

IMPACT SHEET: Switch-off Air Pollution in Mongolia's Cities (SOAP) Phase II

Scale-up inclusive, contextualised, and financially viable energy efficiency solutions for the Housing sector in Mongolia



Improving air quality and reducing greenhouse gas emissions in urban Mongolia



PROJECT BACKGROUND

Mongolia is a rapidly urbanising country where over 70% of the population now lives in cities. Following the fall of the communist regime in the 1990s, a massive rural exodus led to the growth of unplanned 'ger districts' on the outskirts of Ulaanbaatar and other provincial cities — areas made up of traditional felt tents (gers) and individual houses, without access to heating networks, water or sewerage. The EU funded SWITCH-Asia Switch Off Air Pollution project (SOAP Phase I, 2018–2022) was implemented in Ulaanbaatar to address the energy inefficiency and pollution caused by coal-burning stoves in these settlements. SOAP Phase II (2022–2026) builds on these results, scaling up inclusive, affordable and financially viable energy efficiency solutions across Mongolia's urban areas.

CHALLENGE

Ger districts are home to approximately 60% of Mongolia's urban population and are responsible for over 70% of urban air pollution, due to the burning of raw coal and coal briquettes in individual stoves for heating and cooking. The poor quality of construction — with average energy consumption of 554 kWh/m²/year — combined with low awareness of energy efficiency (EE) solutions and limited access to green financing, creates a 'double burden' for ger district households: high energy costs and severe health risks. Air pollution is estimated to cause 1 in 10 deaths in Mongolia. Despite government action (including a 2017 national emergency declaration on air pollution), the housing stock itself — the root cause of the problem — has not yet been adequately addressed.

PROJECT OBJECTIVES

SOAP Phase II aims to improve air quality and reduce greenhouse gas emissions in urban Mongolia by scaling up inclusive access to finance and energy-efficient housing solutions in the individual housing sector.

The specific objectives included the following:

- To capacitate ger area women and men as agents of change to tackle household energy inefficiency and pollution
- To offer a diversified range of affordable, bankable energy-efficient technical solutions for housing
- To improve households' and MSMEs' access to green loans and subsidies for the energy transition
- To strengthen construction-sector MSME capacity in EE techniques, materials and equipment
- To pilot, systematize and hand over a replicable EE model for nationwide scale-up

TARGET GROUPS

- 5,000+ households (HH) in ger districts equipped with EE solutions (incl. 750+ women-headed HH)
- 150+ MSMEs and 2,500+ workers, suppliers, architects and energy auditors in the construction sector capacitated in EE solutions
- 8 financial institutions (5 banks + 3 NBFIs) proposing green loan products including EE
- 20+ women's groups and organizations championing EE solutions and community mobilization
- National and local authorities: Ulaanbaatar Municipality, MUDCH, MoET, ERC

PROJECT ACTIVITIES

Community Mobilization and Awareness-Raising

Women-led community groups are mobilized across 40 khorooos in 6 districts of Ulaanbaatar, with volunteers trained via a cascade model to roll out affordable Do It Yourself "Simple Solutions" to 4,000 households, incl. 650 women-headed. Awareness on energy savings and indoor pollution is raised through community events, demonstration plots and a call center.

Technical Solutions Development

A market-based technical assessment informs the design and certification of min. 5 energy-efficient products covering retrofitting and new construction, branded under the Dulaan Shiidel label. A Technical Committee validates new standards, while practical training is delivered to the construction sector.

Access to Green Finance

5 commercial banks and 3 NBFIs are engaged to co-design tailored green loan products for households and MSMEs, backed by a USD 50 million Green Climate Fund credit line. A marketing unit, call center and digital platform support uptake of concessional EE financing among vulnerable households.

Construction Sector Capacity Building

A dedicated MSME branch within the national construction association is consolidated, training 160 construction workers, craftsmen and women in energy-efficient techniques, materials and equipment to grow market opportunities.

Replication and Sustainable Handover

A comprehensive replication toolbox, tailored to households, financial institutions, construction actors and public bodies, is piloted in another province and rolled out nationwide. The Dulaan Shiidel platform and delivery model are progressively handed over to a sustainable public-private body for long-term impact.

