HTWD Hochschule für Technik und Wirtschaft Dresden University of Applied Sciences

Saxon-Mongolian Innovation Cooperation now and in future

Prof. Dr.
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German-Mongolian Institute for Resources and Technology

Prof. Dr.-Ing.
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International Relations Official
Faculty of Mechanical Engineering

23/10/2026



GMIT's RESEARCH STRATEGY

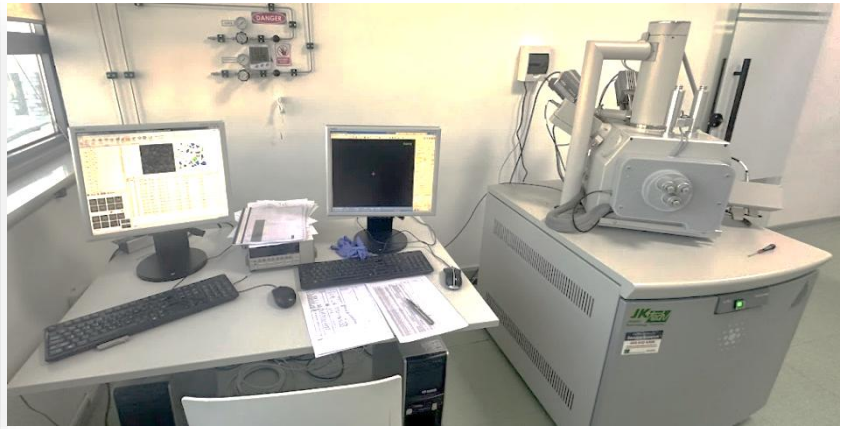
The GMIT's research mission is to conduct cutting-edge research in applied science and technology, to create innovative technologies motivated by the needs of industry and society for the benefit of Mongolian economic and social development.



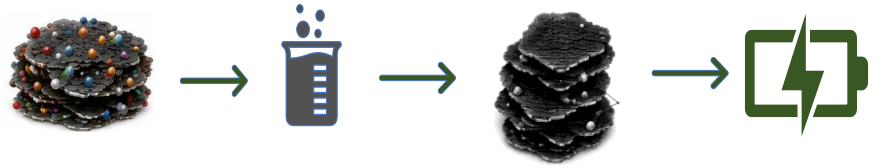


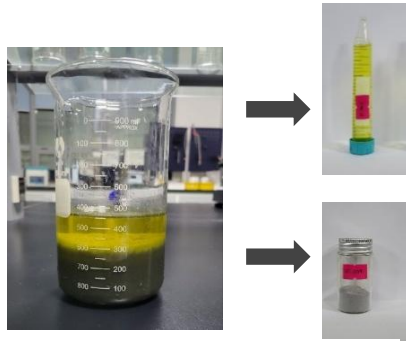
GMIT- RESEARCH UNIVERSITY





Research team, Research labs, Graduate programs





Rare Earth Element





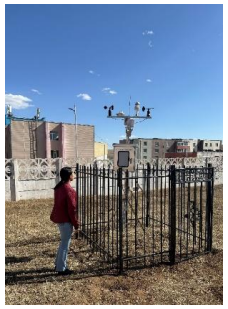
Li, Rb, Cu, Au ore leaching

APPLIED SCIENCE RESEARH → EAST RESEARCH&INNOVATION HUB → Start-ups, Spin-Offs, Companies,

GMIT project activities for a green, sustainable future

Atmospheric environment

- Greenhouse gas emissions and combat global warming effects.
  - Air pollution
  - Climate change





Sustainable soil & land

Preventing soil pollution and reduce the long-term impacts of mining on soil health and ecosystem function.



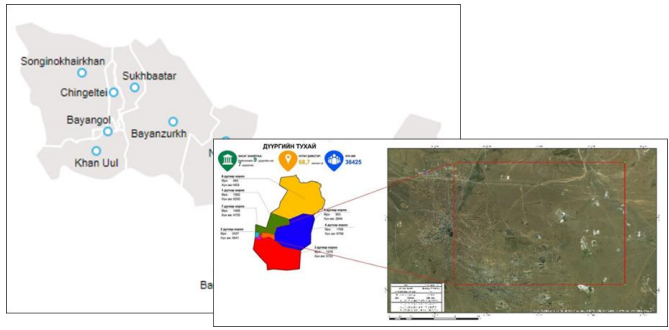



Waste management

Effective waste management reduces pollution, conserves resources, and supports a cleaner, healthier environment.

Environmental monitoring & technologies

Remote sensing, sensors, and GIS, supported by data analysis and modeling, and monitoring.

