Working Paper

Sanitation under stress

How can urban services respond to acute migration?

Beatrice Mosello, Mariana Matoso, Clare Cummings and Julian Doczi

Key messages

- Sanitation is critical for human health in densely populated areas, and yet is often absent from urban planning and investment, especially in developing countries.

- Rapid urbanisation is putting pressure on inadequate, existing sanitation systems. Improving sanitation in cities is even more urgent in the face of 'acute' migration, the sudden arrival of refugees and internally displaced people to a city.

- Sanitation is usually perceived as a static, long-term infrastructure investment. There is little evidence about how a sanitation system can respond to emergencies, such as acute migration.

- In Jordan, the sudden and continuous flow of refugees to cities has exerted substantial pressure on urban sanitation services, reducing access to, and the quality of, sanitation. Many other developing countries are experiencing acute migration to cities and their services are struggling to meet demand.

- Local, national and international organisations must work together with urgency to improve urban sanitation services so that they can respond to sudden and sustained increases in the urban population.

Shaping policy for development   **odi.org**

Acknowledgements

Contents

List of boxes, figures and tables

Boxes

Figures

Tables

Acronyms

AGTP	Ain Ghazal pretreatment plant
BSU	basic service unit
GoJ	The Government of Jordan
HIF	Humanitarian Innovation Fund
ICRC	International Committee of the Red Cross
IDP	Internally Displaced Person
IOM	International Organization for Migration
JMP	Joint Monitoring Programme
LICs	low-income countries
MDGs	Millennium Development Goals
MICs	middle-income countries
MPIC	Ministry of Planning and International Cooperation
MWI	Ministry of Water and Irrigation
NGOs	non-governmental organisations
ODI	Overseas Development Institute
OHCHR	Office of the United Nations High Commissioner for Human Rights
PEA	political economy analysis
SDGs	Sustainable Development Goals
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations Refugee Agency
UNICEF	UN Children's Fund
WASH	water, sanitation and hygiene
WB	World Bank
WDR	World Disasters Report
WFP	World Food Programme
WHO	World Health Organization
WMR	World Migration Report
WSP	Water and Sanitation Program
WSUP	Water and Sanitation for the Urban Poor
WWTP	wastewater treatment plant

Nigeria

88%

of refugees live
in **cities**

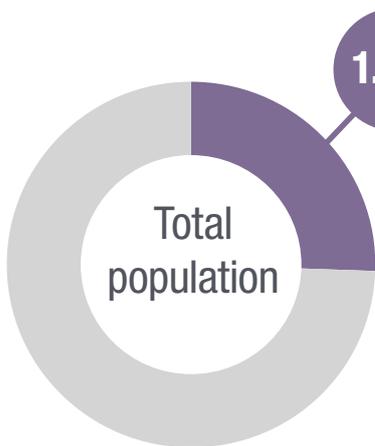**Only 33%**
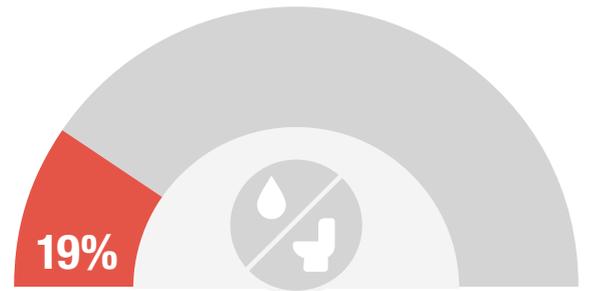
of the urban population has access
to **improved sanitation**

Lebanon

1.5m **displaced people,**
who all live
in cities

Total
population

19%

of the urban population still lacks
access to **improved sanitation**

Rapidly growing cities already need better sanitation. In the face of acute migration,
this is even more urgent. Read more: odi.org/sanitation-under-stress

Executive summary

Drinking water and sanitation are basic services that all people need for their survival and livelihoods. However, providing them can be an enormous challenge – especially in cities, and in the face of climate change, conflict, and the rise of a middle class with more and new needs and expectations. Large and unexpected influxes of migrants and refugees pose yet another constraint to local service providers. But they also provide opportunities to improve services – for example as migrants bring in new skills and coping mechanisms that can be scaled up; or as governments, businesses and other actors experiment with alternative models for the delivery of water, sanitation and hygiene (WASH) services.

This scoping study aims to identify key research questions around the success and/or failure of urban governance structures in delivering essential services to populations in response to large migration movements. It does so through a small-scale review of the literature on water and sanitation service delivery in urban areas in response to influxes of migrants – with a major focus on sanitation. It then unpacks how this type of 'acute' migration has affected Jordan's urban infrastructure and systems for the provision of basic services. We give special attention to the situation in Amman (where most of the urban refugees are concentrated) and its sanitation conditions (one of the least studied sectors).

Our literature review revealed that substantial research has been devoted to service delivery in cities with reference to long-term migration, and particularly rural–urban movements or climate-induced migration. Not many studies explicitly focused on urban service delivery facing 'acute' migration, and even fewer looked at sanitation. Most of the studies on service delivery to refugees and/or internally displaced persons (IDPs) concentrated on camps. However, as displacement becomes more protracted and an urban phenomenon, researchers need to gain a more critical mass to shift focus, funding and institutional commitment to address today's urban displacement.

We briefly analyse issues of service delivery for urban refugees by looking at the existing research on service delivery in informal settlements and slums. Findings from these studies highlighted that migrants are disproportionately represented among the urban poor in informal settlements, and this constrains their ability to access basic resources; the same is likely to be true for refugees and IDPs relocating to a city after they escape from conflict. Sanitation figures quite prominently in the debates on service delivery in cities – but it is only linked to migration through its impacts on health, or it is bundled with water and/or hygiene. Along with more study of sanitation, greater efforts need to be dedicated to identifying service providers in cities: Who are they, how do they interact, and what challenges do they face in responding to acute migration?

Over the last ten years, the 'migration-development' nexus has emerged as an important area of both research and policy. However, most of the interest has focused on the potential that migration holds for poverty alleviation. Existing analyses of disadvantaged groups within urban areas tend to be based on income (and/or assets), housing conditions and access to basic services. Ultimately, we face a massive lack of basic data on urban poverty – and, subsequently, a massive lack of data on the characteristics of those individuals and/or households that have unmet needs.

Overall, besides anecdotal evidence and assumptions, we found limited research on urban service delivery facing large and sudden inflows of migrants and refugees, and particularly focusing on sanitation services. There is a need to more systematically link the research agendas on urbanisation and migration, with a focus on the delivery of sanitation services – typically a neglected area in the literature, which remains skewed towards water supply. The focus should be explicitly on the dynamics of acute and conflict-induced migration in terms of urban service delivery, explored through primary data collection in urban migration 'hotspots'. Disaggregated data on sanitation access – distinguishing not only on the basis of the 'traditional' categories of gender, age, wealth quintiles, but also taking into account migration status – are required to understand the inequalities that are created or reinforced by large and sudden influxes of people in terms of sanitation provision. And finally, qualitative research is needed to understand the challenges that migrants and host communities face in accessing sanitation services in cities.

Therefore, we call for a research agenda that can assist governments, non-governmental organisations, water/sanitation utilities and other service providers in understanding and overcoming the challenges of sanitation provision in urban contexts 'under stress', without reinforcing existing inequalities or creating new ones, and towards realising the SDGs' aspirations for 'universal access to adequate and equitable sanitation' by 2030. We outline a possible research approach and methodology at the end of this paper.

1.Introduction

1.1.   Why this study? The challenge of sanitation in rapidly growing urban areas

Drinking water and sanitation are basic services that all people need for their survival and livelihoods. However, providing them can be an enormous challenge – especially in cities in low-income and middle-income countries, and in the face of climate change, conflict, and the rise of a middle class with more and new needs and expectations. Large and unexpected influxes of migrants and refugees pose yet another constraint to local service providers. But they also provide opportunities to improve services – for example as migrants bring in new skills and coping mechanisms that can be scaled up; or as governments, businesses and other actors experiment with alternative models for the delivery of water, sanitation and hygiene (WASH) services.

This scoping study aims to identify key research questions around the success and/or failure of urban governance structures in delivering essential services to populations in response to sudden, unpredictable migration flows, characterised by a large number people leaving their homes as a matter of urgency – we define this as 'acute migration'. We chose to focus specifically on low-income countries (LICs) and middle-income countries (MICs), in light of their often comparatively limited capacity to finance and manage water and sanitation services for the whole population.

Why sanitation?

Access to safe sanitation services remains out of reach for a staggering number of people in LICs. In 2015, about 2.4 billion people were still living without improved sanitation (World Health Organization (WHO) and UN Children's Fund (UNICEF), 2015). Access to sanitation is a fundamental development metric, with abundant research proving its links to better public health, economic growth, individual dignity, quality of life, and environmental health, among other indicators. An ongoing research initiative by the World Bank has estimated that the current lack of access to sanitation costs the global economy at least US$260 billion yearly (World Bank, 2013).

Nonetheless, it has been difficult to close this gap in access, especially as the world urbanises rapidly. The global community committed to halve the proportion of people living without improved sanitation from 1990 to 2015 but missed the target by almost 700 million people (WHO and UNICEF, 2015). The new Sustainable Development Goals (SDGs) aim to redouble global efforts to achieve universal access to sanitation by 2030. Urban sanitation can be more difficult to achieve than rural sanitation, as urban areas usually lack space for cheaper solutions like pit latrines and require investment in higher service levels.

Data from WHO and UNICEF (2015) support this assertion. From 1990 to 2015, the world's rural population that lacked access to improved sanitation decreased by about 0.64% per year, while the world's urban population that lacked access fell by only 0.16% per year. Meanwhile, the world's total urban population grew by about 0.45% per year.

This suggests that many of the people who migrated from rural to urban areas will not have had access to sanitation as rural dwellers, and are likely to have begun their lives in the city still lacking access to it. Furthermore, their arrival put strain on existing urban sanitation services and probably resulted in sanitation service providers (which in LICs typically suffer from chronically low levels of public investment) being unable to meet their needs. We see this around the world through the growth of urban slums and informal peri-urban areas without access to basic services like sanitation (UN-Habitat, 2003).

Why is providing sanitation in cities such a challenge?

Even in normal circumstances, delivering sanitation to all the inhabitants of a city is not an easy task. Challenges range from the cost of waste management infrastructure to encouraging the behavioural change that is required to shift to improved toilet facilities. In developing urban areas, the authorities responsible for delivering public services might not participate in planning and coordinating the expansion of cities. The density of an urban area can also make infrastructure construction difficult and costly. But let us start by identifying the specific difficulties of delivering sanitation, and then explore how the urban environment compounds them.

The high cost of investing in centralised wastewater systems makes sanitation difficult to finance, especially when the urban poor are unable or unwilling to pay for using these services without significant investment in accompanying behaviour change programmes. The low potential for cost recovery and profit means that networked sanitation is rarely an attractive investment

Box 1: What makes cities unique?

Urban experts recognise four important characteristics of cities and urban areas that distinguish them from rural areas and have implications for the public services provided:

- **Density:** Urban areas concentrate people in closer proximity than rural areas. This can create economies of scale and economic growth from the larger pool of labour available to employers and from the ideas and innovation that can come from people meeting and communicating more frequently. Likewise, urban areas present a larger pool of potential users of a service and can thus make it easier to recover the costs of this service with lower tariffs. However, density can also bring the problems of congestion, pollution and other types of direct cost, particularly by intensifying existing externalities, presenting less physical space for infrastructure and creating higher land costs due to higher demand.
- **Diversity:** More people migrate to urban areas than to rural ones, meaning that urban areas contain more diversity than rural ones. Multicultural cities like London and New York are celebrated for this diversity, but it also presents more diverse needs and behaviours for services to meet, and it can make cities more difficult to govern.
- **Dynamism:** Urban populations change more rapidly than rural ones. This dynamism can change the mix of core skills, social needs, conflict dynamics, and services available in the city, which requires policy-makers and businesses to respond quickly.
- **Complexity:** Density, diversity and dynamism combine to make urban areas more complex than rural ones. They contain more people; more social structures; more agencies, businesses and civil society groups; and more voices in the decision-making process.

Source: Adapted from Mosel et al. (2016), based on Beall et al. (2010), Satterthwaite and Mitlin (2013), Bremner (2004), and Vertovec et al. (2002).

option for the private sector. Tenants may also be unwilling to invest in toilet infrastructure and a formal connection to a sanitation network if they perceive it to be an upgrade to a property that they do not own (Allen et al., 2006). At the same time, cost-recovery for a service provided to people who largely live in the informal sector is challenging. It can also be difficult for a formal service provider to extend its infrastructure services to informal settlements, especially if its right to settle on the land is disputed.

The benefits of sanitation are not always recognised or appreciated, either. Cultural perceptions of adequate solutions for human waste determine demand and usage of sanitation, and changing these perceptions is not easy (Allen et al., 2006). There may also be little demand for better sanitation from wealthier groups, since the consequences of inadequate sanitation may be visible only in the outskirts of a city, where they are less likely to live (Mason et al., 2014). And political attention and pressure may focus on modernising visible services for the elite, rather than providing quality infrastructure for universal sanitation (Bakker et al., 2008).