LESSONS LEARNED

A major structural barrier was financial: a green loan demand study found that while 52.6% of surveyed households wanted to insulate, only 4.4% qualified for formal loans, mainly due to informal income and high debt-to-income ratios. At the same time, coal briquettes subsidized at up to 75% of market price suppress the economic case for insulation, and past high-subsidy programs (covering up to 70% of retrofit costs) created wait-and-see behaviour. The project responded by advocating for coal subsidy reallocation to insulation subsidies, facilitating a study tour for Mongolian policymakers and financiers to France and Belgium (June 2025), and developing alternative financing mechanisms including savings-group pilots and NBFi partnerships.

Converting community interest into completed retrofits remained persistently difficult — the conversion rate from technical assessment to insulation stayed around 10%. A diagnostic study confirmed the core issue: not a lack of demand, solutions or financing instruments, but the need of an end-to-end coordination pathway connecting them. Seasonality, rising inflation and competing municipal free-insulation programs further depressed household urgency. The project responded by developing marketing campaigns reaching 1.9 million people, deploying the Dulaan Shiidel digital platform as a one-stop shop guiding customers, and systematically gathering lessons from each campaign cycle.

SOAP II has demonstrated that demand for energy-efficient housing in Mongolia's ger districts is real and strong — over half of surveyed households want to insulate their homes. The project has succeeded in building, testing and validating an integrated delivery model that combines community mobilisation, technical solutions, green finance and private sector development into a single, accessible pathway for households. Coalition-based outreach through trusted local actors (Red Cross, district authorities, women-led CBOs) proved highly effective in reaching vulnerable households. The Dulaan Shiidel one-stop-shop (OSS) model, the digital platform and the replication toolbox are now operational and being handed over to institutional partners. The conversion rate from technical assessment to completed retrofit (~10%) points not to a lack of demand but to the value of further strengthening end-to-end coordination across the journey. Replicating the model in Darkhan-Uul showed that local adaptation, tailored financing and strong institutional partnerships are the key success factors for scale-up.

PROJECT ACHIEVEMENT

SOAP Phase II has built and proven an integrated energy-efficiency delivery model for Mongolia's ger districts — combining community mobilisation, technical innovation, green finance and private sector development — now expanding across provinces and laying the foundation for nationwide scale-up.

- OSS creation: Dulaan Shiidel digital platform connects HH, workers, financiers & suppliers
- 4,850 HH implemented EE solutions
- Replication toolbox developed and presented to 21 provinces
- Model replicated in Darkhan-Uul
- Upscale strategy & action plan, externality study shared widely with financiers and policymakers
- Advocacy contributed to adoption of Resolutions 57 & 119 mobilising 300b MNT/yr to EE; Mongolian delegation study tour to EU
- Chingeltei district partnership: 2,200 HH insulated

Long-term project sustainability

A key strength of SOAP II is that all key actors in the delivery model are Mongolian and will continue operating independently. Encouragingly, the project has catalyzed the first promising public and private subsidy initiatives for energy efficiency in ger districts — from CSR-funded insulation programmes by private companies to the landmark parliamentary Resolutions 57 and 119, mobilising ~300 billion MNT per year for EE — a strong signal that domestic actors are beginning to internalise the value of EE investment. The MGFC, now a specialised green investment bank, continues channelling a USD 48 million GCF credit line (USD 9.6 million dedicated to retrofitting), while a 300 million MNT revolving green-loan fund established with five NBFIs operates independently.

The replication toolbox — structured into five dedicated packages for public institutions, households, the construction sector, financial institutions and CSOs/NGOs — has been widely presented across Mongolia's provinces. Notably, several provinces contacted the project on their own initiative to request training sessions, demonstrating genuine local ownership and self-driven replication. The Dulaan Shiidel model is integrated into the Ministry of Urban Development's permanent Information Dissemination Centers, and the Government's 2024–2028 Action Plan incorporates SOAPII-driven recommendations on passive house standards and green mortgage lending. Particularly promising is the collaboration with Chingeltei district, which has insulated 2,200 households and is actively seeking to deepen its partnership with the Dulaan Shiidel model. The project also leaves behind a comprehensive library of publications, manuals and training materials — widely disseminated and freely available for reuse by local actors long after project completion.





