts of climate change while creating sustainable livelihoods.

Rapid urbanisation and a critical shortage of formal housing in South Africa have forced millions to live in informal settlements, where they are highly vulnerable to the growing impacts of climate change, including floods, fires, and extreme heat. With inadequate access to essential services like water, sanitation, and electricity, these communities face daily hardships, compounded by the risk of natural disasters. UTTE's Empower Upgrade Model provides a long-term, climate-resilient solution, offering safe, adaptable housing that strengthens communities and equips them to withstand environmental challenges.

Housing is more than shelter
The Empower Upgrade Model is built on the premise that housing must be more than just shelter – it must provide for basic needs of water, sanitation, safety and security, integrate social amenities that build community ties, and enhance economic inclusion with commercial spaces and opportunities for skills development. Additionally it should be resilient against the climate challenges of today and tomorrow.

"Our approach at UTTE isn't just about building homes, but rather focusing on creating ecosystems where people can live with dignity, have access to opportunities, and stay connected to their social networks," explains Delana Finlayson, Managing Director of UTTE. "By working within informal settlements, we preserve the heart of these communities, enhancing the quality of life through integrated solutions."

Future-proofing communities
Each Empower unit is designed to passively thermoregulate, with high-performance insulation that minimises heat loss in winter and reduces heat gains during the summer. This keeps homes

cool during heat waves and warm during colder periods, without relying heavily on external energy sources.

"Our houses are solid! When it's cold, it's warm inside. If it's warm outside, it's cool on the inside", explains Bukiwe Mpondokulu, an Empower resident who received her home in 2021.

By aligning the roofs of all units to face north, Empower maximises the use of rooftop solar panels, which generate twice the energy required to power each home. Once the local regulations and infrastructural system are in place to support this, the surplus energy can then be sold back to the grid through a feed-in tariff, creating an income stream that supports the maintenance of the community's infrastructure. The homes also have battery storage with enough capacity to last two days without sunlight, ensuring energy security even during cloudy periods. This also enables solar arbitrage, where solar energy could be stored during daylight hours and sold back to the grid during peak times when electricity prices are higher, contributing directly to economic sustainability. This directly supports Sustainable Development Goals (SDG) 7: Affordable and Clean Energy.

Water management that turns challenges into solutions
Water scarcity and flooding pose significant challenges for communities in low-lying areas like Khayelitsha, where UTTE's first Empower development is established and where the second is underway. To combat these issues, the Empower Upgrade Model has integrated innovative water management systems. Rainwater is harvested from rooftops and directed either into planter boxes, which grow drought-resistant and edible plants, or into a 30,000-litre underground tank. To prevent contamination from frequent sewage spills, caused by poorly maintained municipal pipes, the system uses downpipes that bypass the street entirely. The stored water supports tree irrigation through a subterranean drip system and serves as a crucial reserve of potable water during future droughts – a vital safeguard in Cape Town's water-scarce climate.

This approach not only mitigates the risks associated with water scarcity but also supports urban greening efforts, and reduces the heat island effect caused by extensive hard surfaces in densely populated areas. These strategies align closely with SDG 6: Clean Water and Sanitation and SDG 13: Climate Action, promoting water conservation and improving community resilience against droughts and floods.

Sustainable urban farming for resilient communities
Incorporating sustainable food systems is another key element of the Empower Model's contribution to climate resilience. Empower has introduced rooftop food gardens on its community centres, using hydroponic and aquaponic systems to maximise yield in

space-constrained environments. This initiative not only provides residents with fresh, locally grown produce but also reduces the carbon emissions associated with long supply chains.

Empower not only generates jobs through construction, management, and maintenance of community amenities and commercial spaces but also enhances local capacity by employing residents to manage food gardens and develop sustainable farming skills. In the latest development 15 residents have been trained to run the food garden, acquiring expertise that can be applied beyond the project. These transferable skills increase the community's ability to adapt and thrive in the face of climate change. By supporting SDG 2: Zero Hunger, this initiative bolsters food security and strengthens overall community resilience.

Sustainable construction and low-impact materials reduce the carbon footprint
A critical aspect of the Empower Upgrade Model is its focus on responsible construction practices. Locally produced materials with short supply chains are used to minimise the carbon emissions associated with transporting materials to the site. Additionally, Empower homes are built to last, reducing the need for frequent rebuilding, which is common in informal settlements following natural disasters. The carbon cost of building one resilient home is significantly lower than the cumulative emissions associated with rebuilding informal homes year after year.

Through these efforts, Empower contributes to SDG 12: Responsible Consumption and Production and SDG 11: Sustainable Cities and Communities, creating long-lasting homes that reduce the environmental impact of housing construction.

Scaling for a climate-resilient future
Over the next five years, UTTE plans to build 1,000 homes, 10 community centres and 10 safe public open spaces – creating 7,000 jobs and impacting tens of thousands of lives by enhancing resilience in the face of crises. These homes will not only provide protection against natural disasters but will also integrate sustainable energy and water systems that contribute to long-term climate resilience. Partnering with the City of Cape Town has opened 14 new sites for development, where the Empower model will lay the foundation for more sustainable, self-sufficient communities.