Despite often limited demand and political pressure for adequate sanitation facilities, they are clearly needed. The externalities of sanitation are intensified in urban areas where dense population and limited space mean that public health risks arise from inadequately disposed wastewater and faecal matter. In the absence of formal sanitation provision, individuals can resort to informal solutions such as disposing raw sewage into the local environment.

These solutions meet their immediate needs but cause other problems for them and their wider community. The ability to find informal solutions may also mean that individuals are less willing to pay for formal provision, which makes it difficult for a public or private provider to recover the cost of providing the service. Therefore, although sanitation is often perceived as a private good, accessed by households, the infrastructure to ensure wastewater is collected and treated is necessarily a public good.

As a result of these difficulties, sanitation in low-income cities today often is a mix of formal provided services, informal coping mechanisms, and no service at all (in some areas). An archetypal developing city may contain a small and poorly maintained sewerage network for its wealthy elite; middle- and lower-income homes with septic tanks that are emptied by formal or informal desludging companies; lower-income homes whose residents use unimproved sanitation solutions like hanging toilets, public toilets or plastic bags; and pavement dwellers and residents of the lowest-income homes who use open defecation or equivalent expedients. This uncoordinated and unequal provision does not capture the collective benefits that arise from universal access to sanitation.

Defining the migration challenge

Migration to urban areas is made up of different types of migration patterns, and their interactions with services like sanitation are not well understood. For the purposes of this study, we identified four different types of migratory

movements (see Table 1 in Section 2): internal labour migration; international labour migration; climate-induced migration; and conflict-induced migration.

Some migration flows, such as internal migration of workers to urban areas, or circular migration that follows seasonal labour opportunities in agriculture, are regular and relatively consistent. These are known as economic migration; they tend to occur with people who make the decision to migrate strategically in order to access better economic opportunities. These migration movements are relatively well studied, and a substantial body of literature exists examining their drivers and characteristics, as well as impacts including in terms of service delivery.

Box 2: Key migration terms

Internally Displaced Person (IDP): Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border (Guiding Principles on Internal Displacement, UN Doc E/CN.4/1998/53/Add.2.).

Migrant: IOM defines a migrant as any person who is moving or has moved across an international border or within a State away from his/her habitual place of residence, regardless of (1) the person's legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is. IOM concerns itself with migrants and migration-related issues and, in agreement with relevant States, with migrants who are in need of international migration services.

Migration: The movement of a person or a group of persons, either across an international border, or within a State. It is a population movement, encompassing any kind of movement of people, whatever its length, composition and causes; it includes migration of refugees, displaced persons, economic migrants, and persons moving for other purposes, including family reunification.

Refugee: A person who, 'owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinions, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country. (Art. 1(A)(2), Convention relating to the Status of Refugees, Art. 1A(2), 1951 as modified by the 1967 Protocol).

Source: International Organization for Migration (IOM) website at: https://www.iom.int/key-migration-terms

---

Instead, this study is concerned with sudden, unpredictable migration flows, characterised by a large number people leaving their homes as a matter of urgency – we define this as 'acute migration'. This form of migration can affect households at all income levels, but those on the lowest incomes are likely to be the most vulnerable to sudden changes and thus the most in need of government or humanitarian support, since they are less likely to be able to afford unforeseen expenses such as emergency travel, food, and accommodation in another location. Migration in response to disasters is, by definition, difficult to predict. A sudden influx of vulnerable people with urgent needs creates an unforeseen stress on the place in which they seek safety. This may often be an urban area, since cities generally present more opportunities for finding housing, work, and basic services than rural areas. Yet what does this mean for the host city? In the event of unpredicted, acute in-migration, municipal authorities need to respond to the urgent demand on existing services and facilities, including sanitation. Humanitarian organisations may also try to address the increased demand for basic services by providing emergency support, whether in parallel or through existing systems.

1.2. Methodology

What happens to sanitation provision if there is a sudden surge of mostly vulnerable, lower-income migrants arriving in a developing city? This study looks at tentative answers to this question. It does so through a small-scale literature review that assesses the state of the art in water and sanitation service delivery in urban areas as a response to large influxes of migrants – with a major focus on sanitation. The following questions guided the research:

- What are the challenges of sanitation provision in urban areas receiving large and sudden influxes of lower-income refugees and migrants, for example as a consequence of conflict?
- What inequalities are created/reinforced in terms of access to sanitation services?
- How can existing and new inequalities in access to sanitation be overcome in the face of increasing demand by local government, non-governmental organisations (NGOs) and service providers?
- What examples are there of cities' creative/successful response to increased demand for urban sanitation services?
- What additional evidence is needed to assist government, NGOs and other service providers to deliver urban sanitation services when faced with acute migration surges?

Our literature review started by identifying existing literature on urban service delivery, with a focus on water and sanitation. We also conducted a basic search on Google and Google Scholar, from which we selected a number of pertinent articles from journals in the fields of migration and refugees studies, international development, urban studies, humanitarian studies, civil engineering, environmental studies and health; grey literature published by international organisations (e.g. International Committee of the Red Cross (ICRC), International Organization for Migration (IOM), WHO, UNICEF), as well as media articles and blogs (especially for the Jordan case study, described below). We then used forward and backward tracking of relevant citations. On the basis of the information derived from the literature, we attempted a categorisation of the different types of migration movements, their impacts on urban service delivery, and the existing evidence base, with a view to identifying research gaps.[1]

The literature review was complemented with a desk-based 'urban hotspot' case study, or a case of a high density city that has dealt or is dealing with migration flows, and the consequent challenges in terms of sanitation provision. Based on the list of migration urban hotspots compiled by the IOM in the World Migration Report (WMR) 2015 (IOM, 2015a), and taking into account the recommendations of key experts in the areas of migration and urbanisation, we selected Jordan for our case study, with a special focus on Amman. This case study helped

illustrate how sudden and ongoing influxes of urban refugees are straining basic service delivery but also encouraging responses that move from mere humanitarian assistance towards longer-term development approaches that aim to benefit both migrants and host communities.

Based on our findings from the literature review and case study of Amman, we propose some steps to develop a research agenda focusing on sanitation service delivery systems within 'urban hotspots' across migration trajectories. We identify and suggest some research questions that remain to be investigated, and we propose ways to better understand the challenges and opportunities of sanitation service delivery in cities when faced with large and unexpected inflows of people.

1.3. Overview of the paper

Our paper has the following structure. After this introduction, Section 2 will review the literature that deals with the impacts of acute migration and refugee flows on service delivery, and particularly sanitation service delivery, in urban areas. In Section 3, we look at the case study of Amman, in Jordan, to unpack how conflict-induced migration has affected the urban infrastructure and systems for the provision of sanitation. In Section 4, we summarise the existing literature gaps that emerged from our analysis and propose a future research agenda to address them (further detailed in Appendix 1).

---

1 Note that because of the non-systematic nature of the literature review, we could not quantify the exact number of studies, but only used the general indications of 'large', 'medium', and 'small' evidence.

2. Urban sanitation and migration: exploring the linkages

2.1. Introduction

In the past decade, there has been a 'swell of interest in urban displacement' (Pantuliano et al., 2012) in recognition of the surging urbanisation of crisis-affected countries, the prevalence of natural disasters in urban areas, and the difficulties confronting humanitarian actors responding to such situations. Interest has also been spurred by greater understanding of several interrelated factors that are exacerbating acute and chronic vulnerabilities in cities, including climate change and long-term underdevelopment. A recent project funded by the Humanitarian Innovation Fund (HIF), which aimed to identify the major challenges that require innovative solutions in humanitarian WASH, also concluded that 'unsurprisingly, given current patterns in urban migration and the nature of recent emergency responses, urban sanitation in particular was identified as a major gap' (Bastable and Russell, 2013).

In this chapter we are interested in reviewing the literature that deals with the impacts of acute migration and refugee flows on service delivery, and particularly sanitation service delivery, in urban areas. While in Chapter 1 we looked at the challenges facing the sanitation sector in cities, here we want to understand what happens when a crisis strikes and large numbers of people move into the urban space in a short span of time as a consequence. We will start by identifying the different types of migration, and by providing an overview of the literature that defines their main characteristics and dynamics. We will then zoom in on those studies that look at service delivery to refugees and IDPs in camps and cities, focusing on the water, sanitation and hygiene sector. Finally, we will review the existing literature on who is providing services to refugees and migrants, according to what modalities, and with what impacts on inequalities in service access and quality.

2.2. Different types of migration

Not all types of migration have the same impacts on service delivery in cities. For example, short-term migrants temporarily displaced after a disaster require more urgent but less permanent responses than fluxes of people from rural areas coming into cities to settle and find new jobs. For the purposes of this study, we identified four different types of migratory movements:[2] internal labour migration (1); international labour migration (2); climate-induced migration (3); and conflict-induced migration (4). We looked at what the literature says on their potential or actual impact on urban service delivery. Based on our review, we also estimated the extent to which these linkages between migration and urban service delivery have been researched. The evidence is summarised in Table 1 below.

---

2   Throughout this study, we will refer to each particular type of migration using the numbers 1, 2, 3 and 4, as specified in Table 1.

Table 1: Type of migrations, impacts on urban service delivery, and evidence base

	Type of migration	Characteristics	Impact on urban service delivery?	Evidence base (large, medium, small)[3]
1	Internal labour migration: rural–urban, urban–urban, circular migration	Time horizon: Takes place over the long term: progressive movement of people from rural to urban areas, or from urban to urban areas of different sizes; people can permanently move to a city, or migration can be circular. Motivation: People move in search of jobs/livelihoods opportunities. Geographical focus: LICs and MICs[4]	It can worsen existing shortages of service delivery (especially when combined with lack of capacities, of public willingness, and of funding to subsidise service access for poorest and most vulnerable groups); migrants are disproportionately represented among the urban poor; new inequalities can be created between migrants and city inhabitants.	Evidence base: large. Most of the studies/research on migration and urbanisation focus on this type of migration; see e.g. Tacoli et al. (2015); Glaeser (2011); Krugman (2011); World Bank (2009). Linked to growth/vulnerabilities of informal settlements (in both LICs and MICs): Hoang, Truong and Dinh (2013); Rigg, Nguyen and Luong (2014); UNDP (2009); Awumbila, Owusu and Teye (2014). Ability of urban migrants to access basic resources is constrained. See: IOM (2013); Duong, Linh and Thao (2011); Ku and Jewers (2013); Sabates-Wheeler (2009); Adams, van Hattum and English (2009).
2	International / inter-regional labour migration:	Time horizon: Takes place over the long term: progressive movement of people from rural or urban areas to urban areas in a different country; people can permanently move, or migration can be circular. Motivation: Can be of professional and managerial expatriates (skilled migrants) and international students; or of low-skilled migrant workers. Geographical focus: From LICs and MICs to key urban centres in Asia (e.g. Singapore, Kuala Lumpur) and Africa (e.g. Lubumbashi, Fes, Accra, Lagos) as well as to cities in high-income countries (Europe, USA, Canada)	Especially in low- and middle-income cities, low-skilled migrant workers can become vulnerable as they experience migrant-specific barriers (e.g. they are undocumented) to accessing services (e.g. health, housing, education). Low-skilled migrants may end up in informal sectors (or participate in both formal and informal economies). Discriminatory and non-inclusive policies and attitudes against migrants force them into informal settlements with lack of basic services. Positive role of international migration as a poverty reduction tool (e.g. in Africa through diasporas) and connecting cities, increasing diversity (multiculturalism) e.g. in Asia.	Evidence base: n.d. Not the focus of this literature review – see WMR 2015 (IOM, 2015a: Chapter 2).

---

3 Note that this was not a systematic literature review, and therefore we are not able to quantify the exact number of studies that exist on the different types of migration and their impacts on urban service delivery. With the classification of 'large', 'medium', and 'small' evidence bases we aim to provide a general estimate of the extent to which the different categories are covered, based on the literature we came across during our review. Accordingly, 'large' indicates the existence of a considerable amount of studies on the subject, which is therefore well explored; 'medium' indicates the existence of some studies on the subject, but with research gaps; 'small' indicates the lack of enough studies to explain the issue at hand.