Xavier Rat

Country Representative,
Geres Mongolia

“

In Mongolia, winter temperatures can drop to -40°C . Coal burned in ger districts causes over 70% of Ulaanbaatar's air pollution, making it one of the world's most polluted capitals in winter. Proper insulation can cut energy use by up to 60%, reducing household bills while improving indoor air quality, thermal comfort and health, and contributing to cleaner air. But solutions alone are not enough. The real challenge is creating a system that reliably connects all actors along the retrofitting journey. That is what we are building with Dulaan Shiidel.

”

“Our house is now insulated with mineral wool walls, ventilation and 15 cm roof insulation. The living space is uniformly heated without a fireplace. Before insulation, I used to wake at 4 a.m. to start a fire — now I can keep sleeping. The house is clean since we stopped using coal, and it's safer for the children, who can now stay at home on their own while I'm working. Maintaining a tidy home influences our mood: we feel, warm, comfortable and happy.”

Oyunsuren B., mother of six, Khan-Uul district, Ulaanbaatar

Project contributions to Climate Change Mitigation and SDGs

Over its implementation period, SOAP II has avoided 20,008 tonnes of CO_2 equivalent through insulation works across 4,850 households — equivalent to avoiding the combustion of 13,529 tonnes of lignite. This represents 11,824,485 kWh saved in heating energy. Winter monitoring confirms that full insulation reduces daily indoor temperature fluctuation from 11°C to 6°C and lowers indoor $\text{PM}_{2.5}$ levels significantly. An independent externality study found that while EE retrofits are not yet financially self-justifying under Mongolia's heavily subsidised energy tariffs, they become highly cost-effective once externalities are included — household air pollution alone causes an estimated USD 1.2 billion in annual economic losses. A renewable energy pilot (solar PV with Ureca) explores the combined impact of insulation and clean energy. At the scale projected through the MGFC credit line over 15 years, the model has potential to deliver 771,566 TeqCO_2 of cumulative reductions and serve up to 24,000 households.

On **SDG 12** (Responsible Consumption and Production), SOAP II shifts Mongolia's housing sector towards sustainable consumption through a market-based delivery model rather than one-off subsidies, making EE products, services and financing accessible at scale. The project's externality study and Green Transition Accelerator's Club recommendations are feeding into national policy: the Government is considering passive house standards and a 500-household green model pilot area, while two recent parliamentary resolutions (57 and 119) mobilise approximately 300 billion MNT per year in domestic public resources for EE investment — the largest single policy shift in Mongolia's housing sector to date. The EE retrofit market is estimated to reach USD 300 million (retrofitting) and USD 750 million (new EE housing) by 2034, a market SOAP II is actively helping to unlock.

Beyond SDG 12 and **SDG 7** (Affordable and Clean Energy), SOAP II shows strong results on **SDG 3** (Good Health): an independent health impact study across 585 households found that insulated homes reported better mental health and fewer hospital visits than non-insulated ones; respiratory inpatients per 10,000 population fell from 508 (2021) to 480 (2025), a 6% reduction. **SDG 5** (Gender Equality) is mainstreamed throughout: women-led CBOs delivered the Simple Solutions campaigns to 290,255 residents, a dedicated gender sensitization in construction-sector was integrated into training curricula for MSMEs, and 65 of 253 trained construction workers were women. The project presented this work at the AWID International Forum in Bangkok (December 2024), reaching 2,500 participants.

SDG 8 (Decent Work) is supported through 9 MSMEs registered as MNCA deputy members, a growing job-matching platform for trained energy advisors, and 95.6% of participating MSMEs expressing strong willingness to continue in the sector. **SDG 1** (No Poverty) is addressed through targeted DIY kits for women-headed and disabled-inclusive households and the savings-group pilot financing model. **SDG 11** (Sustainable Cities) aligns with Ulaanbaatar Municipality's air pollution targets. **SDG 13** (Climate Action) is advanced through verified CO_2 reductions feeding into Mongolia's NDC reporting and the national commitment to a 10% green loan portfolio by 2030. **SDG 17** (Partnerships) underpins the model through collaborations with GIZ, AFD's FRESH programme, UNICEF, the EU Delegation and the 126-member Green Transition Accelerator's Club.

