



# Energy Efficient Building Refurbishment in Mongolia



Implemented by



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Dr. Dunja Hoffmann, Project Manager

# PROJECT DETAILS

Energy Efficient  
Building Refurbishment  
in Mongolia Project  
(EEP)

2018-2021

8.3 Mio Euro



## MACRO-MESO-MICRO LINKAGES



### **POLICY AND PROCESS CONSULTING**

Energy Conservation Law,  
Financing arrangements, Tariffs



### **CAPACITY DEVELOPMENT**

Institutions, Service providers,  
Credit facilities



### **TECHNOLOGY TRANSFER**

Piloting, Market take-up,  
Replication

# PROJECT GOALS



Transparent, effective and gender-sensitive public investment management (PIM) in Ulaanbaatar is introduced through the case of energy efficiency in buildings.



Local Energy Efficiency Action Plan (LEEAP) for the building sector is adopted.



Private sector's capacity for energy efficiency is improved.



Energy efficiency technologies are introduced in ger neighborhoods.

## IMPLEMENTED BY





Energy efficiency technologies are introduced in ger neighborhoods.



From **10-18°C to 22°C** indoor temperature

1. Energy Savings up to **57%**
2. Reduced CO<sub>2</sub> and fine particle emissions
3. Extended lifetime of building **> 20 years**
4. Improved indoor air quality
5. Teachers and children are up to **78% less absence** of due to better health

Improved blueprints for **125 buildings** in Ulaanbaatar (and more in other regions)



Energy efficiency technologies are introduced in ger neighborhoods.

	District heating	Heat-only boiler
Average costs for renovation per building (4500 m <sup>2</sup> )	936 Mio. MNT	936 Mio. MNT
Average savings per building in CO <sub>2</sub> / year	250 t/ year (district heating)	710 t/year (heat-only boiler)
Average savings per building in 30 years	7.440 t	21.380 t

**125 public buildings** in Ulaanbaatar with available blueprints **save app. 50.000 t CO<sub>2</sub> per year.**

Over 30 years  
**> 100% of NDC reduction obligation** (830 000 t) of Mongolian construction sector

# GOAL 3

Private sector's capacity for energy efficiency is improved.

**60%** of Ulaanbaatar's population lives in the “**ger area**” in yurts or houses with poor insulation.



- Financing scheme was developed in close collaboration with the Mongolian Bankers Association (MBA) and ToC
- Eligible designs for EE houses were approved by GIZ



- **> 20% more EE** than in Mongolian regulation energy audits
- < 60.0 m<sup>2</sup>
- < 80.0 million MNT
- Interest rate: 6-12%



Private sector's capacity for energy efficiency is improved.



Savings per homes:  
8 -10 t CO<sub>2</sub>/ year

Saving per 30 years lifetime:  
240 – 300 t CO<sub>2</sub>

**3.458\*** newly built family homes that follow GIZ requirements would save **830,000 t of CO<sub>2</sub> in a 30-year lifetime.**

Reference:  
CO<sub>2</sub> Emission per capita in Germany in 2018: 9t/a



*\* Less than 2% of all families in the ger areas*



Private sector's capacity for energy efficiency is improved.

## FIRST certified green building in Mongolia

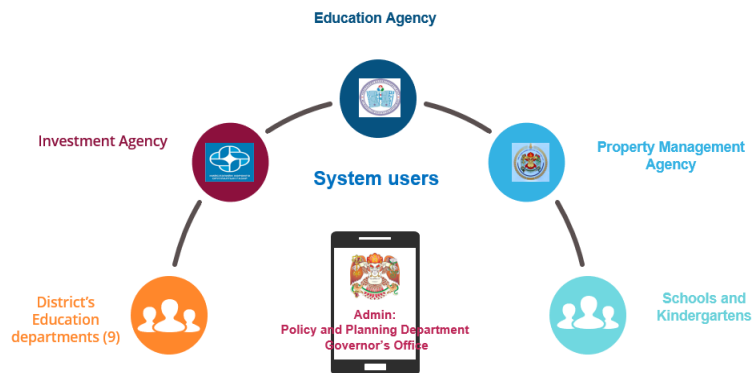






Transparent, effective and gender-sensitive public investment management (PIM) in Ulaanbaatar is introduced through the case of energy efficiency in buildings.