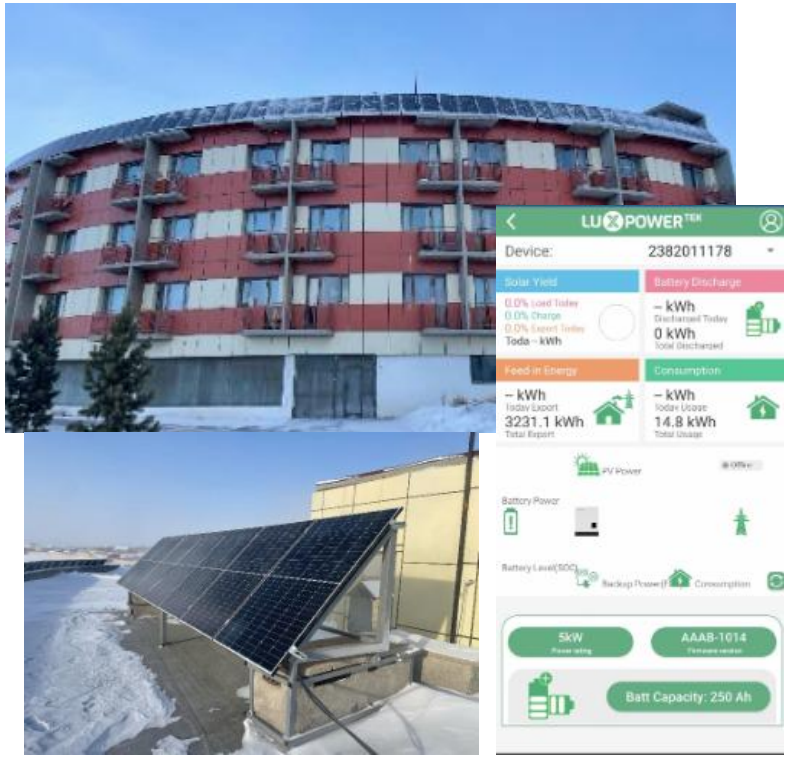


Water quality

Promoting responsible usage and management of water resources to preserve freshwater ecosystems.



GREEN CAMPUS DEVELOPMENT







Solar energy sources produce 14% of total electricity.
2 SES experts for Campus development

Renewable energy Research center
(GMIT&MUST cooperation)

REGIONAL DEVELOPMENT

Nalaikh - Green university city





Key Advantages:

- **Close** proximity to **Ulaanbaatar** city
- **Basic infrastructure** already in place
- Located at the intersection of **residential and tourism zones**
- **Gateway** to the Eastern region of Mongolia
- High potential to become a **green zone**
- Development opportunities based **on Nalaikh mine** – *e.g., responsible mine closure, rehabilitation, museums, training and practice centers*

GERMAN - MONGOLIAN INSTITUTE
FOR RESOURCES AND TECHNOLOGY

THANK YOU FOR YOUR ATTENTION!

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Hochschule für Technik und Wirtschaft HTWD – University of Applied Sciences

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Practice oriented study and research









Facts and Figures

12%
International students

40+
Degree programmes

163
Professors

150+
International university partners

2
Campus: Dresden City and Pillnitz



1992
Founded

25 Mio.
Euro Third-party funding per year

4800
Students

Cooperations of HTWD



Outlook of
Saxon-Mongolian scientific cooperation

1. New cooperation study programs
2. Research approach
3. Technology transfer



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Binational Study Programs in Mechanical and Electrical Engineering



Freistaat SACHSEN

Signing Ceremony, Leipzig, 22.10.2026

S.E. Herr KHURELSUKH Ukhnaa
Staatspräsident der Mongolei

Herr Dr. Andreas Handschuh
Chef der Staatskanzlei Sachsen

Frau Prof. Battsengel Baatar
Rektorin der GMIT

Herr Prof. Ingo Gestring
Rektor der HTWD

GMIT GERMAN-MONGOLIAN INSTITUTE FOR RESOURCES AND TECHNOLOGY

HTWD Hochschule für Technik und Wirtschaft Dresden
University of Applied Sciences

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Mongolia -
Sustainable Energy Projects





The Salkhit Wind Farm (Mongolian: Салхит Салхин Цахилгаан Станцын) is a 49.6 MW wind farm in Töv Province, Mongolia.