Impacts at a Glance

Economic Impact	- Insulation brigades earned average of 30,855,324 MNT (7714EUR) per brigade/per year and the total of 2,674,014,244 MNT (668,503 EUR) during the project period 20 insulation solutions expanded to 5 additional standard insulation + 3 renewable energy solutions - The project improved the supply chains by adding new products, expanding the number of suppliers, financial institutions and building capacity of construction brigades
Environmental Impact	- The project was able to reduce the average energy consumption for heating of 4,850 individual houses, by avoiding burning of 13,529 tons of lignite and emission of 20,008 tons of CO₂ equivalent greenhouse gas 18% reduction of SO₂ level throughout Mongolia - 0.017 (2021) to 0.014 (2025)
Social Impact	- Contributed to improved health by reducing exposure to cold indoor environments. The number of inpatients with respiratory disease per 10,000 population decreased by 6% between 2021 (508) and 2025 (480). - Occupational health and safety training was integrated into the mandatory brigade training curriculum - Reduced household energy expenditure through lower fuel consumption, reducing energy poverty. - Strengthened community participation, with 4,681 households implementing do-it-yourself simple renovation solutions and 4,256 residents participated in public training to enhance their knowledge on energy efficiency.
Climate Benefits	11,824,485 KWh reduction in energy usage over 4 years, avoiding emission of 20,008 tons of CO₂ eqv - Two pilot households installed renewable energy solutions for heating purposes. Annual energy generation is 248 kWh.
Green Finance	723,210,942 MNT (180,802 EUR) was leveraged through SMEs to households as a green loan for insulation. 5 commercial banks + 3 NBFIs and savings groups engaged - Initiated green loan information sessions among financial institutions and SMEs to provide better understanding of green finance
Target Group Engagement	253 construction workers, 75 MSMEs actively engaged in project activities, 32 energy auditors trained 290,255 vulnerable residents enrolled in Simple Solutions awareness-raising activities 4,850 households with houses insulated
Policy Development	- Contributed to discussions led by the Ministry of Economy and Development related to the draft Law on Climate Change Adaptation and Resilience - Contributed to discussion on 57th regulation - On measures to be taken to form a green financing system and improve its legal framework
Europe-Asia Cooperation	- Dulaan Shiidel upscale strategy + action plan established by Belgian company Climact (specialist in energy transition and energy efficiency models at scale), including benchmarking with european One-stop-shop models - Organized meetings with the following organizations: AFD, ANAH, SOLIHA, APC, Energiesprong, French Senator (France) + SLRB, Comensia (Belgium) + EIB,EBRD, European Commission (DG-INTPA, SWITCH-Asia) - Study tour to France and Belgium





FUNDING

EUR 2,874,936
(EU Contribution: 80%)



DURATION

May 2022 - July 2026



PARTNERS



Geres



Mongolia Green Finance Corporation
(MGFC)



Mongolian National Construction
Association (MNCA)



Building Energy Efficiency Center
(BEEC)



Mongolian Women's Fund (MONES)



CONTACT

Xavier Rat
Delta Center, 1st khoroo, Chingeltei district, Ulaanbaatar,
Mongolia
Telephone: +976 9922 7136
Email: x.rat@geres.eu
Website: <https://www.geres.eu/en/news/project-news/ulaanbaatar-actions-fight-against-air-pollution-until-2026/>
Dulaan Shiidel Digital platform: <https://dulaalga.mn/>

This impact sheet is developed together with SWITCH-Asia Policy Support Component



www.switch-asia.eu



EU SWITCH-Asia Programme
[@EUSWITCHAsia](https://www.facebook.com/EUSWITCHAsia)



SWITCH-Asia
[@SWITCHAsia](https://twitter.com/SWITCHAsia)



SWITCH-Asia Official
[@switch-asia-official](https://www.linkedin.com/company/switch-asia-official)