4 LICs = Low-income countries, MICs = middle-income countries

	Type of migration	Characteristics	Impact on urban service delivery?	Evidence base (large, medium, small)[3]
3	Climate-induced (internal or international) migration: climate/environmental refugees and migrants.	Time horizon: can be short term (environmental refugees – temporary relocation during reconstruction process); or long term (environmental migrants – permanent displacement). Motivation: Occurs in the immediate aftermath or during a natural disaster; or in fear/threat of negative climate-related shocks to livelihoods sources (gradual, long-term climatic change). It occurs when climate change impacts on current or future income or living standards; or when climate change increases pressure on resources and leads to violence/conflict (but less/contested evidence). Geographical focus: Rural–urban, urban–urban in LICs (especially vulnerable – poverty connected to low adaptive capacity); slums/informal settlements in both LICs and MICs.	Large and sudden inflows of people can put pressure on urban service delivery especially when this already faces challenges. Link to wider sustainability challenges, including and increasing social inequalities in cities.	Evidence base: medium to large. Substantial evidence on the impacts of climate/environmental migration on urban resilience – less explicitly linked to urban service delivery. See, e.g. Raleigh et al. (2008), United Nations Task Team on Social Dimensions of Climate Change (2011), Foresight (2011); Chelleri et al. (2015); Waldinger and Fankhauser (2015). Effects of climate variability and internal migration is well documented: e.g. Barrios et al. (2006); Marchiori et al. (2011); Henderson et al. (2014); Qaisrani (2014). Less evidence on effect of climate on international migration: Piguet et al. (2011) Country- and region-specific literature especially Bangladesh (Martin et al., 2013), Haiti (World Disasters Report (WDR), 2012).
4	Conflict-induced migration: Refugees/IDPs In camps In cities (urban displacement)	Time horizon: Evidence shows that this type of migration is intended to be short term initially, but displacement tends to be protracted and give rise to permanent settlements. Motivation: Triggered by armed conflict, violence, human rights abuses. Geographical focus: LICs and MICs, increasingly developed countries (e.g. Syrian refugees in Europe).	In the aftermath of a crisis: 'acute' migration calls for emergency response to address basic needs (humanitarian domain); in the long term, protracted displacement can put strains on existing service delivery systems (especially when already weak/characterised by scarce resources) and exacerbate inequalities/cause tensions between refugees and host population. Refugees often tend to relocate to informal settlements/slums that lack basic services and are more difficult to reach by humanitarian assistance.	Evidence base: small to medium. Abundant literature documenting linkages between conflict-induced migration and basic service delivery in camps (especially from humanitarian perspective, and focusing on health and education; very little on water and sanitation), e.g. Van der Helm et al. (2015); UNHCR (2013). More recent research on protracted displacement, shift from temporary/emergency service delivery ('humanitarian mode') to longer-term ones ('development mode'), see Loescher & Milner (2011), Metcalfe et al. (2012), WDR (2012), UNHCR and UNICEF literature. No study found directly focusing on impacts of conflict-induced migration on WASH (and particularly sanitation) service delivery in cities.

Source: Authors.

As Table 1 shows, the literature has abundantly tackled the linkages between migration and service delivery in cities with reference to long-term migration, and particularly rural–urban movements (1). For example, researchers at the International Institute for Environment and Development conducted several studies on the causes of service deficiencies, and constraints on urban housing and infrastructure, due to rural-migration fluxes into towns and cities in LICs (Tacoli et al., 2015). They concluded that migration does not necessarily constrain service delivery in cities; it does so when combined with policies and incentive systems that explicitly exclude the poorest and most marginalised members of society (ibid). Other authors suggested that urbanisation trends resulting from rural–urban movements can contribute to, rather than undermine, economic development and consequent improvement of service delivery (see e.g. Glaeser, 2011; Krugman, 2011; and World Bank, 2009).

Another stream of literature looking at the linkages between migration and urbanisation focused on climate-induced migration (3). Already in the 1970s and 1980s, forced displacement was one of the foreseen catastrophic effects of environmental change, and it played an important role in drawing the attention of the international community to the seriousness of climate change. Thereafter, the body of literature on climate change and migration has grown steadily, although experts in the field remark that the subject remains understudied and fragmented (see e.g. Raleigh et al., 2008, United Nations Task Team on Social Dimensions of Climate Change, 2011). Evidence shows that cities in the global South, and especially their slums, are likely to bear the brunt of climate migration (UK Government, 2011; Deshingkar, 2015) – they are faced with a 'double jeopardy' future (Foresight, 2011). Cities are likely to grow in size, partly because of rural–urban migration trends, whilst also being increasingly threatened by global environmental change. These future threats will add to existing fragilities, whilst new urban migrants are, and will continue to be, particularly vulnerable (Foresight, 2011). For example, in Dhaka, roughly 350,000 migrants arrive every year from the delta regions of Bangladesh where storms and sea- level rise have made farming less viable, adding to the city's 14 million inhabitants (Deshingkar, 2015).

Movement induced by climate change impacts, such as floods or other extreme events, is likely to be temporary and occur internally over short distances, especially in LICs (Sward and Codjoe, 2012; Gemenne, 2011). However, disasters can also trigger large and sudden inflows of people. In Bangladesh, the Sixth Five-Year Plan acknowledged that climate-induced migration could put a tremendous pressure on land and natural resources exerted by migrants (Martin et al., 2013). In recognition of this, some authors have broadened their analyses of urban resilience from a narrow focus on climate change and disaster management to encompass wider sustainability challenges, including unsustainable urban metabolism patterns and increasing social inequalities in cities (see, e.g., Chelleri et al., 2015).

A different case is presented by sudden movements of people into cities as a consequence of conflict (4). This was the story of cities like Maputo, Luanda, Kinshasa, Monrovia, and Freetown, which experienced rapid increases of population during and immediately after the civil wars that happened in their countries (Hove et al., 2013). Also, the 2015 WMR report acknowledged that 'mass displacement creates specific vulnerabilities for displaced people and poses unique challenges to those who need to respond, including local authorities and host communities' (IOM 2015a: 89). If markets and institutions in cities are not ready to absorb the sudden inflow of migrants, the latter are forced to find shelter in extremely precarious makeshift arrangements (Haysom, 2013; Carrillo, 2009; Albuja and Ceballos, 2010). Despite the fact that these settlements are intended to be temporary, many people ultimately remain for extended periods, putting a strain on already limited resources and services (Carrillo, 2009).

Albeit without explicitly distinguishing between rural–urban and acute migration, Hove et al. (2013) identified several urbanisation challenges that arise as a consequence of migration flows into African cities. These include unemployment and underemployment; increasing numbers of 'urban poor', often living in situations of deprivation and exclusion; heightened crime and violence; and profound human insecurity as a consequence of inadequate and affordable housing and basic services. The authors also noted that due to financial limitations and capacity constraints, most cities are incapable of providing basic services to their citizens: 'With regard to transport, communications and other utilities, the gap between demand and supply is widening; the same is true for social services such as education, health and care, as a result of lack of public resources and public choices that give priorities to national security' (Hove et al., 2013: 8).

In summary, our review revealed that, as compared to rural–urban migration (1), climate-induced migration (3), and internal and international labour migration (2), the impacts of conflict-induced migration (4) on urban service delivery remain largely unexplored. Several studies look separately at urbanisation and service delivery, and/or service delivery to displaced people especially in camps – but only a few try to link the two.

2.3.   Different spaces of migration

Refugees: In camps or …?

Most of the literature focusing on refugees and/or IDPs (4) looks at service delivery in camps. Notably fewer studies have been done with reference to urban contexts. This is

a major limitation given that more and more refugees are now in cities.

For historical, political and programmatic reasons, camps have shaped the humanitarian approaches of UN agencies and NGOs, as well as states, to displacement. Camps enable the delivery of assistance to large numbers of people, often over prolonged periods of time. They also ensure that service providers have a high degree of control in shaping the environment e.g. by installing sanitation facilities and setting standards for shelter size, materials, etc. The Sphere standards, although ostensibly concerned with the quality of assistance in 'any context', are all essentially about 'how to create a good camp' (Haysom, 2013). And because of the nature of camps, conceived as temporary refuges for people displaced by conflicts and violence, service delivery solutions tend to be short term, for 'emergencies' only. For example, sanitation is generally taken care of through the construction of septic tanks or sealed underground tanks for wastewater collection, without any outlet pipe or scum/sludge retention systems. Often sanitation facilities simply consist of pits dug in the ground, covered by concrete slabs with apertures to allow emptying.

However, the reality is that refugee camps are rarely short-term solutions. As an increasing body of research points out, the average duration of displacement for refugees has lengthened from 9 years in the 1980s to 20 years by the mid-2000s (Loescher & Milner, 2011). Of all the refugees in the world, 85% are estimated to be displaced for protracted periods of time. Thus, basic humanitarian assistance ends up being delivered for many years; yet, it remains insufficient to enable displaced people to build paths to self-reliance. When the displacement crisis is approached as a temporary event, less effort is put in to build ties with local service structures or include host populations who may also be affected by the crisis (Crawford et al., 2015).

… In cities? Urban displacement

An increasing body of evidence indicates that displacement is increasingly an urban and dispersed phenomenon, with settled camps becoming the exception rather than the norm. Several high-profile situations of urban displacement have occurred in the last decade, including in Iraq, Sudan, Somalia, Nairobi (Kenya), Sana'a (Yemen) and Haiti (World Disasters Report (WDR), 2012). At least 59% of all refugees are now living in urban settings, a proportion that is rising annually (Crawford et al., 2015). Rapid- and slow-onset disasters, conflict and violence all drive migration from rural to urban areas and between and within urban areas (1) (Haysom, 2013: 5).

In cities, displaced people and refugees hope to find security, more economic opportunity, greater access to services, anonymity, proximity to power brokers, and access to assistance (Haysom, 2013). While the living conditions they encounter in urban areas may be difficult, even unacceptable by international standards, conditions are often better than those in their countries of origin (WDR, 2012). Numerous studies have shown that IDPs and refugees move to cities to access international assistance, as well as to ensure their survival and build livelihoods for themselves and their dependents. In reality, however, their hopes are seldom met; many people in urban areas receive very little assistance or none whatsoever (Metcalfe et al., 2012) as host governments prefer to concentrate their efforts on refugee camps (Haysom, 2013).

There has been much debate amongst humanitarian organisations on how their strategies and interventions have to adapt to the changing geographies of displacement. These concerns are part of a broader conversation about the challenges that urban humanitarian crises present, especially in terms of post-disaster relief and reconstruction and disaster preparedness and response (Haysom, 2013). Proposed solutions have often centred around the need for new 'tools' to determine the types and standards of assistance required, or looked at how to retrofit the instruments used in rural areas and camps for urban environments. There is a growing body of documented practice on this, particularly emerging out of the large-scale post-earthquake operation in Haiti and refugee responses in Middle Eastern cities (see e.g. Crisp et al., 2009).

The linkages between migration and urban spaces are further evidenced in the work of UN agencies such as IOM, UN-Habitat and the United Nations Refugee Agency (UNHCR). For example, the 2015 World Migration Report (WMR), IOM's flagship publication, drew attention to the livelihood of migrants in the cities of the Global South and highlighted the close connection between migration and urban development at local, national and international levels (IOM, 2015a.) A background paper to the WMR, prepared on the occasion of the 2015 Conference on

---

5   The Sphere standards are a set of minimum standards that all humanitarian interventions in key lifesaving sectors (water supply, sanitation and hygiene promotion; food security and nutrition; shelter, settlement and non-food items; and health actions) should respect. They were developed in the context of the Sphere Project – or 'Sphere'– initiated in 1997 by a group of humanitarian NGOs and the International Red Cross and Red Crescent Movement, aiming to improve the quality of their actions and accountability during disaster response. For more information, see: http://www.spherehandbook.org/en/what-is-sphere/.

6   According to Crawford et al. (2015), more than 80% of refugee crises last for 10 years or more; two in five last 20 years or more.

Migrants and Cities, also stressed the need for a rights-based approach to migration, supported by the delivery of relevant services. Recent research highlighted the strong correlations that exist between effective provision of migrant-inclusive services and urban development in the major emerging economies (see e.g. IOM, 2015b).

While these developments in practice are laudable and encouraging, researchers noted that they have not yet gained the critical mass necessary to shift focus, funding and institutional commitment to address the huge scale of today's urban displacement (Haysom, 2013). Large percentages of refugees and IDPs in urban areas go without assistance or attention. Despite a general recognition that humanitarian actors have the legitimacy and capacity to operate in cities, their institutional priorities remain focussed on camp populations, and there is general uncertainty about what role the international humanitarian system has, or should have, in urban areas.

Urban displaced and informal settlements

We briefly analyse issues of service delivery for urban refugees is by looking at the existing research on service delivery in informal settlements and slums. Recent studies noted that migrants (1, 2 and 3) are disproportionately represented among the urban poor in informal settlements (Hoang, Truong and Dinh, 2013; Rigg, Nguyen and Luong, 2014; UNDP, 2009). This is because migrants are less easily identifiable and are often unemployed or work in low-paid and informal sectors; they may be in female-headed households, have children at work instead of school, and generally experience housing insecurity. National and local health and education systems, social

protection mechanisms and infrastructure are overwhelmed by the volume of demand, or simply unavailable for them (UN, 2016; IOM, 2015a; see Box 3 for a list of barriers that migrants face in accessing the full range of resources, services and opportunities in cities).

In turn, these barriers constrain the ability of urban migrants to access basic resources (IOM, 2013; Duong, Linh and Thao, 2011; Ku and Jewers, 2013; Sabates-Wheeler, 2009; Adams, van Hattum and English, 2009). For example, in Accra, Awumbila calculated that the 92% of migrant households live in one slum, Old Fadama, without a ready supply of water or access to toilet facilities (Awumbila, 2014). In many cities in LICs and MICs, informal settlements commonly function as entry points for incoming migrants (Awumbila, Owusu and Teye, 2014). The same is likely to be true for refugees and IDPs (4) relocating in a city after they escape from conflict; for example, IDPs in urban areas in Colombia live mainly in informal settlements (Crawford et al., 2015).