Fundamentals in Research and Study





Sources: Freistadt Sachsen, HTWD,

Let‘s create
Saxon-Mongolian scientific cooperation in H2 application











energy saxony

WASSERSTOFFLAND SACHSEN
Sächsischer Innovationscluster für Brennstoffzellen und Wasserstoff

Sources: Freistadt Sachsen, HTWD, Hzwo, energy Saxony, sunfire

Outlook of
Saxon-Mongolian scientific cooperation

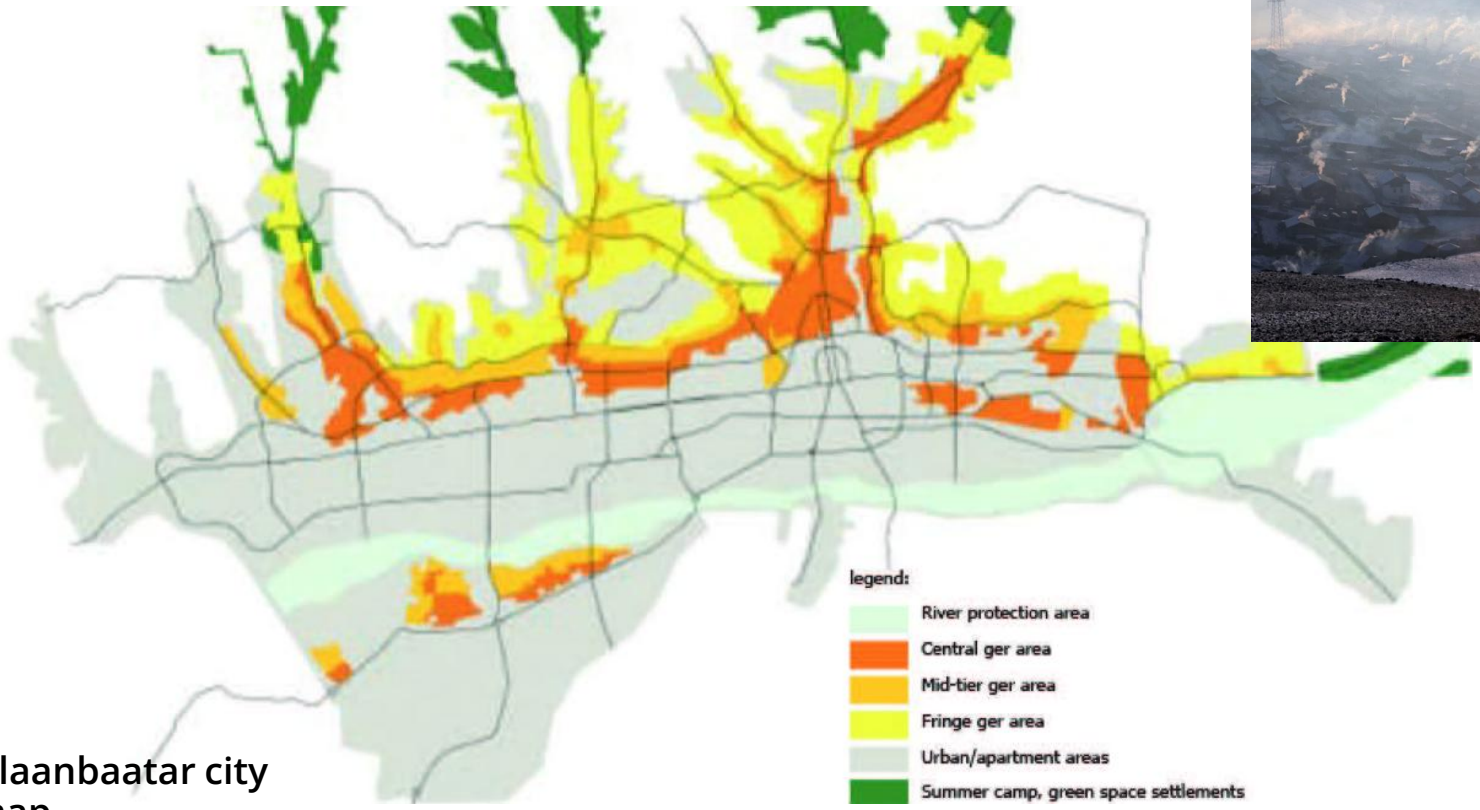
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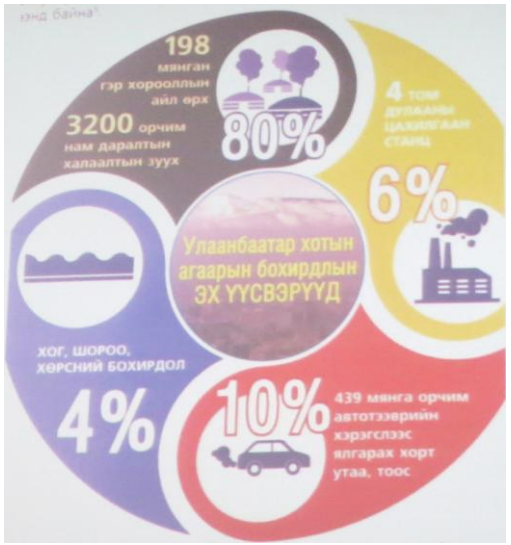
Pollution Situation in Ulaanbaatar / Mongolia

