MoMo
Integrated Water Resources Management Mongolia

Integrated Water Resources Management
– Model Region Mongolia –

MoMo Fact Sheet
iPiT® - integrated Personal innovative Toilet

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Background

2.6 billion people on this planet do not have access to a proper toilet. Each day hundreds of children are dying underage due to fecal-oral-transmitted diseases.

Many experts work on adapted solutions for the world-wide sanitary crisis, but a real breakthrough is not in sight.

The **main objectives,** which still need to be considered are:

- development of standardized technical components
- better availability of adapted technology
- integration into an overall sanitation system
- economical sustainability
- stakeholder involvement

Under the guidance of Prof. Dr. Londong, the Bauhaus-Universität Weimar developed an innovative toilet, called the iPiT® (**i**ntegrated **P**ersonal **i**nnovative **T**oilet).

The iPiT team tries to contribute to find solutions for the worldwide sanitary crisis by addressing the main objectives in their pilot project in Darkhan within the frame of the MoMo project.

iPiT development

The **iPiT is a key component of an integrated sanitation system**. Therefore it is especially designed to match the specific needs of the overall system. The toilet and the containers have to function as a unit. Urine and feces are separately collected in 2 different containers. Replaceable, stackable and easily transportable containers are crucial components of the toilet.

Through separate collection of urine and feces it is possible to apply the most suitable way of treatment (biogas digester and composting) and value added reuse of nutrient-rich fertiliser in agriculture. The production of energy and fertiliser in a pilot biogas plant shall contribute to the economic sustainability of the system.

The iPiT is installed at the roadside of the real estate of the participating families and is accessible from outside. A local service provider exchanges the containers regularly and transports them to the treatment facilities on the wastewater treatment plant Darkhan (pilot biogas plant of the Bauhaus-Universität Weimar). The system offers an interesting business opportunity for local small and medium enterprises.

Fig. 1: Delivery of new iPiTs ready for installation.

Fig. 2: Exchange of containers by local service provider.

A very important criteria in the development process of the iPiT® was the enhancement of the user comfort. The toilet should as well be safer and easier to use for children and elderly people. Most of the old latrines have wooden boards over the cesspit and in wintertime (with temperatures down to minus 40°C) the use of these latrines is very dangerous. Additionally they are very unhygienic, contaminate the soil and the groundwater and are therefore the main reason for the spread of faecal-oral transmitted diseases.

Fig. 3 (left): Old latrine: no user comfort, very unhygienic, contaminating the environment and dangerous to use in wintertime when the ground is frozen.

Fig. 4 (right): New iPiT with toilet seat. Better comfort, safe to use and protection of the environment.

iPiT as a part of the integrated sanitation system

The iPiT is one main component of an integrated sanitation system with the following research objectives:

- development of the iPiT as part of the integrated sanitation system, which is suitable for a large scale implementation in Mongolia
- emerge business opportunities for local services which include iPiT production, collection, transport and treatment of the organic matter
- identification of the potential for optimization in terms of acceptance, comfort and maintenance of the toilet technology
- identification of the potential for optimization of the integrated sanitation system in terms of material flows, energy flows and cash flows

Integration of the toilet user

From the beginning of the project the families, who use the toilets and other stakeholders were integrated in the whole planning process. Capacity development for all stakeholders is essential for the acceptance of the new toilet system.

Fig. 5: Information sheets „Toilet Use" in different languages.

Preliminary results

After one year of successful operation of the toilets and the transport service the first results of the system are very promising:

- high level of acceptance among the users and local stakeholders
- children stop open defecation and start to use the new toilets
- improvement of hygiene - toilet user keep their toilets clean
- high demand for the iPiT® among neighbours and guests
- system of collection, transport and treatment functions smoothly since more than one year
- willingness to use fertiliser made from urine and feces is increasing significantly in the Darkhan region after successful testing in agriculture

Key Data

Location:	Darkhan, Mongolia Latitude: 49°30'31'' N, Longitude: 105°55'34,5'' E
Developer:	Bauhaus-Universität Weimar
Type of pilot measure:	Urine diversion dry toilet and service company for operation
Size of the pilot project:	12 families use iPiT®; monitoring & optimisation is ongoing

Project Partners & Contact Information

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