The 2015 WMR calculated that the region with the largest percentage of urban population living in slums is sub-Saharan Africa (62%), followed by South Asia (35%) and South-East Asia (31%) (IOM, 2015a). Based on data from the global assessment of slums in African cities conducted in 2003 by UN-Habitat (UN-Habitat, 2003a; 2003b), Arimah noted remarkable inter-country differences in the incidence of slums in sub-Saharan Africa, accounted for by: GDP per capita; financial stability; unequal distribution of income; external debt burden; rapid pace of urbanisation; investment in urban infrastructure; and exclusionary nature of the regulatory framework underlying the provision of planned

---

Box 3: Legal, cultural and social barriers that migrants face in accessing resources, services and opportunities in cities

- **Linguistic barriers:** Lack of linguistic skills can impede access to local markets (in particular the labour market), information (including disaster preparedness warnings), health care and education, and hinder the understanding of administrative procedures that are key to daily life.
- **Legal and administrative barriers:** Laws and regulations can exclude all or some specific groups of migrants from formal access to housing, employment, health care, education, and response and recovery assistance in the case of disasters.
- **Reduced access to social networks:** Moving away from the place of origin often disrupts family and community ties that help provide income, health care, childcare, education, emotional support or additional resources to cope with hardship.
- **Reduced knowledge of the local environment and social context:** Moving out of a particular local context also means that site-specific knowledge is lost, including sufficient awareness of local resources and opportunities and how to access them, as well as of local hazards.
- **Inadequacy of skills for urban labour market:** People arriving in cities might face specific challenges in accessing income opportunities and may have to deal with unemployment or deskilling.
- **Lack of representation, discrimination and xenophobia:** Lack of political representation results in a lack of recognition within decision-making processes of the needs and capacities of migrant communities.

Source: IOM (2015a)

residential land (Arimah, n.d.). Therefore, the problem is not urbanisation per se, but the lack of proactive planning of low-cost settlements in order to accommodate urbanisation movements (IOM, 2015a). Often, this stems from deliberate policy measures that aim to deter migrants through the provision of low-quality living conditions, in turn fuelling negative public opinion and xenophobia against migrants (Ostanel, 2011).

Sanitation figures quite prominently in the debates on service delivery in cities – but it is mostly linked to migration through its impacts on health. For example, the 2015 WMR discussed the health vulnerabilities of migrants living and working in unsafe conditions (IOM, 2015a). The WHO and UN-Habitat (2010) argued that overcrowded urban environments with poor sanitation facilities increase the spread of infectious and non-communicable diseases (WHO and UN-Habitat 2010: 14). It is difficult to provide improved sanitation in informal settlements for a number of connected reasons. These include the lack of high-level political leadership aiming to improve living standards and access to basic services (Northover et al., 2014); weak or conflicting governance arrangements that create inertia within the provision structure (O'Reilly and Louis, 2014); and a lack of formal tenure arrangements and a transient population, which dampen the demand for private investment in sanitation facilities (Scott et al., 2013). The absence of government provision also creates the opportunity for profitable but largely unregulated businesses to develop (Gulyani et al., 2005), although newer evidence shows that these are responding to gaps that, if left unattended, could have much worse repercussions (Matoso, 2015). Residents in informal settlements generally pay, relative to their income, higher costs for basic services than households in richer areas (Nilsson, 2006). And finally, logistical issues, such as narrow streets and muddy paths, prevent easy collection of wastes (Mikhael et al., 2014). These difficulties have resulted in piecemeal improvements in sanitation conditions; as of 2014, more than 180 million people living in urban areas in sub-Saharan Africa lacked access to improved sanitation (WHO/UNICEF, 2014).

Overall, besides anecdotal evidence, we found that there is very limited research that systematically deals with service delivery in urban areas facing large and sudden inflows of migrants and/or refugees. When it does, it rarely focuses on sanitation services alone – sanitation is often bundled with water and/or hygiene. A welcome exception is a study realised by HIF in 2013, which aimed to identify significant gaps in emergency WASH (Bastable and Russell, 2013). The authors found that excreta disposal issues, such as latrines in areas where pits cannot be dug, desludging latrines, no-toilet options and the final treatment or disposal of the sewage were the areas in which emergency response was falling short (ibid). As more and more international agencies and donors start realising the new challenges presented by refugees moving into urban areas rather than camps, we can expect more research to be devoted to these topics.

2.4. What happens to service delivery in response to conflict-induced migration?

Who are the service providers?

The capacity of cities to respond to acute inflows of people escaping from conflict will largely depend on: a) the status of existing services (are they already suffering from deficits and inefficiencies?); and b) the extent and type of crisis (is it short term or long term; is it political/ethnic/religious persecution, or conflict?)

Urban service delivery authorities are the first actors that are called to respond. However, especially in developing countries, they may face significant constraints, for example because the financial and human resources at their disposal are limited. Moreover, city authorities often have a negative attitude towards refugees and displaced people, and treat them as an additional burden on overstretched resources and infrastructure (WDR, 2012).

Depending on whether service providers were able to deliver to the urban population prior to the crisis, and on whether there was a centralised system,[7] we can identify the following challenges:

- If there was a centralised system, its expansion to meet increased demand may come at the expense of operation and maintenance, pollution treatment capacity, or its financial health more generally. If the centralised utility ignores the new arrivals and carries on as normal, it may be that some migrants are able to connect anyway; the consequent surge in demand risks creating shortages and eventually damaging the water resource base. Other migrants may be left without access, or may tap the network illegally; this could have negative impacts, for example by drawing down groundwater levels.

---

7   Centralised systems are infrastructures such as drinking water or wastewater treatment plants, which treat large amounts of water from many households in a single location. Centralised systems require either the collection of waste and wastewater from individual houses or distribution to the households (i.e. drinking water); and imply the construction of a piping system (water distribution system or sewers) and / or other means of collection and distribution (e.g. cartage). Source: Sustainable Sanitation and Water Management (SSWM)'s website (glossary): http://www.sswm.info/glossary/2/letterc.

- If there was not a centralised utility, migrants may be able to afford to set up their own water and sanitation systems – for example by digging wells and pit toilets – or connect to a local, small-scale one. In either case, increased demand may draw down water resources, and create more sanitation pollution.

All in all, small-scale community-managed schemes that rely on voluntary management efforts, and thus are relatively open access, have the greatest potential to collapse from the population surge. Local private-sector schemes, such as septic tank desludgers, may fare better, as they charge for their services. These service providers may even experience a booming business as a consequence of migration. However, all of these observations are theoretical, and little evidence exists to support any of the potential pathways and outcomes.

Facing the incapacity of service providers to respond to increased needs and demands, local and international NGOs step in to fill gaps in service provision, particularly for the most vulnerable people living in urban settings. The recent 'urbanisation of emergencies' (WHS Urban Expert Group, 2015: 1) has shifted the focus of humanitarian actors away from camps-only to covering gaps in service coverage in urban areas too (see e.g. WDR, 2012; ICRC and UEA, 2015). Researchers and practitioners have identified two main challenges that humanitarian agencies face in adapting to urban areas as opposed to camps: the dispersion of displaced populations among other residents; and the need to establish relationships – with local authorities that control resources and long-term resources, and with development partners and the private sector (see, e.g. Haysom, 2013; WDR, 2012; UNICEF, 2014).

Other mechanisms of support to refugees and IDPs in cities (4) can also come in. Zetter and Deikun's study of three cities struck by conflict and disasters (post-election violence in Nairobi and Eldoret, typhoon in Manila and earthquake in Port-au-Prince) concluded that IDPs and refugees often rely on host communities for protection, housing, access to basic services, and support for livelihoods (Zetter and Deikun, 2011). A recent report by ODI researchers, looking at the crisis in Syria, also noted that 'much of the support has come from host governments and communities' (Metcalfe-Hough et al., 2016). Other authors confirmed that being hosted by friends and relatives is a common coping strategy amongst refugees and IDPs; however, it is also one that puts extreme pressure on existing infrastructure and services (Zetter and Deikun, 2011). For humanitarian agencies, this means that they should move from models of assistance largely focused on care and maintenance to promote self-reliance and livelihood solutions – as argued by Crawford et al. (2015) on the basis of case studies of Colombia, Jordan, Darfur and Uganda.

The type and extent of the crisis that drives the migratory movement will also impact on the capacity of the city to respond. However, not much has been written on this subject. An emergent stream of literature is documenting the impact of conflicts on urban service delivery. For example, researchers at the University of East Anglia and the ICRC conducted a joint study focusing on the impacts of armed conflict in cities (ICRC and UEA, 2015). The study observed that armed conflict can disrupt any one of the three components (people, hardware and consumables) that make up a service either directly (e.g. a water tower pierced by a tank shell, chlorine shortages due to sanctions) or indirectly (e.g. critical municipal or humanitarian agency staff not showing up for work because access is unsafe). Furthermore, direct and indirect effects can cumulate and result in 'vicious cycles' that may render the restoration of a service unfeasible (ICRC and UEA, 2015).

Another way in which conflict directly impacts on service delivery, including sanitation, in cities is by disrupting development aid and public and private investments. Evidence from conflict-affected areas shows that when a conflict breaks out, development projects are often suspended, temporarily or indefinitely. Most assistance is diverted towards humanitarian interventions. Even when armed fighting stops taking place in the city and moves out to the countryside, investors remain cautious. This is what happened in Juba, in South Sudan. The city received substantial investments into its sanitation system after independence in 2011, under the World Bank's Multi-Donor Trust Fund. However, with the 2013 conflict, most of these investments have been interrupted and the gains lost (Mosello et al., 2016).

Does migration impact on existing inequalities?

International migration is a powerful symbol of global inequality, whether in terms of wages, labour market opportunities, or lifestyles (Black et al., 2005). Already in the 1980s, some authors argued that not only is inequality a major cause of rural–urban migration (1), but the 'after-effects' of migration – remittances and return migration – also increase interpersonal and inter-household inequalities (Lipton, 1980). Over the last ten years the 'migration-development' nexus has emerged as an important area of both research and policy. However, most of the interest has focused on the potential that migration holds for poverty alleviation.

Existing analyses of disadvantaged groups within urban areas tend to be based on income (and/or assets), housing conditions and access to basic services (see Tacoli et al., 2015). Data are disaggregated by sex, age and sometimes ethnicity, but migrant status is rarely taken into account (Tacoli et al., 2015), or there are no distinctions between different migrant groups. Ultimately, we face a massive lack of basic data on urban poverty – and, subsequently, a massive lack of data on the characteristics of those individuals and/or households that have unmet needs.

Although some of the considerations for rural–urban migration (1) can be assumed to be valid for acute migration in the aftermath of a crisis too, we found that a comprehensive body of research exploring the impact of acute migration on inequality of access to services is missing. Programs and agencies focusing on poor-inclusive service delivery in urban areas have merely looked at the gap between rich and poor, often ignoring the many layers of these two categories and their underlying causes. There has not been enough progress in measuring and monitoring urban poverty, both in relation to income-based poverty definition and in relation to the other dimensions of poverty, such as lack of access to basic services (Tacoli et al., 2015).

Inequalities and WASH

We found little specific reference to delivering WASH services to migrants and refugees; but some considerations from the more general WASH literature can apply. The 2015 UNICEF/WHO Joint Monitoring Programme (JMP) report made it clear that, despite the positive achievements of several countries in the recent decade, absolute percentages mask strong inequalities between people and groups within countries (JMP, 2015). This recognition of the multidimensionality of inequalities is reflected in the SDGs, particularly in SDG 6 aiming to achieve access to adequate and equitable sanitation and hygiene for all by 2030 (JMP, 2015). Recent research initiatives by the World Bank and other international agencies in the WASH sector signalled a stronger institutional intent to 'aggressively address inequalities in service delivery'. More studies are also concentrating on alternative methods to measure access to drinking water and sanitation facilities, which account for water quality, equity of access, and extra-household services (see e.g. Bartram et al., 2014).

While the SDGs have been useful in moving the discussion towards recognising that income and gender inequality (in particular) impact on people's opportunities to access WASH services, Winkler et al. (2014) noted that systematic disadvantage also expresses itself along the lines of ethnicity, language, religion, caste, sexual orientation, gender identity, age, disability, nationality, and other factors (see also: Cobham and Sumner, 2013). In the studies we typically found little or no discussion on how inequalities in access to services are created or strengthened by migratory movements.

The reviewed literature on urban WASH is also clearly skewed towards water supply. On sanitation, the World Bank's Water and Sanitation Programme (WSP) found that access to adequate sanitation in cities has been slower than for drinking water, and gaps between rich and poor persist, especially in terms of coverage, quality and functionality

of services, as well as the impact of flooding (Hawkins et al., 2013). The Water and Sanitation for the Urban Poor (WSUP) partnership also widely explored inequalities in access to sanitation services in some cities in Africa and Asia.[8] However, research to date has not considered the more dynamic dimension of the problem, i.e. access to sanitation services when large numbers of people move to the city. What happens then to behaviours of people sharing their toilets with more people, maybe of a different nationality, ethnicity or religion? What happens to government's expenditure? In the next section, we will try to answer to some of these questions by looking at the case study of Amman, in Jordan.

2.5.   Summary

In this section, we explored the existing literature dealing with sanitation service delivery in cities facing migration movements. Overall, we found that more research has been devoted to the service delivery in cities with reference to long-term migration, and particularly rural–urban movements. Another stream of literature looking at the linkages between migration and urbanisation focused on climate-induced migration, and showed that cities in the global South, and especially their slums, are likely to bear the brunt of climate migration.