- Population = 1.75 mio. people, 49 % of national population (2025)
- Approximately 220.000 gers and small houses responsible for 86% of the overall air pollution
- Air pollution = Particulates+ Poisonous Gases
- Variety of health issues, including: reduced lung function, irregular heart attacks



Ulaanbaatar city map HTWD





http://www.mongolia-properties.com/research/real-estate-report-2015/ulaanbaatar-real-estate-sectoral-analysis/introduction-



GLEAR Video: problem and solution



GLEAR – clean air for gers.

Project to reduce the flue gas emission by using ESP principle.

sequence 3:00 min.

Full Video: 20:00 min.
Mongolian language
with English subtitles:

https://youtu.be/_M68sZCFcko?si=boR5_EInDf3865Xt

Implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

GMIT

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GLEAR Project Steps

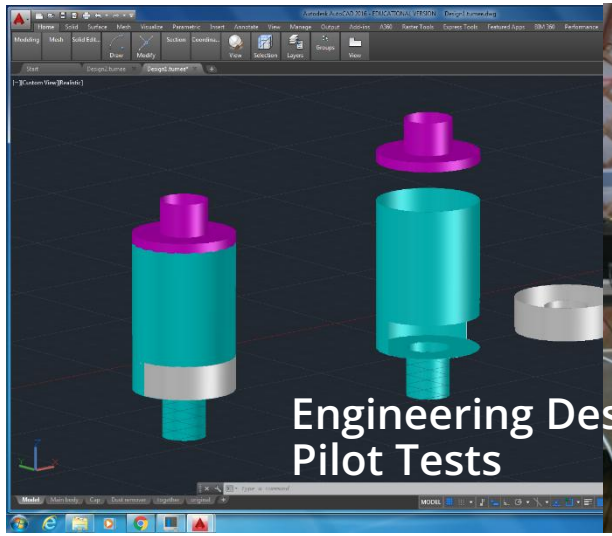
Implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

PROTOTYPE (2016/2017)
- first prototype development
- first test in ger (Nalaikh)
- measurement strategy & devices
- improved prototype

PILOT TEST (2018/2019)
- Small-scale production
- installation in ger district UB
- Field Test & Pollution Measurement

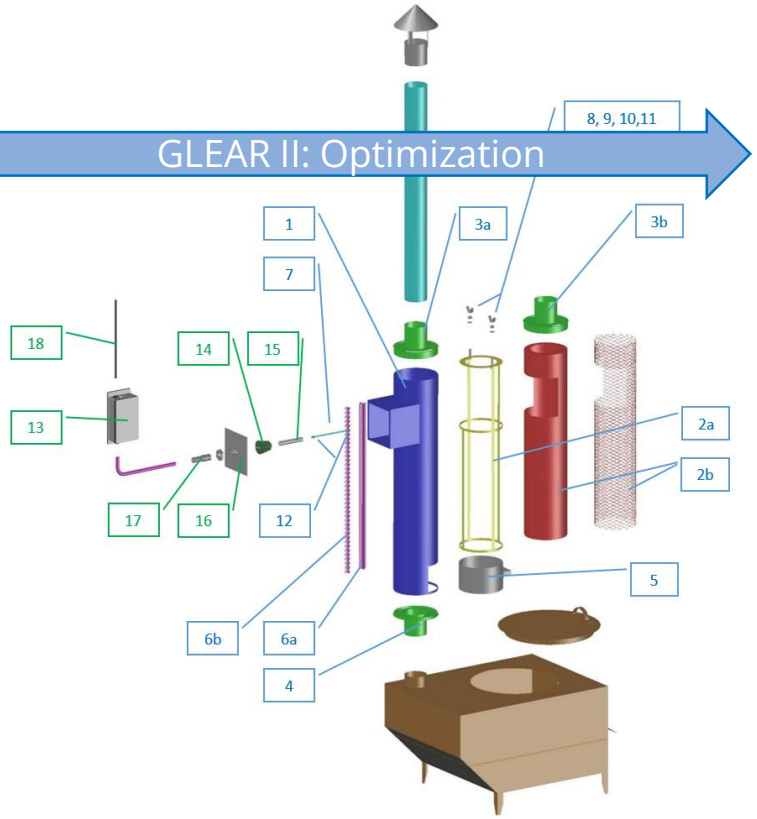
Optimization (2019/2020)
- Mechanical and electrical optimization
- Application tests
- Cost calculation

