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## Sustainability of Water Supply and Sanitation systems in Kazakhstan

**Kamshat Tussupova**<sup>1</sup>, Ainagul Kaliyeva<sup>2</sup>, and Kenneth M Persson<sup>1</sup>

<sup>1</sup>Lund University, Faculty of engineering, Department of building and environmental technology, Lund, Sweden (kamshat.tussupova@tvrl.lth.se)

<sup>2</sup>Toraighyrov University, Department of Biology and Ecology (ainanurlina80@mail.ru)

Sustainable development goals (6.1 and 6.2) call for full coverage with safely managed drinking water and safely managed sanitation by 2030. Thus, the UN Sustainable development goals declare to provide water, sanitation and hygiene for all and to involve local water users and find most suitable local practices for water provision.

While the MDGs highly promoted access to piped water and flushed toilets as the safest distribution of water and sanitation services, the SDGs promote access to all water sources and sanitation facilities if a safe management can be assured.

The SDGs "Safely managed drinking water" indicator includes the three following conditions: accessible on-premises, available when needed and free from contamination, and "Safely managed sanitation" indicator includes an improved sanitation facility which is: not shared, excreta is safely disposed in situ or excreta is transported and treated off-site. Thus, both centralized and decentralized water supply and sanitation systems are considered safe if met the sustainability criterias.

Since the Soviet Union time most of the centralized water systems in towns and rural areas in Kazakhstan were built in a linear way with piped water in and no sewer pipes out or limited wastewater collection pipes with no treatment and direct discharge. This research attempts to assess centralized water supply and sanitation systems on a household and the system levels in rural/urban areas in Kazakhstan using six sustainability components: environmental, socio-cultural, institutional, economic, health and technological sustainability. The survey included the questionnairre of the households, discussions with the responsible for water supply systems and observation of water and sanitation points. The survey was conducted in three settlements with the access to centralised and decentralized water supply systems in Nothern part of Kazakhstan and covered 82% of the households. More than 85% of households used water from private sources; water from centralized sources if used mainly for watering the garden and not for drinking purposes. No sewer system was provided in the settlements and the waste/grey water is the responsibility of the household itself. Every household had pit laterine outside, meeting basic technical requirements and partially lacking the environmental safety requirements.

For this study, several sustainability limitations were recognised where the most prevalent component, which consequently affected other components, was the institutional sustainability in the region, namely lack of community-based water supply systems, the local municipality organization and regulation and education on maintaining the WSS systems.