The focus of our investigation was on sudden movements of people into cities as a consequence of conflict. Overall, besides anecdotal evidence and assumptions, we found limited research on urban service delivery facing 'acute' migration, and even less on sanitation services (which are often bundled together with water and/or hygiene). Most of the literature focusing on refugees and/or IDPs looked at service delivery in camps. However, displacement becomes more protracted and an urban and dispersed phenomenon. Researchers have not yet gained the critical mass necessary to shift focus, funding and institutional commitment to address the huge scale of today's urban displacement.

Recent studies noted that migrants are disproportionately represented among the urban poor in informal settlements, and that this constrains their ability to access basic resources; the same is likely to be true for refugees and IDPs relocating to a city after they escape from conflict. Evidence indicates that the problem is not urbanisation per se, but the lack of proactive planning of low-cost settlements in order to accommodate urbanisation movements. Sanitation figures quite prominently in the debates on service delivery in cities – but it is only linked to migration through its impacts on health, or it is bundled with water and/or hygiene.

---

8   See WSUP's website: http://www.wsup.com/programme/current-research/.

We then moved to identify who the service providers are, and what capacity they have to respond to acute migration. Once again, we found few studies on this. For example, while urban service delivery authorities are the first actors that are called to respond, it is unclear what challenges they face, and what management model may guarantee the flexibility they need. The type and extent of the crisis that drives the migratory movement will also impact on the capacity of the city to respond. Similarly, not much has been written on how the type and extent of the crisis that drives the migratory movement impacts on the capacity of the city to respond.

Over the last ten years, the 'migration-development' nexus has emerged as an important area of both research and policy. However, most of the interest has focused on the potential that migration holds for poverty alleviation. Existing analyses of disadvantaged groups within urban areas tend to be based on income (and/or assets), housing conditions and access to basic services. Ultimately, we face a massive lack of basic data on urban poverty – and, subsequently, a massive lack of data on the characteristics of those individuals and/or households that have unmet needs.

3. Case study: Jordan – from building camps to sustaining cities

3.1. Why Jordan?

Our review revealed that, as compared to rural–urban migration, climate-induced migration, and internal and international labour migration, the impacts of conflict-induced migration on urban service delivery remain largely unexplored. Several studies look separately at urbanisation and service delivery, or service delivery to displaced people especially in camps – but only a few try to link the two. A literature stream on 'urban emergencies' and the type of responses required to deliver services to people escaping from conflict or fighting conflict in cities is emerging – but it focuses primarily on WASH, and shows a clear skew towards water supply.

Besides obvious health implications, the lack of access to adequate sanitation services exposes migrants to exclusion, poverty, and deprivation of security and dignity. In the face of increased fluxes of migrants to cities, often for prolonged periods of time or even permanently, it is paramount to better understand the factors that determine the successes and failures of urban governance structures to deliver essential services to their populations. A first step in this sense is to identify and learn from high density cities that have dealt or are dealing with migrating flows, and the consequent challenges in terms of sanitation provision.

As a first glimpse, in the next section we unpack how conflict-induced migration has affected Jordan's urban infrastructure and systems for the provision of basic services. Whilst direct evidence of impacts of refugee flows on service delivery is not available, Jordan offers a wealthy body of literature (grey literature and secondary literature) that allows us to examine issues around the delivery of sanitation services in light of the magnitude and impacts of the crisis in neighbouring Syria. Special attention has been given to the situation in Amman (where most of the urban refugees are concentrated) and its sanitation conditions (one of the least studied sectors).

3.2. Jordan and the Syrian refugee crisis

The dawn of the Syrian Arab Spring uprising in 2011 and the five-year bloody conflict that followed triggered one of the largest refugee exoduses in recent history. The intensification of fighting and the decreasing chances of a peace deal over the last year have triggered a rapid surge in the number of refugees from Syria. As of March 2016, the UNHCR had registered 2.1 million Syrians in Egypt, Iraq, Jordan and Lebanon; 1.9 million in Turkey, and 28,000 in North Africa.[9] By December 2016, the number of Syrian refugees that will have left their home country is estimated at 4.7 million (3RP, 2016).

Jordan has long been a recipient of refugees from a multiplicity of countries. Considered one of the few safe havens in the politically volatile Middle East, Jordan's refugee population had mounted to 1 million as of December 2015, representing 14% of the country's total population, and the second-greatest ratio of refugees to citizens of any country in the world (UNHCR, 2015a).

Jordan is not a signatory to the 1951 Refugee Convention nor of the 1967 Protocol Relating to the Status of Refugees. Therefore, it has limited liability for the thousands of refugees pouring into its borders. Its refugee policy is framed around a non-legally binding 1998 Memorandum of Understanding with the UNHCR and its ratification of the UN's 1966 International Covenant

---

9 On 03 March 2016, UNHCR's Syria Regional Refugee reported 4,815,360 registered Syrian refugees.

Box 4: Impact of sudden and large-scale influx of refugees in basic service delivery

Any large and sudden inflow of people severely increases the pressure on existing service delivery infrastructure and systems. This is because systems are built based on population estimates that do not necessarily contemplate such unpredictable situations. Services are severely impacted especially if the existing infrastructure is already dilapidated or under stress, if governance systems are weak, or if the managing institutions are unable to prepare in advance and adjust to increased demand. Jordan is no exception; several reports from government and UN agencies have documented the struggle of municipalities to respond to the sudden, large-scale and continuous influx of refugees across different sectors.

Solid waste management: The amount of solid waste produced has more than doubled in both Mafraq (from 60 tons per day to 150) and Irbid (from 80 tons per day to 250) municipalities. In the city of Mafraq, garbage was collected twice every day; now, it is only collected a few times per week due to municipalities' shortages of both labour and material assets such as compressors, garbage tractors and waste containers. Furthermore, the city is spending approximately 18% of its total budget on waste management (Khoury, 2014). As a consequence, there has been an increase in illegal dumping, and inappropriate disposal and burning of waste, in turn contributing to water, soil, and air pollution (ibid).

Water services: Municipalities face challenges in terms of both water supply and water demand (Khoury, 2014; MPIC, 2016). On the one hand, most existing water distribution networks are old and dilapidated; this leads to high loss rates and decreases water availability. On the other hand, a natural population growth rate of 2.2% coupled with the rising influx of refugees means that water demand has also increased substantially over a very short period of time (MPIC, 2016). As a consequence, national piped water coverage rates have dropped astonishingly, from 93% in 2012 to 67% in 2013 (Elmam, 2015). Such combination of dilapidated infrastructure and increasing demand has led to a decrease in water availability. This ultimately impacts daily per-capita water consumption, which since 2012 has reduced by 28% (from 88 litres pre-crisis to 64 litres at present) (3RP, 2016). In some regions, per capita consumption has decreased to dangerously low limits; for example, in Balga, per capita consumption is limited to 66 litres (OHCHR, 2014).

Road infrastructure: With the expansion of cities and booming of refugee camps, new roads are needed to alleviate the pressure on existing ones (Khoury, 2014). Street lighting is also a big concern; in many cases, municipalities have had to ration it, since they are heavily indebted to electricity providers (ibid).

on Civil and Political Rights (which includes the legal obligation to respect the principle of non-refoulement).[10] Nonetheless, between 2011 and November 2014 the Government of Jordan (GoJ) did allow Syrian refugees to access public services (health facilities, schools) (Amnesty International, 2016), and extended subsidies for energy, water, bread and gas to them (World Bank, 2013b). Today, however, Syrian refugees no longer have access to subsidised medical care, for example, and an increasing number of them are being denied entry at Jordan's borders (Francis, 2015).

This is a direct response to the considerable strains that such a swift and unprecedented influx of refugees has put on Jordan's political, social and economic fabric. As a plethora of reports highlighted (see references Table 2), the Syrian refugee crisis has had a considerable impact in terms of depleting the country's natural resources, increasing job competition, overburdening infrastructure, and straining social services. With the GoJ expecting to spend just under US$8 billion over the next three years for the Syrian crisis alone (MPIC, 2016), tensions are running high.

To better understand the present situation, it is necessary to unpack the impact that the sudden and large-scale urban refugee migration influxes to Jordan have had on the country's urban infrastructure and systems of basic service provision. We based our analysis on a review of existing primary and secondary sources of information, including reports, journal articles, and media. Our succinct snapshot of the Jordan case study confirms the research gaps we noted in Section 2, and particularly highlights the following:

- Limited information exists on the impact that urban refugees have on service provision (especially from a sanitation perspective).;
- The literature looks at the vulnerabilities and livelihoods of refugees in camps, but not so much from a basic service delivery angle within the urban context.;
- Evidence on the impacts of patchy urban sanitation systems on urban refugees and host communities remains insufficient.
- The linkages between sudden influxes of refugees and inequalities in access to basic services in urban contexts are unexplored.

---

10 'No Contracting State shall expel or return ('refouler') a refugee in any manner whatsoever to the frontiers of territories where his life or freedom would be threatened on account of his race, religion, nationality, membership of a particular social group or political opinion.' See: UNHCR (2010)

Figure 1: Sanitation coverage trends in Jordan (1990-2015)
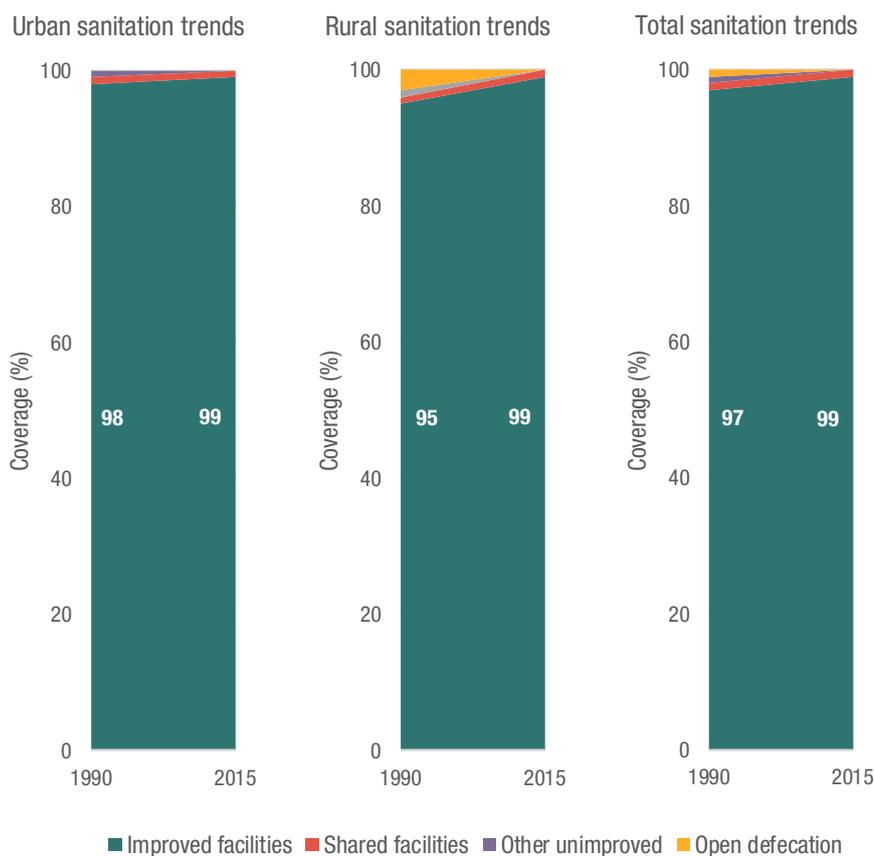
Source: *JMP website (accessed 10/03/2016)*

3.3. How are service delivery systems coping?

There are currently 630,000 registered Syrian refugees in Jordan, which equates to 9% of the country's total population. Even before the onset of the conflict, Jordan was hosting 750,000 Syrians (MPIC, 2016). Because of these pre-existing community linkages, 83% of Syrian refugees now live in non-camp settings, benefiting from the strong social ties, kinship and business relations that Jordanians and Syrians have established over a long period of time (Wazani, 2014). The majority of Syrian refugees have settled into some of Jordan's poorest northern municipalities, within the governorates of Amman (28%), Irbid (23%), and Mafraq (12%).

The sudden and continuous flow of refugees has exerted substantial pressure on Jordan's infrastructure sector, as well as its economic and social fabric. As revealed in a recent report by Jordan's Ministry of Planning and International Cooperation (MPIC, 2016) government expenditure has increased by 38%; GDP growth has fallen by 56%; public debt has grown by 53%; and capital expenditure has remained too low to address the structural impact of the crisis on services and infrastructure. Nevertheless, some authors contested this scenario.

Through a cost-benefit analysis, Wazani (2014) observed that the influx of Syrian refugees had a positive impact on Jordan's national income accounts, given their role in increasing private and public spending and investments. A baseline assessment conducted by MapAction (2014) also remarked that some Jordanians are benefiting economically from the arrival of aid agencies that have injected money into the local economy and created job opportunities. In addition, local businesses and the agriculture sector are taking advantage of the availability of cheap labour provided by Syrians, and landlords and landowners are making significant profits by renting out previously vacant properties.

