## Ulaanbaatar microgrid design



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As Ulaanbaatar"s population swells, nonprofits are mobilizing to create sustainable solutions to infrastructural issues that pose safety risks and health hazards.

Children gather to play in GerHub"s community center, Songinokhairkhan district, Ulaanbaatar, Mongolia.

Mongolia"s capital city is growing rapidly, and the influx of nomadic families to the outskirts of Ulaanbaatar is straining its already fragile infrastructure.

The lack of medical resources combined with astronomical levels of pollution and food insecurity pose a threat to all residents, but young children and pregnant women in particular.

Since 1990, the number of people living in urban areas in Mongolia has increased from 58 percent to nearly 70 percent. This number continues to grow each year as nomadic herders relocate to ger areas - recently settled areas in the hills and mountains surrounding Ulaanbaatar.

These areas lack essential resources like plumbing, electricity, and access to clean water and healthy food. Many residents choose to live in ger areas because their proximity to the city holds the promise of educational and career opportunities.

"It"s important to note that the ger area isn"t a "slum" - it"s a very important part of the city," said Daria Azbayar, a social innovation lead for GerHub, a nonprofit that works closely with residents of Songinokhairkhan, the fastest growing ger district in Ulaanbaatar. "Ulaanbaatar was a nomadic city - it moved around - so our original form of the city was ger areas."

GerHub's most visible contribution to Songinokhairkhan is the Ger Innovation Hub - a community center that seeks to bridge the infrastructural gaps that local residents face.

Designed to replicate the traditional structure of a ger, the Ger Innovation Hub's architecture utilizes modern materials and is engineered to maximize energy efficiency by trapping heat within the walls.

Approximately half of Ulaanbaatar residents live in traditional gers - structures made of organic materials like wood and thick fabric. The Innovation Hub borrows structural elements of the ger design but substitutes cloth for polycarbonate sheets that can expand and contract in extreme temperatures without breaking.

The sheets also enable natural light to enter the space, minimizing the need for electricity.



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