

TITLE: UB'S ECO-INCLUSIVE HOUSE: A SUSTAINABLE SOLUTION FOR AIR POLLUTION AND SOCIAL EXCLUSION

(BY: V.OIDOV)

Introduction:

I represent a team of entrepreneurs who have built an experimental house in Mongolia to address the critical issues of air pollution and social exclusion. The Eco-Inclusive house we constructed offers a proof of concept that socially inclusive and low-carbon construction is not only feasible but also economically viable. In addition, the house serves as an educational platform, providing workshops and seminars on sustainable living, energy conservation, and inclusive design. We collaborate with educational institutions and NGOs to offer training programs for students and professionals interested in learning about sustainable architecture, environmental health, and inclusive design principles. The international community is also taking note. The Ambassador of the United States to Mongolia recently visited the Eco-Inclusive house. This article highlights the key features of the Eco-Inclusive house and emphasizes its potential to combat environmental and social challenges in Ulaanbaatar, Mongolia



Picture 1: Mr. Oidov Vaanchig, initiator and owner of the UB's Eco-Inclusive House is standing on the terrace.

The Eco-Inclusive House Basics:

Construction: The Eco-Inclusive house was built at a cost of approximately \$40,000, which is equivalent to 10 times the per capita GDP. With a 20% down payment and a 30-year mortgage at an 8% interest rate, the monthly cost of the house would amount to \$257. The living space of the house spans 60 sqM3 (650 sq ft).

Carbon Footprint: Thanks to its exceptional insulation, the Eco-Inclusive house eliminates the need for carbon-based heating sources. Instead, it relies on solar radiation with minimal electrical consumption, even in extreme temperatures as low as -40oC/F. The house is constructed with 40

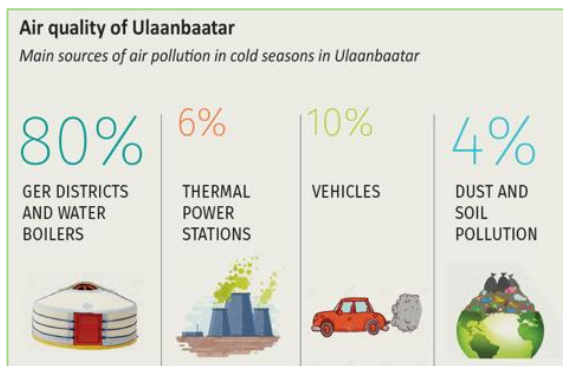
cm (16 ins) thick insulation, consisting of glass wool, stone wool, and insulation spray foam. Furthermore, the house features triple-glazed windows, a 20 cm (8 ins) thick insulated metal door, and electric radiators for heating. The Energy Recovery Ventilation system ensures efficient air circulation and filtration, maintaining interior air quality within the WHO safety standards. In terms of cost, electric heating in the house is comparable to the cost of coal briquettes in a regular house of the same size. From August 2021 to August 2022, the house consumed 460 kilowatt-hours, resulting in a monthly cost of \$20. In comparison, traditional houses using electricity for heating would cost between \$65 and \$114 per month, which is financially burdensome for. The house's eco-friendly design significantly minimizes air pollution both inside and outside the dwelling.

Addressing Environmental and Social Challenges:

Air Pollution: Ulaanbaatar, Mongolia's capital city, is notorious for its high levels of air pollution, primarily caused by coal burning in domestic stoves during the severe winters. The Eco-Inclusive house presents an opportunity to tackle this issue by providing an alternative to coal stoves. By replacing the traditional ger and wooden housing stock



Picture 2: UB's Eco-Inclusive House view from inside



Picture 3 & 4: Sources of Air Pollution in Ulaanbaatar

with houses like the experimental one, it is estimated that wintertime coal-fired air pollution could be reduced by 85%, amounting to a decrease of 1,000,000 tons of coal (85 percent of wintertime pollution is from domestic coal stoves. There about 250,000 of those households. Each household burns about 4 tons of coal). This shift towards cleaner heating sources would have significant health and environmental benefits for the population, particularly for pregnant women and children who are most vulnerable to the adverse effects of air pollution.

Social Exclusion: The gher areas surrounding Ulaanbaatar present challenges of social exclusion and inadequate accessibility. The Eco-Inclusive house serves as a model for inclusive design, emphasizing the importance of accessibility and equity in the built environment. By promoting collaborative efforts across society, the aim is to ensure that all individuals have equal access and opportunities, regardless of their physical abilities. Implementing inclusive design principles can break the cycle of disability and poverty, enhancing the quality of life for all residents. Additionally,

the article highlights the need for updated accessibility standards, implementation of inclusive policies, and the incorporation of inclusive design solutions in urban planning.

Conclusion: The Eco-Inclusive house in Ulaanbaatar, Mongolia, stands as a beacon of hope in addressing critical challenges of air pollution and social exclusion. We aim to collaborate with government agencies, NGOs, and private sector partners to scale up the implementation of such housing solutions, contributing to a cleaner environment and a more inclusive society. With its low-carbon construction, effective insulation, and emphasis on inclusivity, the house provides a sustainable and economically feasible solution. The success



Picture 5: Toilets in Ger areas are completely inaccessible

of the Eco-Inclusive house demonstrates that sustainable and socially inclusive solutions are not only desirable but also essential for the well-being of communities and the environment.

If you have any further questions or would like more details about specific aspects of the house, please let me know. **(Detail technical article is available too).**

Facebook page: <https://www.facebook.com/PassiveInclusiveLabHouse/>

Youtube: <https://www.youtube.com/watch?v=SKaI0NdxxKY&t=387s>

The parts of the text were developed with the permissions and supports from the following sources:

- *Dr. David Warburton, Professor of Pediatrics Children’s Hospital Los Angeles, USC Keck School of Medicine University of Southern California Honorary Professor Mongolian National University of Medical Sciences and National Center for Maternal and Child Health.*
- *Global Disability Innovation Hub: Case Study full report on Inclusive Design and Accessibility of the Built Environment in Ulaanbaatar, Mongolia.*

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