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MANAGING WASTEWATER DURING REFUGEE CRISIS – COMPARING THE LESSONS LEARNED FROM FINLAND AND JORDAN

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Abstract: The civil war in Syria has caused the displacement of an estimated 11.7 million people, of which over 5 million are seeking asylum or protection abroad. While the large-scale movement has been mainly directed towards the bordering countries, such as Jordan, Lebanon and Turkey, in summer 2015, the number of people seeking for asylum in the EU exploded unexpectedly. This presentation discusses the wastewater infrastructure management challenges associated with large-scale population displacement. Technical challenges are derived from first-responder experiences in two different countries hosting refugee populations. The discussed data consists of 19 expert interviews and field observations that were conducted in Jordan and Finland in 2016. All interviewees were directly involved in wastewater treatment plant re-construction and operation. Preliminary research findings showed that understanding of steady-state practices in wastewater management did not prepare stakeholders for emergency response activities. Refugee response was effective when stakeholders felt comfortable providing improvised solutions, stakeholder role division was clear, and decision makers were personally motivated to solve problems related to environmental protection and humanitarian aid provision.

1 Project Background

World-wide displacement is at its all-time high. Of the estimated 65 million global refugees, internally displaced people and asylum seekers, 39% are hosted in Middle East and North Africa (UNHCR 2017). Since the beginning of the Syrian civil war in 2011, The Hashemite Kingdom of Jordan bordering Syria has been one of the countries hosting the largest number of refugees in relation to its national population. Approximately 20% of the total of 664,000 registered refugees in Jordan live in refugee camps, such as Azraq, Zaatari and Cyber city (UNHCR 2016). In 2015, the “Syrian refugee crisis” became a worldwide topic as the number of people seeking for asylum in the European Union exploded unexpectedly. One of the countries receiving tens of thousands of migrants over a few months was Finland (Finland 2016). Finland hosted most of its over 30,000 refugees and asylum seekers in refugee centers that were established rapidly in existing, unused facilities, such as camp centers and old school buildings.

Wastewater management and recovery during disaster response are critical for ensuring protection of human health and to minimize long-term environmental consequences (Fenner et al. 2007; Ivers and Ryan 2006). In both Jordan and Finland, the provision of adequate sanitation services for the displaced populations demanded reconstruction, re-design and adjustments of the existing wastewater treatment infrastructure. In Jordan, the Azraq and Zaatari refugee camps became among the first in the world to have an on-site, advanced wastewater treatment plants. In Finland, several small-scale wastewater treatment plants were refurbished to accommodate the increased demand for treatment.

While pre-existing conditions and the scale and intensity of the refugee response were drastically different between the two countries, wastewater treatment related decisions involved similar group composition. The interdisciplinary teams included policy makers, aid organizations, technical consultants and operating staff.

2 Research approach and Preliminary results

This study investigates stakeholder decision practices in advanced wastewater treatment system operation and management during emergency response. It applies a mental model approach to better understand how technical and non-technical factors, such as professional expertise and personal characteristics, influence stakeholder decisions and project delivery in unpredictable and high stress project conditions. The stakeholder mental models, i.e. thought process constructs, were built based on field observations and 19 expert interviews that were conducted in Jordan and Finland in 2016. All interviewees were directly involved in wastewater treatment plant re-construction and operation either in the Azraq refugee camp in Jordan or in refugee centers in Southern Finland.

The stakeholder mental models showed that the understanding of wastewater management or treatment plant operation in steady-state conditions did not fully prepare stakeholders for the technical challenges faced in the emergency conditions. In several occasions, refugee response demanded improvised solutions that only experts with long-term exposure to wastewater treatment and in-depth understanding of the treatment mechanisms felt comfortable providing. The lack of shared technical understanding was seen as a major reason for project delays at the Azraq refugee camp, but did not appear to impact stakeholder collaboration in Finland. One of the suggested reasons for the different project outcomes was that the project teams in Finland had a clear role division from the beginning of the project, whereas the international project team in Azraq only found mutual understanding of each stakeholder's responsibilities over the course of the project. Stakeholders' professional adaptability and personal interest in environmental protection and humanitarian aid facilitated decision-making both in Finland and Jordan and was especially important in permitting related challenges.

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