GLEAR: Prototype → GLEAR I: pilot test → GLEAR II: Optimization



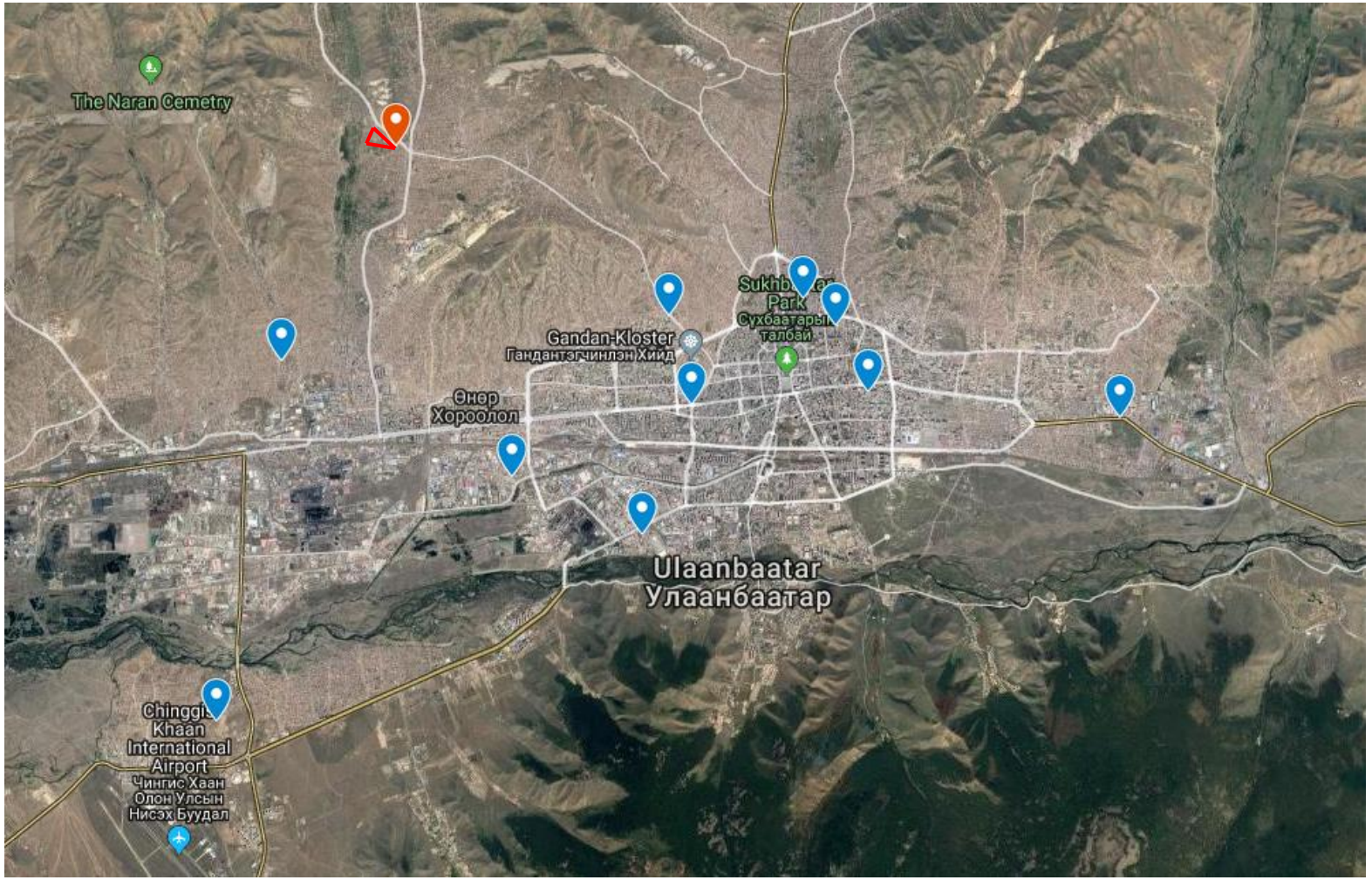






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Field test of 100 ESPs





Mongolian Parliament member D. Terbishdagva, Prof. Gunther Stehr and districts government responsibles

Shown location tags are air quality monitoring stations in UB city.
Red one is located in “Bayankhoshuu” known as most polluted area.