Nonetheless, host communities have been feeling the pressure of this large-scale influx of refugees from Syria, as noted in UNHCR's Sector Vulnerability Assessment (SVA), published in 2015 (UNHCR, 2015b). The study noted that basic service provision access and quality have dropped for Jordanians; for example, since 2012, health centres and schools have become overcrowded; the cost of rent has gone up by 17%, and competition for work has increased (ibid). And indeed, public services, especially in the northern governorates, where most of the refugees have settled, show signs of severe stress. Municipalities there already suffered from structural issues before the crisis;

most of them operated in a dysfunctional way, borderlining bankruptcy (Francis, 2015). However, the current situation has exposed the vulnerability of municipal institutions (USAID, 2014). According to a needs assessment survey completed in 36 municipalities experiencing a large influx of refugees (Khoury, 2014), local authorities face urgent priorities especially around solid waste management, water services, road infrastructure and sanitation (see Box 4).

The low prioritisation that municipalities in Jordan gave to sanitation, compared to waste disposal and water supply, would seem to suggest it is not one of their highest concerns. As JMP coverage rates illustrate (Figure 1), by 2015 virtually all of Jordan's population had access to improved sanitation facilities (99% in both rural and urban areas) and open defecation had been eradicated. However, several studies highlighted that this optimistic scenario may be the result of statistical misrepresentation. Melloni et al. (2013) noted the following:

- Toilet access is widespread, but sewerage system coverage is more limited (46%), with a significant rural/urban divide. Only 35% of the rural basic services units (BSUs)[11] had sewerage systems, compared to 82% of the urban ones. Conversely, improved pits were observed in 76% of the rural BSUs and in 55% of the urban ones.
- Half of the population that is unserved by sewerage collects wastewater in improperly defined 'septic tanks', i.e. tanks that are in fact pits dug in the ground, covered by corrugated iron sheets; tanks that are not lined on all sides; or tanks that have no outlet pipe but are not designed to retain sludge and scum, and thus allow wastewater to seep into the ground.
- Shared toilets are more common than the statistics say; multiple families usually share one toilet, especially if living in multi-family buildings. Other studies found that in larger settlements, for example in Ash-Shouna, approximately 12 families (more than 70 people) shared one toilet (Oxfam, 2013a). According to the JMP definition, this would fall under the unimproved sanitation category.
- In informal settlements, the majority of households (68%) still engage in open defecation due to lack of access to toilets. The study also revealed that 12% of households reported using private toilets, but this might actually refer to the practice of defecating in a plastic bag or container in the home and discarding the waste outside.

Sanitation services in Jordan are provided through two parallel systems: a standard wastewater collection system and an improved pit system. Although these systems have coexisted for decades, only recently did the

GoJ develop and adopt a clear policy on decentralised wastewater management approaches, emphasising their complementarity (MWI, 2015a). Core urban areas benefit from a centralised system that comprises 31 wastewater treatment plants; their wastewater is reused primarily for irrigation purposes in the Jordan Valley. However, the national wastewater collection and treatment system is in need of significant improvement (either major expansion to handle the increased quantity of waste, or more effective technologies, or both) (MWI, 2015b). Wastewater services have also been severely affected by the increasing demand for water supply and rise in population. These constraints are reflected in the actual level of coverage: out of 1,042 Jordanian localities, the nationwide wastewater collection and treatment network partially or fully reaches and serves only 91 of them (MWI/MPIC, 2013).

---

11 A BSU is a community that shares the same access to services. It does not necessarily overlap with administrative divisions (Melloni et al., 2013).

Table 2: Summary of studies on Syrian refugees and basic service delivery

Year	Author	Title	Angle
2012	ACTED	Rapid Emergency WASH & Livelihoods Assessment in Northern Jordan: Syrian Refugees living in Mafraq and Irbid	Mafraq and Irbid
	Care International	Baseline Assessment of Community Identified Vulnerabilities among Syrian Refugees living in Amman	Amman
	IFRC	Syrian Refugees living in the Community in Jordan	Nationwide
2013	Care International	Syrian Refugees in Urban Jordan: Baseline Assessment of Community-Identified Vulnerabilities among Syrian Refugees Living in Irbid, Madaba, Mufraq, and Zarqa	Irbid, Madaba, Mufraq, and Zarqa
	Melloni et al.	WASH in Host Communities in Jordan – an interagency assessment	Jerash, Ajloun, Irbid, Mafraq, Balqa, and Zarq
	Oxfam (a)	Integrated Assessment of Syrian Refugees in Host Communities – Jordan: Emergency Food Security and Livelihoods; Water, Sanitation and Hygiene	KAP survey - Ajloun, Balqa, Irbid, Jerash and Mafraq FGD - Ajloun, Amman, Balqa, Irbid, Mafraq, Zarqa
	Oxfam (b)	Water Market System in Balqa, Zarqa, & Informal Settlements of Amman & the Jordan Valley	Balqa, Zarqa and Amman
2014	REACH (a)	Access to water and tensions in Jordanian communities hosting Syrian refugees	Ajloun, Balqa, Irbid, Jarash, Al Mafraq and Zarqa
	REACH (b)	Multi-Sector Assessment of Syrian Refugees in Informal Tented Settlements in Jordan	Al Aqaba, Al Mafraq, Amman, Irbid, Maan and Zarqa
	UNHCR	Assessment Syrian refugees in Amman, Irbid, Mufraq, and Zarqa	Amman, Irbid, Mufraq, and Zarqa
	Wazani, K.	The socio-economic implications of Syrian Refugees on Jordan – A cost-benefit Framework	Irbid and Mafraq
2015	Care International	Five Years into Exile - The challenges faced by Syrian refugees outside camps in Jordan and how they and their host communities are coping	Amman, Azraq (town), Irbid, Mufraq, and Zarqa – urban areas
	REACH	JESSRP Monitoring and Evaluation Framework – Baseline Report	Irbid, Al-Mafraq and Al-Zarqa
2016	Amnesty International	Living on the Margins – Syrian Refugees in Jordan Struggle to Access Health Care	Nationwide

Source: Authors.

For the remaining population living in rural and suburban areas, GoJ has begun investing more in decentralised wastewater systems. This approach is considered to be more suitable to Jordan's highly variable topography, and is used to minimise connection costs and risks of technical failure associated with remoteness and dispersion of communities (MWI, 2015a). The private sector also plays a key role in this decentralised system. According to a study by Melloni et al. (2013), around 80% of the interviewed households lived with toilets that discharged to improved pits and were heavily dependent on private desludging trucks. Private sector de-sludging comes at a higher cost, though, and this cost has been increasing since the sudden influx of refugees in cities. For example, in Mafraq the desludging cost has increased from 25 JoD a trip to 30 JoD between 2012 and 2013 – as a result of the diversion of available desludging trucks to Za'atari camp (Oxfam, 2013a).

Syrian refugees living off camp will most likely experience a mix of both systems, depending on the area they settle in (rural, suburban or urban). A report published by Oxfam (2013a) provides the most up to date snapshot of these communities' experiences of sanitation services:

- **Type of sanitation system:** Syrian refugees have access to improved sanitation systems, either pour-flush squatting or flushed-sitting. They prefer the squatting type and highlight the fact that shower and toilet are not separated, which is inconvenient for prayer preparation and when the accommodation is shared with a large number of family members.
- **Quality of shared toilets:** a family of refugees is composed of five to six members on average, and usually settles in crowded and confined multi-family buildings with communal toilets. These come with a variety of problems, however. Intermittent water supply coupled with frequent usage by multiple families often results in water shortages, negatively affecting personal hygiene practices and increasing infection levels (especially during women's menstrual cycles). This lack of cleanliness attracts rodents and insects,

often dissuading children from using the toilets out of fear. People, especially women, also complained of long queues, lack of privacy and lack of security.

- **Handwashing practices:** Urban refugees reported that they wash their hands with water and soap at key moments of the day, for example before eating and after toilet use. Major motivational factors for hand washing are based on disease prevention and religious norms. Women did not refer to hand washing before feeding the baby or after changing baby diapers, which suggests that hand washing is not necessarily practiced at those times. Hand washing practices in informal settlements are weak even though soap and water are available. This might be linked to the poor educational level of people in those settlements.

- **Access to hygiene kits:** Access to hygiene items varies between the governorates and the monthly income available to their inhabitants. The majority of families can purchase essential hygiene items such as soap, toothbrush, toothpaste, washing powder, cleaning detergent and often shampoo and dish liquid. Frequently, Syrian refugees complain that hygiene kits are not part of the World Food Programme (WFP) vouchers; and with dwindling financial resources, purchasing these items loses priority in relation to, for instance, purchasing food.

Therefore, the sudden influx of refugees into Jordan has undoubtedly increased pressure on existing sanitation systems. Service delivery, especially in cities, has also been constrained by pre-existing policies and institutional systems in place (Francis, 2015). Although GoJ estimates that the total cost of Syrian refugees related to wastewater is US$209 million per year (MPIC, 2016), a recent report by the Ministry of Water and Irrigation (see MWI, 2015a) acknowledged that the costs of delivering this service may be even higher. This is because of several bottlenecks that persist in the institutional and infrastructural set-up of the water and sanitation sectors, such as the lack of clear allocation of responsibilities and funds for urban planning, land acquisition problems for establishing new wastewater treatment plants, and uncontrolled expansion of residential areas.

To address some of these issues, as well as sanitation-related needs of Syrian refugees in particular, GoJ has introduced a series of new policies and sectoral plans. In 2015, it adopted the National Framework for Decentralised Wastewater Management in Jordan and the National Plan for Operation and Maintenance of Wastewater Treatment. It also published a new National Water Strategy (2016-2015) supported by a Water Sector Capital Investment Plan. The Ministry has further revised national targets and now plans to increase the number of people connected to sewer networks to 80% by the year 2025 (MWI, 2015b). To deal with the effects of the ongoing Syrian refugee influx, GoJ has developed the

---

Box 6: Wastewater systems in cities with the highest concentration of urban Syrian refugees after Amman – Irbid and Mafraq

Irbid governorate hosts the second-largest conglomeration of urban Syrian refugees. It has a population of just over a million, which is projected to increase by 55% by 2035. The existing wastewater network only covers the central part of the governorate and part of the eastern areas, with a total coverage of 52%. Northern and western parts of the governorate do not have sewer systems and are discharging into septic pits. However, even some localities within the served districts are not covered with sewer systems. The largest district is Irbid Qasabah, which houses about 41% of the governorate population and is the centre of the governorate. The Qasabah contains two operating wastewater collection systems connected to two WWTPs (Central Irbid WWTP and Wadi Al Arab WWTP). The service area of the two WWTPs covers about 331,361 people, representing approximately 72% of the Qasabah area.

Mafraq hosts the third-largest concentration of Syrian urban refugees. It currently has a population of 300,000 people, but it is estimated that this number will rocket 61.6% by 2035. The wastewater service system serves only parts of Mafraq city, with a total coverage of about 8% of the governorate population. The other parts of the governorate do not have sewer systems and currently discharge to septic pits. There is one existing wastewater treatment plant, designed to serve 14,680 people. The total estimated number of unsewered population within Mafraq governorate exceeds 241,500; in the service areas of existing sewer systems, the unsewered population amounts to approximately 44,040 people.

Source: Adapted from USAID (2013)

Jordan Response Plan for the Syria Crisis (2016-2018) where it contemplates improving access to sanitation facilities for targeted vulnerable Syrian and Jordanian population (see Box 5).

Due to the nature, magnitude and longevity of the Syrian crisis, it is very unlikely that refugees in Jordan will return to their homeland any time soon. This implies that the strains and tensions highlighted above will become more acute if not properly addressed. What our analysis also suggests is that the quick onset of refugees seeking humanitarian support has swiftly become a full-on protracted crisis – ultimately forcing GoJ to rethink and shift its response to refugees: from immediate humanitarian relief to long-term development, and from building camps to supporting cities (Su, 2014).

In order to start probing whether or not this shift in paradigm is underway in Jordan, in the next section we

provide some data on the sanitary conditions in Amman and how they affect the Syrian urban refugees

3.4. Amman – anatomy of a city at odds with migration and sanitation flows

Amman is the main recipient of non-camp refugees in Jordan, housing more than 175,000 Syrians. It often represents the first choice of refugees fleeing conflict in their home country, as it already hosts a large Syrian community, and its urban living provides a sense of normalcy and stability. In 2012, UNHCR data suggested that as many as 300 people a day were unofficially leaving refugee camps, making their way to Amman (Care, 2012). However, refugees often settle in the eastern part of the city, alongside the most vulnerable and poorest Jordanians. This has affected their ability to access public services and left them largely hidden to the authorities and Amman's wealthier residents.

The coverage rate of wastewater services in Amman is considerably high – especially if compared to other cities that have witnessed a high influx of refugees (see Box 6). In Amman, wastewater services reach about 84% (or 2 million people) of the total population (USAID, 2013) and cover most of the central, western, and eastern parts of the city, which are served through Ain Ghazal pretreatment plant (AGTP). The northeastern part of the city is served by West Zarqa PS. Both Ain Ghazal and West Zarqa systems flow to As Samra wastewater treatment plant (WWTP). Standalone sewer systems in Abu Nseir area in northern Amman, Wadi Es-Seer in western Amman and Al-Jeeza in southern Amman are in operation, whereas a WWTP is under construction in South Amman, and a WWTP and collection system have yet to be constructed in Naour, Southeast Amman. There are six existing wastewater treatment plants and one pump station to As Samra TP. These plants have a combined total design capacity capable of serving 3,687,500 people. This implies that the existing treatment plants collectively have available treatment capacity for an additional 1,607,388 people (ibid). However, some unsewered areas remain, affecting 3.35% of the total population of Amman (ibid).

