



The iPiT as Part of an Integrated Sanitation System in Darkhan, Mongolia

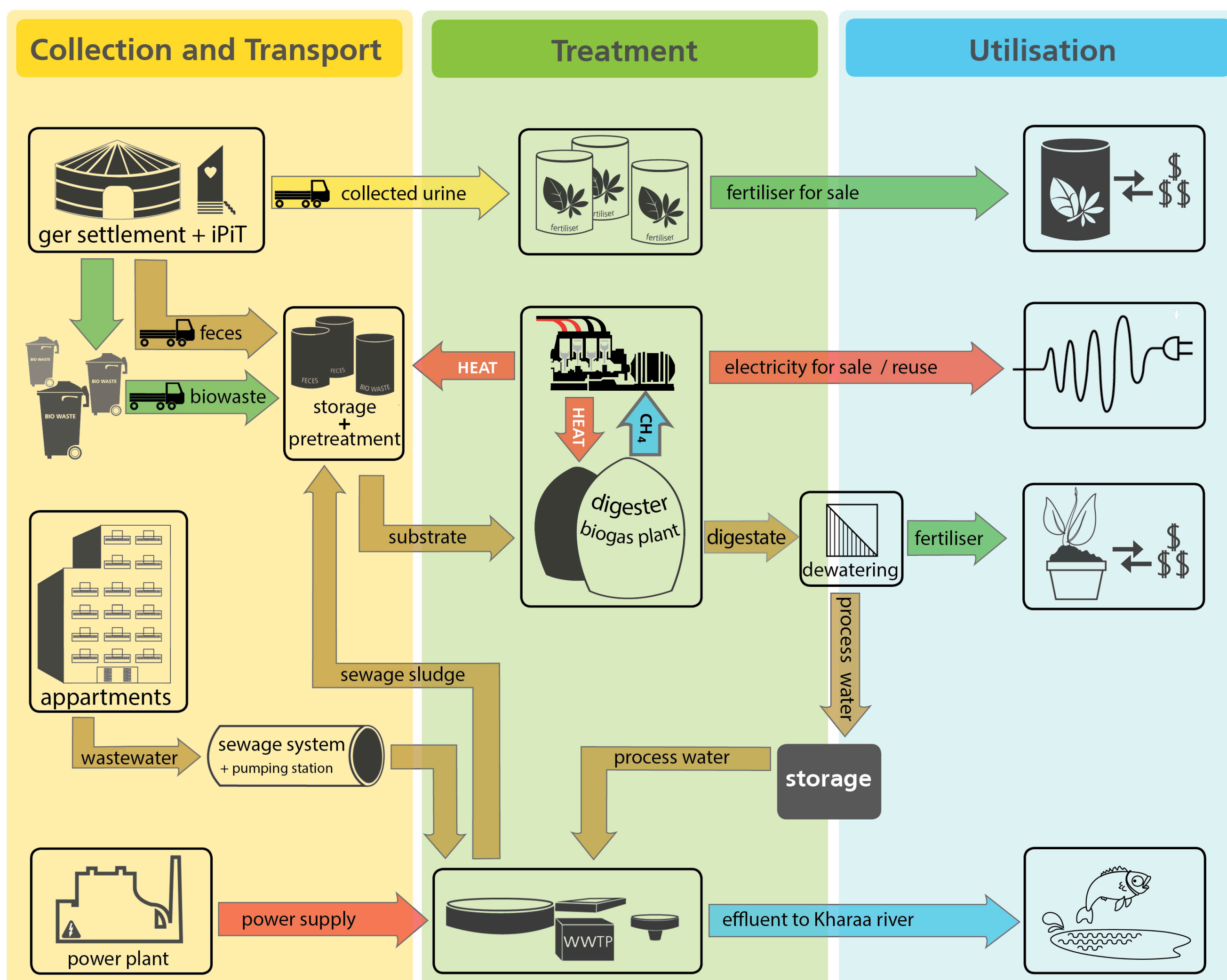
Jürgen Stäudel¹, Ganbaatar Khurelbaatar¹, Christian Bruski¹, Jörg Londong¹

¹ Bauhaus Universität Weimar, Department of Urban Water Management and Sanitation

email: juergen.staedel@uni-weimar.de, christian.bruski@uni-weimar.de, joerg.londong@uni-weimar.de, ganbaatar.khurelbaatar@uni-weimar.de

Introduction – integrated sanitation system

The lack of adequate water supply and sanitation services is a major issue related to sustainable development in Ger settlements in Mongolia. Within the frame of the international research project **MoMo*** the chair of urban water management and sanitation of the Bauhaus-University Weimar (BUW) developed an integrated sanitation system, suitable for the Mongolian context.



An integrated urban sanitation system offers the opportunity to treat all material flows in the most efficient way (Londong et al. 2011)

Basic principles of the integrated sanitation system:

- system is based on the material flows of the households: urine, feces, organic waste, solid waste, greywater
- system includes collection, transport, treatment and re-use
- system is developed in a participatory planning process (Sigel et al. 2011)
- system can be combined with existing conventional wastewater treatment system
- system shall be included into a regional sustainable infrastructure concept: economical resource management and value-added reuse

The new sanitation system combines the existing infrastructure with innovative sanitation concepts and technologies.

The iPiT[®] sanitation system

The name **iPiT[®]** derives from **integrated Personal innovative Toilet**. The toilet was inspired by the work of ACF-Mongolia and was further developed and adapted in order to integrate it into the overall concept.

The two focal points of the development are

- the enhancement of the user comfort: users do not have to worry about maintenance at all
- the accessibility for the local service company: SME`s should be able to operate the system on an economical basis.

The **iPiT[®]** is a key technological element of the integrated sanitation system.

References

- Sigel, K. (2010): Environmental sanitation in peri-urban ger areas in the city of Darkhan (Mongolia): A description of current status, practices, and perceptions. UFZ-Bericht 02/2010
- Sigel, K., Altantuu K. & Basandorj D. (2011 forthcoming): Household needs and demand for improved water supply and sanitation in peri-urban ger areas: The case of Darkhan, Mongolia. Environmental Earth Sciences
- Londong et al: Integrated Sanitation: Supply by Disposal - Measures for Darkhan, Mongolia. Presentation at International Conference, 07.12.2011, Mongolian University of Agriculture, Darkhan, Mongolia

* **MoMo**: "Integrated Water Resources Management in Central Asia: Model Region Mongolia (MoMo2)"



The new iPiT: collection of feces and urine in replaceable containers, which are accessible from the roadside (old latrine in the back, right)

Research objectives

- Development of an integrated sanitation system, which is suitable for large scale implementation in Mongolia
- To initiate business opportunities for a local service provider for toilet maintenance as well as for the collection, transport and re-use of feces and urine
- To identify optimization potential in terms of acceptance, comfort, and maintenance of the toilet technology

First results

- "the khasha belongs to the owner again and not anymore to the toilet !"
- children stop open defecation and start to use toilets
- big leap forward for the families in bag 7 in Darkhan
- high demand for more iPiT's in Darkhan among the local population
- re-use options for urine and feces are discussed among stakeholders in the Darkhan region
- high level of acceptance and support among population and local administration

The **iPiT** sanitation system offers an **immediate** and **affordable solution** for the challenging sanitation problems in ger settlements. The sanitation system is **flexible** and **adaptable** to the rapid urban development (**positive** and **negative growth**).



Collection and transport service, operation of treatment facilities, sales of hygienic safe organic fertiliser can be organized by a local service provider

© all pictures by Jürgen Stäudel 2012
iPiT[®] is a registered trademark