Installation







Dust particle precipitation



after 1 day usage



2 days



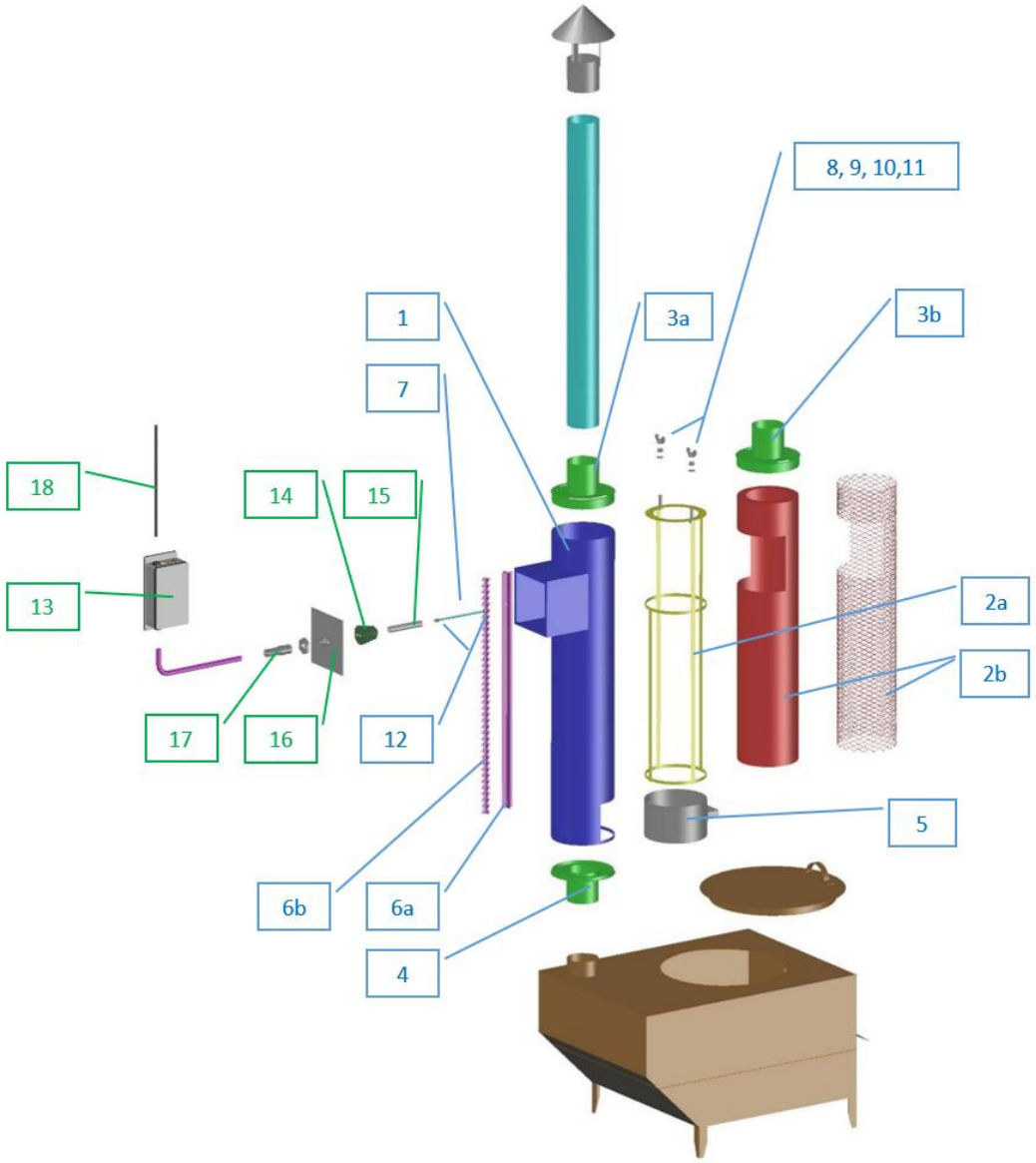
3 days



4 days

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Improved Mechanical Design of ESP…



Implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

GMiT

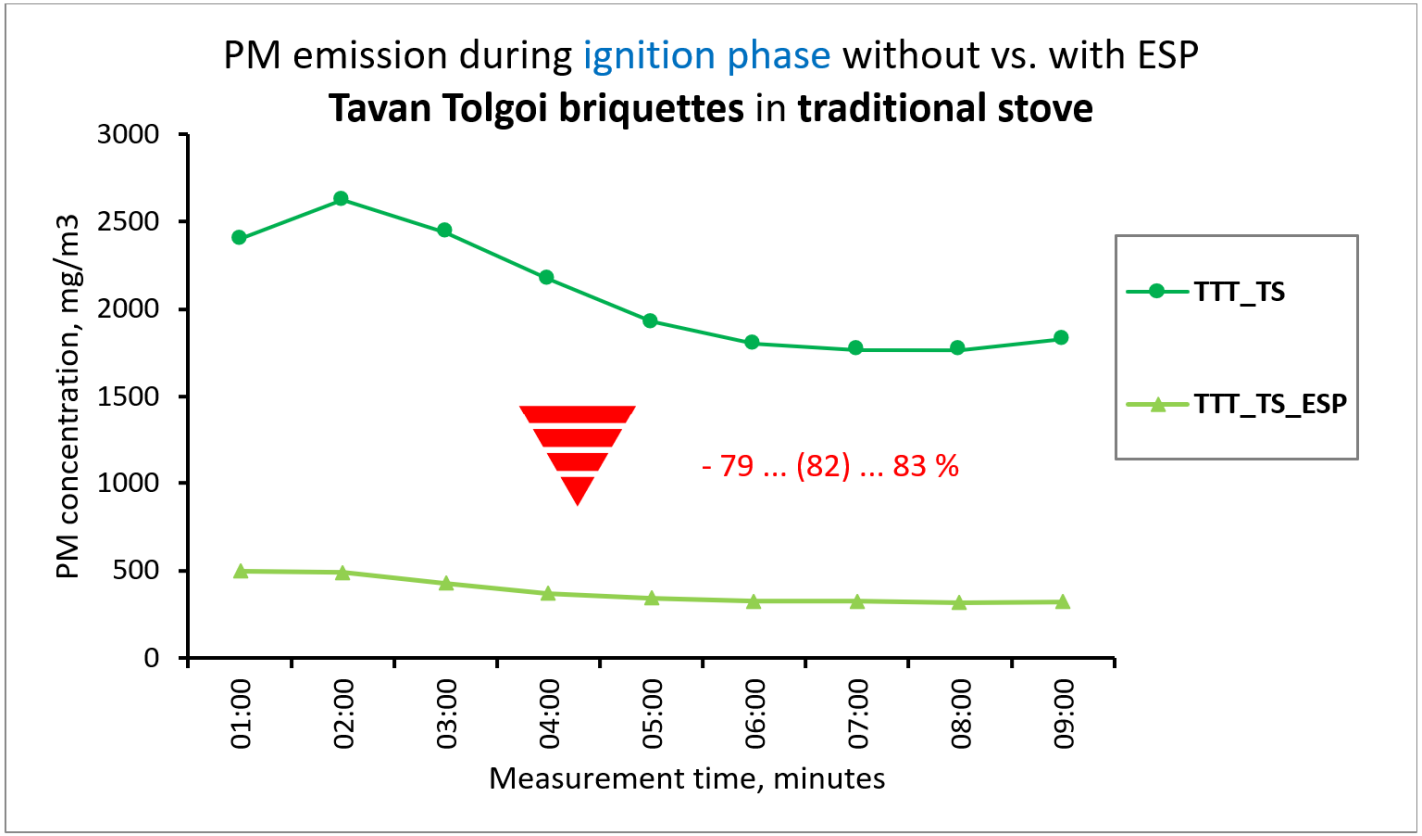




HTWD

… with effective results

Implemented by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH







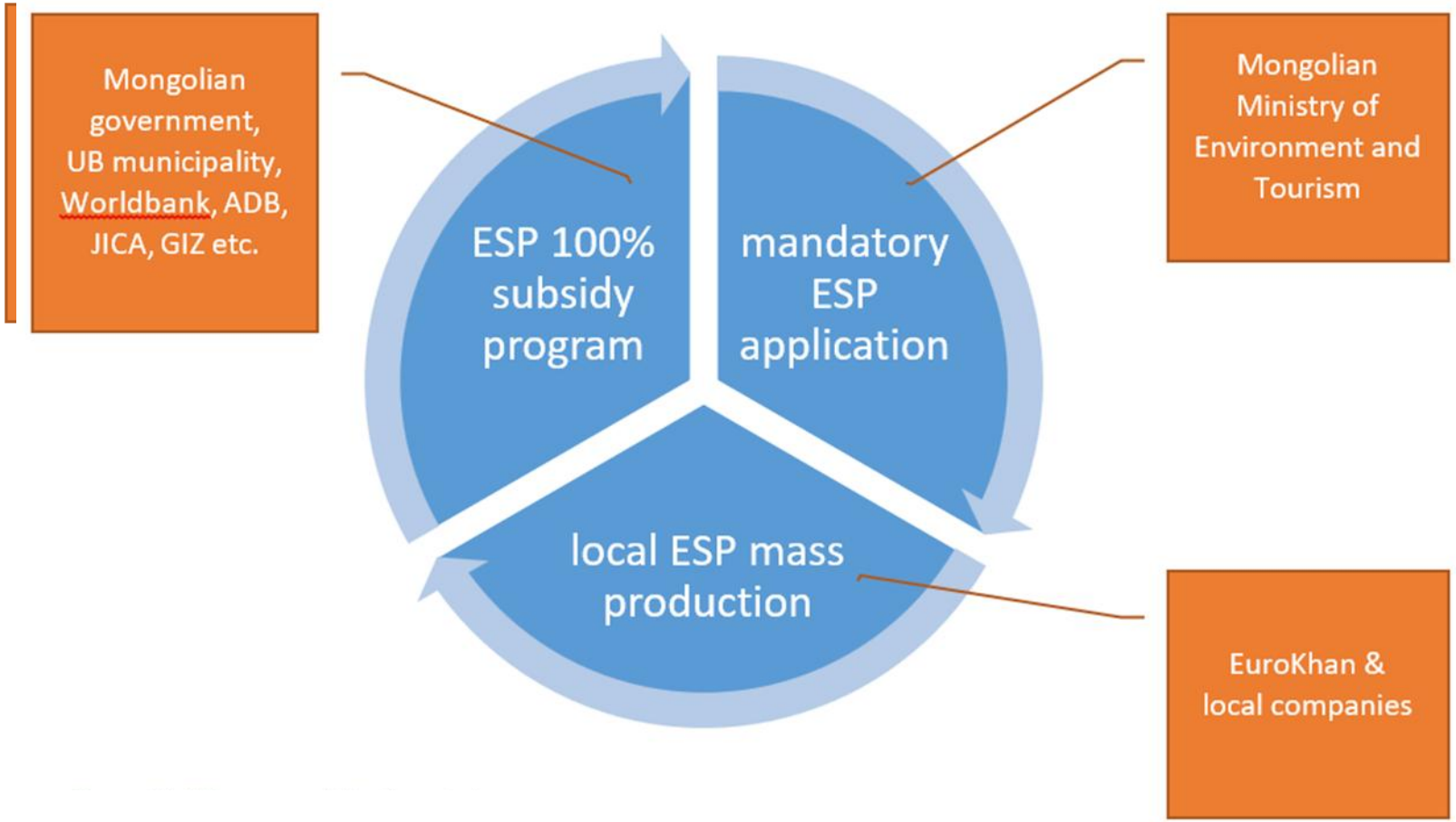


- Overal collection efficiency: 20% (same like commercial systems)
- Very cheap (250 USD)
- Very low energy consumption (40W)
- Ready for „Made in Mongolia“

Prof. D. Karthe, Khulan Tsermaa, GMIT, ESP test report Feb. 2020

Air Quality Improvement in UB city

Rather, a successful strategy could be to ensure the financing of the ESPs through a subsidy program without financial contribution by the user and thus to designate the ESPs to be distributed as "state property".



GIZ Project report GLEAR II: Improved design and test of an electrostatic dust precipitator for implementation in gers and small houses in the urban environment of Mongolia, 2020

Policy Recommendations and Implementation

- Gradual rollout of ESPs
- Maintenance and training programs for users
- Legal framework for mandatory installations in ger areas
- Develop local manufacturing capabilities (5,000 units/month)
- Total investment: $45–50 million (government and international funding)





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Action Plan

1. Project leader (Mongolian government or National Agency)
2. Implementation project: Optimization of ESP efficiency
   (power supplies, electrode design)
3. Legal framework
4. Integration with catalytic converters
   for gas-phase pollutants (next research)
5. Sustainable disposal of collected fly ash



https://www.tona.de/wiki/5-10-keramischer-modul-katalysator

https://www.schraedler.com/futurekat



Fraunhofer IBP

This is our goal:





http://us.gstat.mn/newsn/images/c/2016/01/150875-18012016-1453081823-1879707156-UlaanbaatarSmog.jpg

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2. Research approach
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Thank you for your attention.

Анхаарал тавьсанд баярлалаа.

See you at HTW Dresden!

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