Apart from this information, our review did not find much other evidence on sanitation coverage in Amman and how it correlates with settlement patterns of Syrian urban refugees. As shown in Table 2, most of the assessments conducted so far around basic service delivery have focused on general livelihoods assessments (e.g. REACH, 2014; UNHCR, 2014), or have depicted WASH conditions in rural and camp settlements (e.g. Melloni et al., 2013; Oxfam, 2013a), have only focused on water (e.g. Oxfam, 2013b) or health (Amnesty International, 2016). To

date, we found only a study by Care International on the vulnerabilities of Syrian refugees living in Amman (Care, 2012).[12] Care International's assessment revealed that only 54% of households had acceptable, good or very good levels of sanitation (including running water, access to a separate toilet/bathroom, hygiene conditions, etc.); 47% had poor or very poor access levels; and 2% did not have access at all. A study conducted by Oxfam in 2013 (Oxfam, 2013a) further noted that the lack of sewage system caused a persistent smell in the latrines, as remarked by Syrian refugee women in Amman.

The lack of comprehensive data and information on the sanitation conditions of Syrian refugees in Amman makes it difficult to fully grasp the extent of the problem, and reduces much needed investments. Thus, for example, a review of the Syrian Response Plan posed that most of sanitation related investments will be redirected to more well-known 'hotspots' of refugees (Irbid, for example) despite the fact that urban population in Amman is expected to increase around 66% by 2035 (USAID, 2013).

3.5. Summary

In this section, we provided a glimpse of how conflict-induced migration has affected Jordan's urban infrastructure and systems for the provision of basic services, with a special focus on Amman and the sanitation systems servicing the city.

We found that the sudden and continuous flow of refugees has exerted substantial pressure on Jordan's infrastructure sector, as well as its economic and social fabric. On top of that, our review highlighted that service provision access and quality dropped in general; the current situation thus exposes the vulnerability of municipal institutions systems, especially in the northern governorates, where most of the refugees have settled. This was also the case for sanitation systems, leading to a decrease in coverage rates and quality of service being provided. The situation in the city of Amman following the large inflow of Syrian refugees illustrates these dynamics well.

However, the limited amount of sources we found for our case study also pointed to the fact that little is known about the effects of large increases in population on urban sanitation systems. Our small-scale literature review on sanitation service delivery to refugees in Jordan highlighted that the vulnerabilities and livelihoods of refugees have been studied and understood from a refugee camp perspective but not from a basic service delivery angle and in the urban context. Finally, more research is needed to understand the impact of sudden influxes of refugees on inequalities in access to basic services in cities.

---

12 The baseline assessment was conducted in 9 urban areas of Amman, and included data from 60 household interviews and focus group with 57 community members.

4. Future research

4.1. Summary of main findings

In this study, we explored the existing literature dealing with sanitation service delivery in cities facing migration movements. Large-scale, sudden and ongoing influx of people towards urban areas significantly increases pressure on sanitation systems. Depending on the level of urban planning and the settlement dynamics of acute waves of migration, this might mean that centralised and decentralised systems will struggle to cope with increasing demand. This is especially true if financial and technological backup systems that respond to this added volume of people are not in place, if the existing infrastructure was already dilapidated or under stress, if governance systems were already weak, if the managing institutions were unable to prepare in advance for this flow and/or if financial investment towards expansion of centralised networks and decentralised on-site sanitation schemes does not exist.

Overall, we found that more research has been devoted to the service delivery in cities with reference to long-term migration, and particularly rural–urban movements, and this evidence base highlights that migration does not necessarily constrain service delivery in cities. Inward migration is only a challenge for service delivery when policies and incentives shaping public services exclude the poorest and most marginalised members of society. Unfortunately, this is often the case in cities in the global South, and it is these cities, and their informal settlements, that are predicted to receive high flows of inward migration, whether due to climate change or conflict.

Limited rigorous research has been conducted to explore the impact of 'acute' migration on urban service delivery. Most of the literature concerning service provision for refugees and/or IDPs has looked at service delivery in camps. However, as a growing body of research points out, displacement is often protracted, which makes basic humanitarian assistance costly and inappropriate in the long term as displaced people strive to become more self-reliant. In addition, displacement is increasingly an urban phenomenon. There has been much debate amongst humanitarian organisations on how their strategies and interventions have to adapt to the changing geographies of displacement; but there is a lack of research and knowledge on the most effective ways of supporting urban areas to meet the needs of displaced people, and on how to shift focus, funding and institutional commitment to address the huge scale of today's urban displacement.

The most relevant literature for understanding issues of service delivery to urban refugees is that on service delivery in informal settlements and slums. Recent studies noted that migrants are disproportionately represented among the urban poor in informal settlements, and thus have limited access to basic services. The same is likely to be true for refugees and IDPs relocating to a city after they escape from conflict if they cannot afford more formal accommodation. Evidence indicated that the problem is not urbanisation per se, but the lack of proactive planning of low-cost housing in order to accommodate the inward migration of people with a low income, whether they are migrants, IDPs, or refugees.

Sanitation figured quite prominently in literature on service delivery in cities – but it is generally only linked to migration through its impacts on health or it is bundled with water and/or hygiene studies. The literature offers some explanations as to why it is difficult to provide improved sanitation in informal settlements, such as problems with land tenure, settlements being deemed illegal, and challenges of collecting payment from households for the service. Where formal public provision is lacking, private but largely unregulated businesses may fill the gap. This may be a suboptimal solution, but some literature suggests that this does at least reduce the problems caused by a lack of sanitation.

With regard to sanitation service providers and their capacity to respond to acute migration, once again, we only came across a limited amount of research. For example, while municipal authorities are often responsible for sanitation services, it is unclear what forms of governance and financing of sanitation services would enable the service to be resilient to acute migration. An emergent stream of literature is documenting the impact of conflicts on urban service delivery, and so this offers some insight.

Over the last ten years, the 'migration-development' nexus has become an important area of both research and policy. Most of the interest has focused on the potential that migration holds for poverty alleviation, but not necessarily on how urban areas can effectively respond. While there is a large literature base on urban poverty and service delivery in developing urban areas, there is still a lack of accurate data on urban poverty.

Overall, besides anecdotal evidence and theoretical assumptions, we found limited research into how urban service delivery, or sanitation specifically, can be resilient to and meet the needs of large and sudden inflows of refugees.

Therefore, we call for a research agenda that can assist utilities, governments, NGOs and other service providers to better understand and overcome the challenges of sanitation provision in urban contexts 'under stress', and so progress towards realising the SDGs' aspirations for 'universal access to adequate and equitable sanitation' by 2030.

4.2. Research priorities

Our literature review and the Jordan case study highlighted the following research gaps and priorities to be addressed.

How do refugees impact on sanitation service delivery in cities? Linking three research agendas
There is a need to more systematically link the research agendas on urbanisation and migration, with a focus on the delivery of sanitation services – typically a neglected area in the literature, which remains skewed towards water supply. Migratory movements differ in their causes, duration, size, and impact on receiving communities. However, some common traits can be distinguished; for instance, refugees fleeing into cities to escape conflict will probably end up living in the poorest areas, just like migrants leaving their rural villages in search for better livelihoods for themselves and their families. Research on urban WASH access and service provision has traditionally taken into account rural–urban, internal/international labour-induced, and/or climate-induced movements, and has been focused on slum settings. Little is known about how refugee communities experience access to services in 'formal city settings', amidst hosting communities. This study has represented a first attempt at identifying relevant literature that can explain some of the dynamics of acute and conflict-induced migration in terms of urban service delivery. A more systematic analysis, substantiated with primary data collection in urban migration 'hotspots', is required.

How to understand the complexities created by migration?
There seems to be a lack of empirical data of a comparative quality, especially in low-income countries, to understand the complexities created by rapidly shifting patterns of migration. Disaggregated data on sanitation access that distinguish not only on the basis of the 'traditional' categories of gender, age, wealth quintiles, but also take into account migration status are required to understand the inequalities that are created or reinforced by large and sudden influxes of people in terms of sanitation provision. This would clarify the scale of the problem – or whether there is a problem in the first place (it may be that migrant status does not add an additional layer of vulnerability; incoming refugees may even receive better services than the host population as a consequence of humanitarian assistance, for example).

What are the challenges of migrants and host communities in 'urban hotspots'?
In addition to quantitative data to explain sanitation and migration, qualitative research is needed to understand the challenges that migrants and host communities face in accessing sanitation services in cities. The stories of people, their daily struggles, and their coping mechanisms are an essential element to identify existing solutions that can be scaled up with the support of utilities, governments and external actors. Research efforts should also go into identifying potential 'urban hotspot' case studies, or high density cities that have dealt or are dealing with migration flows, and the consequent challenges in terms of sanitation provision. The list of migration urban hotspots in the 2015 WMR (IOM, 2015a) can provide a useful starting point.

4.3. A future research agenda

In Appendix 1, we present some ideas for a research project that would address some of these gaps. Our proposed research focuses on sanitation service delivery systems within 'urban hotspots' across migration trajectories (see IOM, 2015a). As a first step, we aim to develop some criteria for distinguishing differences in accessibility and quality of sanitation services between migrants/refugees and the poorest and most vulnerable in the host community. We then aim to understand the challenges of providing sanitation if there is a large and unexpected inflow of people to a city. Finally, we investigate existing coping mechanisms and instances of positive responses to such a scenario at different levels (households, communities, urban authorities, service providers, national governments, international organisations). Investigating these questions by examining cases of positive deviance should generate recommendations for how cities can improve their sanitation provision. These recommendations would aim to improve operational standards of implementing agencies, with a focus on solutions that strengthen the collaboration between municipal and national authorities, service providers (both formal and informal) and international organisations providing humanitarian and development assistance.

We thus aim to contribute to the definition of a research agenda that merges studies on urbanisation, migration and sanitation service delivery. As found in this study, there is currently limited understanding of the challenges that urban authorities face in delivering sufficient and quality services to people in the face of large and sudden inward migration. We also lack evidence on whether there are inequalities that are created or reinforced by inadequate service provision, in particular by a lack of sanitation. The research project we have proposed aims to provide valuable evidence that will assist those who are responsible for devising the policies and responses to address these inequalities.

References

Ababsa, M. (2011) 'Social Disparities and Public Policies in Amman' in Myriam Ababsa et Rami Farouk Daher, Villes, pratiques urbaines et construction nationale en Jordanie. Beyrouth: Presses de l'Ifpo, 2011 (pp. 205-231) (http://books.openedition.org/ifpo/1744).

Adams, V., van Hattum, T. and English, D. (2009) 'Chronic disaster syndrome: displacement, disaster capitalism, and the eviction of the poor from New Orleans', American Ethnologist 36(4): 615-636.

Albuja, S. and Ceballos, M. (2010) 'Urban displacement and migration in Colombia', Forced Migration Review 34:10-11.

Allen, A., Dávila, J.D. and Hofmann, P. (2006) 'Governance of Water and Sanitation Services for the Peri-urban Poor'. Development Planning Unit. London: University College London.

Amnesty International (2016) 'Living on the Margins – Syrian Refugees in Jordan Struggle to Access Health Care'. London: Amnesty International (https://www.es.amnesty.org/uploads/media/Jordan._Living_on_the_Margins.pdf).

Arimah, B.C. (n.d.) Slums as expressions of social exclusion: explaining the prevalence of slums in African countries (http://www.oecd.org/dev/pgd/46837274.pdf).

Awumbila, M. (2014) 'Linkages between Urbanization, Rural–urban Migration and Poverty Outcomes in Africa'. Background Paper for the World Migration Report 2015, Migrants and Cities: New Partnerships to Manage Mobility. Geneva: IOM.

Awumbila, M., Owusu, G. and Teye, JK. (2014) Can Rural–urban Migration into Slums Reduce Poverty? Evidence from Ghana. Working Paper No 13. Migrating out of Poverty Consortium. Brighton: University of Sussex (http://r4d.dfid.gov.uk/ Output/196216/).

Bakker, K., Kooy, M., Shofani, N.E., and Martijn, E.J. (2008), 'Governance Failure: Rethinking the Institutional Dimensions of Urban Water Supply to Poor Households', World Development 36(10): 1891–1915.

Barrios, S., Bertinelli, L. and Strobl, E. (2006) 'Climatic Change and Rural–urban Migration: The Case of Sub-Saharan Africa'. CORE Discussion Paper No. 2006/46.

Bartram, J., Brocklehurst, C., Fisher, M.B., Luyendijk, R., Hossain, R., Wardlaw, T., and Gordon, B. (2014) 'Global Monitoring of Water Supply and Sanitation: History, Methods and Future Challenges', International Journal of Environmental Research and Public Health 11: 8137-8165.

Bastable, Andy and Russell, Lucy (2013). Gap Analysis in Emergency Water, Sanitation and Hygiene Promotion. London: Humanitarian Innovation Fund.