## Building and Investment Data Management System



[brs.ulaanbaatar.mn](http://brs.ulaanbaatar.mn)

**262**  
Schools



**145**  
Kindergartens





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## 2020

**29 proposals** amounting to **MNT 3.1 billion** were approved and funded by the state and municipal budgets



## 2021-2022

**48 proposals** amounting to **MNT 4.4 billion** are approved and included in the budget



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## 2018-2021: Parental participation methods for monitoring and evaluation

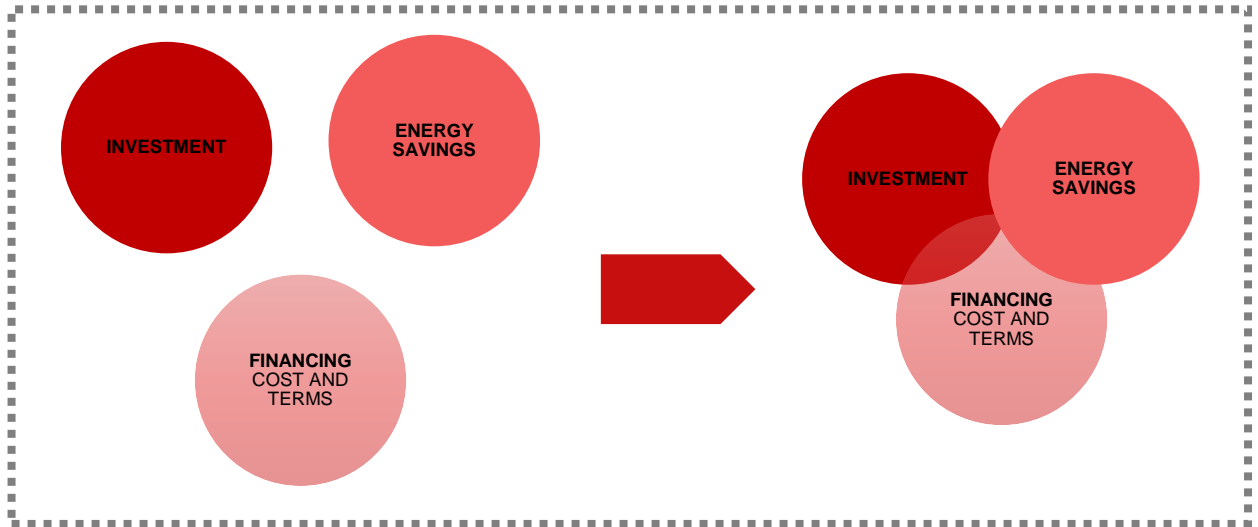
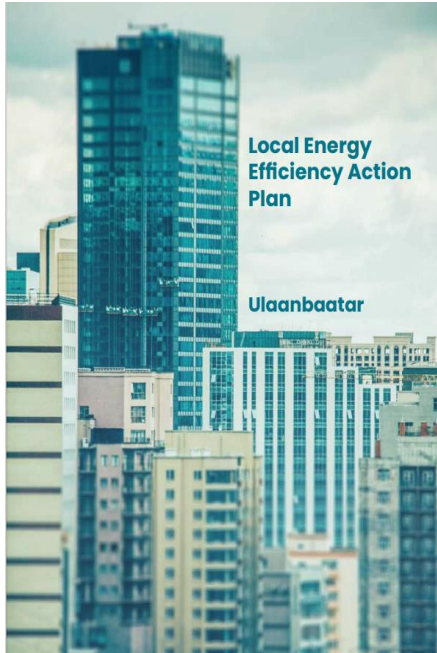


Additional activities implemented by project schools:

**Educative school gardening**, implementing **recycling** strategies, building paved access roads, fences for safe playing, renovation of classrooms, creation of new spaces, organize training and advocacy activities to students, parents and other communities, **implementing knowledge in insulation for in private houses and other public education buildings**



Local Energy Efficiency Action Plan (LEEAP) for the building sector is adopted.



A **guide to integrate** the current separately acting areas of public and private investment, financing and the motivation to save energy within one system.

# Thank you for your attention!

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Energy efficiency technologies are introduced in ger neighborhoods.

**45% reduction** of energy consumption of public buildings **is easy and cheap**

### Investment

- Investment costs: 208.000 MNT = 63 Euro per m<sup>2</sup> (1/10 of new building)

### In a 30-year lifetime of the EE measures

- Costs of energy savings: 39,4 MNT = 0,01 Euro/ kWh
- Cost of CO<sub>2</sub> savings: 84,2 MNT = 0,03 Euro/ kg CO<sub>2</sub>