Bastia, T. (2013) Migration and Inequality. Routledge (https://www.routledge.com/products/9780415686853)

Beall, J. (ed.) et al. (2010) Urbanization and development: multidisciplinary perspectives. Oxford, UK: Oxford University Press.

Betts, A., Bloom, L., and Omata, N. (2012) Humanitarian innovation and refugee protection. Working Paper Series No. 85, Refugee Studies Centre. Oxford, UK: University of Oxford (http://www.rsc.ox.ac.uk/files/publications/working-paper-series/wp85-humanitarian-innovation-2012.pdf).

Betts, A., and Bloom, L. (2014) Humanitarian Innovation: The State of the Art, OCHA Policy and Studies Series 009, November (https://docs.unocha.org/sites/dms/Documents/OP9_Understanding%20Innovation_web.pdf).

Black, R., Natali, C., and Skinner, J. (2005) 'Migration and inequality, Equity and Development'. World Development Report 2006, Background Papers, Second draft, January (http://siteresources.worldbank.org/INTWDR2006/Resources/477383-1118673432908/Migration_and_Inequality.pdf).

Bremner, L. (2004) Johannesburg: one city, colliding worlds. Johannesburg, SA: STE Publishers.

Buhaug, H. and Urdal, H. (2013) 'An urbanisation bomb? Population growth and social disorder in cities', Global Environmental Change 23(1) 1-10.

Buscher, D. (2011) 'New Approaches to Urban Refugee Livelihoods', Refuge 28(2): 17-29.

Campbell, E.H. (2006) 'Urban Refugees in Nairobi: Problems of Protection, Mechanisms of Survival, and Possibilities for Integration', Journal of Refugee Studies 19(3): 396-413.

Care (2012) 'Baseline Assessment of Community Identified Vulnerabilities among Syrian Refugees living in Amman'. Amman: Care Jordan (https://data.unhcr.org/syrianrefugees/download.php).

Carrillo, A.C. (2009) 'Internal displacement in Colombia: humanitarian, economic and social consequences in urban settings and current challenges', International Review of the Red Cross 91(875): 527-546.

Chelleri, L., Waters, J.W., Olazabal, M., and Minucci, G. (2015) 'Resilience trade-offs: addressing multiple scales and temporal aspects of urban resilience', Environment and Urbanization 27(1): 181-198 (http://eau.sagepub.com/content/27/1/181.abstract?rss=1).

Cobham, A., and Sumner, A. (2013) 'Putting the Gini back in the Bottle: "The Palma" as a Policy Relevant Measure of Inequality' London: King's College London (http://www.kcl.ac.uk/sspp/sga/idi/people/Sumner/Cobham-Sumner-15March2013.pdf).

Crisp et al., (2009) 'Surviving in the City: A Review of UNHCR's Operation for Iraqi Refugees in Urban Areas of Jordan, Lebanon and Syria'. Geneva: UNHCR Policy Development and Evaluation Service.

Davis, Paul K. (2003), Besieged: 100 Great Sieges from Jericho to Sarajevo. Oxford, UK: Oxford University Press.

Deshingkar, Pryia (2015) 'Focus on Migration: Cities on the Climate Frontline'. SciDevNet (http://www.scidev.net/global/migration/analysis-blog/migration-cities-climate-front-line.html).

Duong, L.B., Linh, T.G. and Thao, N.T.P. (2011) Social protection for rural–urban migrants in Vietnam: Current situation, challenges and opportunities. CSP Research Report 08. Centre for Social Protection. Brighton: Institute of Development Studies (www.ids.ac.uk/files/dmfile/ResearchReport08REVISE.pdf).

Elmam, D. (2015) 'Refugee influx causing drop in water, sanitation service coverage' in Jordan Times. Published 18 October 2015. Accessed 08/03/2016 (http://www.jordantimes.com/news/local/refugee-influx-causing-drop-water-sanitation-service-coverage-%E2%80%94-nasser).

Foresight (2011) Migration and Global Environmental Change: Future Challenges and Opportunities. Final Project Report. London: UK Government Office for Science.

Francis, A. (2015) 'Jordan's Refugee Crisis'. Washington, DC: Carnegie Endowment for International Peace (http://carnegieendowment.org/files/Brief-Francis-Jordan.pdf).

Gemenne, F. (2011) 'Why the numbers don't add up: A review of estimates and predictions of people displaced by environmental changes', Global Environmental Change. 21S, P.S41-S49.

Glaeser, E. (2011) Triumph of the City: How our Greatest Invention Makes us Richer, Smarter, Greener, Healthier and Happier. London: Macmillan.

Gulyani, S., Talukdar, D. and Kariuki, R. (2005) 'Universal (non)service? water markets, household demand and the poor in urban Kenya', Urban Studies 42(8): 1247-1274.

Hawkins, P., Blackett, I., and Heymans, C. (2013) Poor-Inclusive Urban Sanitation: An Overview. Washington DC: Water and Sanitation Programme (WSP), International Bank for Reconstruction and Development / The World Bank (http://www.wsp.org/sites/wsp.org/files/publications/WSP-Poor-Inclusive-Urban-Sanitation-Overview.pdf).

Haysom, S. (2013) 'Sanctuary in the City? Reframing Responses to Protracted Urban Displacement'. HPG Policy Brief. London: HPG.

Henderson, V.H., Storeygard, A. and Deichmann, U. (2014) 50 Years of Urbanization in Africa – Examining the Role of Climate Change. World Bank Development Research Group Policy Research Working Paper No. 6925. Washington, DC.

Hoang, X.T., T.A. Truong and T.T.P. Dinh (2013) Urban poverty in Vietnam – a view from complementary assessments. International Institute for Environment and Development (IIED) Working Paper. London (http://pubs.iied.org/pdfs/10633IIED.pdf).

Hove, M., Ngwerume, E., and Muchemwa, C. (2013) 'The Urban Crisis in Sub-Saharan Africa: A Threat to Human Security and Sustainable Development', International Journal of Security and Development (http://www.stabilityjournal.org/articles/10.5334/sta.ap/).

ICRC and UEA (2015) Urban services during protracted armed conflict: A call for a better approach to assisting affected people. Geneva: International Committee of the Red Cross (https://www.icrc.org/eng/assets/files/publications/icrc-002-4249.pdf).

International Organization for Migration (IOM) (2013) World Migration Report: Migrant Well-being and Development. Geneva: International Organization for Migration. (http://publications.iom.int/bookstore/free/WMR2013_EN.pdf).

International Rescue Committee (n.d.) 'Crisis Watch Urban Refugees' (www.rescue.org/crisis-watch-urban-refugees).

IOM (2015a) World Migration Report (http://publications.iom.int/system/files/wmr2015_en.pdf).

IOM (2015b) 'Migration and local planning: issues, opportunities and partnerships'. Background Paper to the International Dialogue on Migration 2015: Conference on Migrants and Cities, 26 and 27 October 2015 (http://www.iom.int/sites/default/files/our_work/ICP/IDM/2015_CMC/IDM-October-2015-Conference-on-Migrants-and-Cities-Background-Paper.pdf).

Jacobsen, K. (2006) 'Refugees and Asylum Seekers in Urban Areas: A Livelihoods Perspective', Journal of Refugee Studies 19(3): 273-86.

JMP Fact Sheet (2015) (http://www.unicef.org/wash/files/4_WSSCC_JMP_Fact_Sheets_4_UK_LoRes.pdf)

Joint Monitoring Programme (JMP) (2015) 'Progress on Drinking Water and Sanitation: 2015 Update'. Washington, DC: World Health Organization/UNICEF.

Keane, D. (2004) 'Environmental Causes and Consequences of Migration: A Search for the Meaning of Environmental Refugees', Georgetown International Environmental Law Review 16:209-224.

Khoury, M. (2014) 'Municipal Needs Assessment Report: Mitigating the Impact of the Syrian Refugee Crisis on Jordanian Vulnerable Host Communities'. Jordan: UNDP (http://www.alnap.org/resource/19588).

Krishna, A. et al. (2014) 'Slum types and adaptation strategies: Identifying policy-relevant differences in Bangalore', Environment and Urbanization 26(2) 568-585.

Krugman, P. (2011) 'The new economic geography, now middle-aged', Regional Studies 45(1) 1-7.

Ku, L. and M. Jewers (2013) Health Care for Immigrants: Current Policies and Issues. Washington, DC: Migration Policy Institute.

Lipton M. (1980) 'Migration from rural areas of poor countries: the impact on rural productivity and income distribution', World Development 8: 1-24.

Loescher, G. and Milner, J. (2011) 'Responding to Protracted Refugee Situations: Lessons from a Decade of Discussion'. Forced Migration Policy Briefing 6. Refugee Studies Centre. January.

Lucchi, Elena (2013) Humanitarian Interventions in Situations of Urban Violence, ALNAP Lessons Paper, Active Learning Network for Accountability and Performance. London: Overseas Development Institute.

MapAction (2014) SNAP: Jordan baseline information, Saunderton: MapAction (http://www.mapaction.org/component/mapcat/download/3209.html?fmt=pdf).

Marchiori L., Maystadt, J.F. and Schumacher, I. (2011) 'The impact of weather anomalies on migration in sub-Saharan Africa', Journal of Environmental Economics and Management 63 (2012):355- 374.

Martin, M., Kang, Y., Billah, M., Siddiqui, T., Black, R., and Kniveton, D. (2013) Policy analysis: Climate change and migration Bangladesh. Working paper 4, University of Dhaka and University of Sussex (http://migratingoutofpoverty.dfid.gov.uk/files/file.php?name=wp4-ccrm-b-policy.pdf&site=354).

Mason, N., and Mosello, B. (2016) Making humanitarian and development WASH work better together. London: Overseas Development Institute (ODI).

Mason, N., Harris, D. and Batley, R. (2014) 'The technical is political: understanding the political implications of sector characteristics for the delivery of sanitation services'. ODI and University of Birmingham.

Matoso, M. (2015) 'The Liquidity of Power: Models of Urban Water Governance in Lusophone Africa, a comparative case between the peri-urban areas of Luanda and Maputo'. PhD Thesis. University of Nottingham.

Melloni et al. (2013) 'WASH in Host Communities in Jordan – an interagency assessment'. ACTED/OXFAM/Mercy Corps/UNICEF/Relief International: Amman (http://www.alnap.org/pool/files/96-wash-in-host-communities-in-jordan-an-interagency-assessment-september-october-2013.pdf).

MercyCorps (2016) 'Quick facts: What you need to know about the Syria crisis'. Published 05 February 2016. Access 08/03/16 (https://www.mercycorps.org/articles/syria-turkey-iraq-lebanon-jordan/quick-facts-what-you-need-know-about-syria-crisis).

Metcalfe, V., Haysom, S. and Martin, E. (2012) Sanctuary in the City: Urban Displacement and Vulnerability in Kabul. HPG Working Paper.

Metcalfe-Hough, V., Manuel, M., and McKechnie, A. (2016) Enhancing aid architecture in the regional response to the Syria crisis. London: ODI.

Mikhael, G., Robbins, D.M., Ramsay, J.E. and Mbeguere, M. (2014) 'Methods and means for collecting and transport of faecal sludge', in Linda Strande, Mariska Ronteltap and Damir Brdjanovic (eds), Faecal Sludge Management (1st edition, pp 67-97). London: International Water Association.

Mosel, I., Lucci, P., Doczi, J., Cummings, C., Bahadur, A., Walker, D., Scott, L. and Nixon, H. (2016) Urbanisation: consequences and opportunities for the Netherlands' Directorate-General for International Cooperation. London: ODI.

Mosello, B., Mason, N., and Aludra, R. (2016) Improving WASH service delivery in protracted crises: The case of South Sudan. London: ODI.

MPIC (2016) Jordan Response Plan for the Syria Crisis 2016 – 2018, Ministry of Planning and International Cooperation: Amman (http://www.jrpsc.org/s/JRP2016-2018Full160209.pdf).

MWI/MPIC (2013) High Level Conference on Jordan's Water Crisis, Ministry of Water and Irrigation/ Ministry of Planning and International Cooperation: Amman (http://www.mwi.gov.jo/sites/en-us/Hot%20Issues/High%20Level%20Conference%20on%20Jordan%E2%80%99s%20Water%20Crisis%20-%20December%202,%202013.pdf).

MWI (2015a) National Framework for Decentralized Wastewater Management. Ministry of Water and Irrigation: Amman.

MWI (2015b) Water Sector Capital Investment Plan (2016-2025), Ministry of Water and Irrigation: Amman.

Nilsson, D (2006), 'A heritage of unsustainability? Reviewing the origin of the large-scale water and sanitation system in Kampala, Uganda', Environment and Urbanization 18(2): 369-385.

Northover, H., Ryu, S.K. and Brewer, T. (2014), Achieving total sanitation and hygiene coverage within a generation – lessons from East Asia. London: WaterAid.

OECD Migration Policy Debates May 2014 in Habitat III Issue Paper (2015): Migration and Refugees in Urban Areas, June 2015 (https://www.habitat3.org/bitcache/93982e88c031e00daaa1d0cad3de 05a8f95f4e61?vid= 542863&disposition=inline&op=view).

Oesch, L. (2010) The Evolution of Urban Upgrading and Rehabilitation in Greater Amman. New York: Columbia University.

Office of the United Nations High Commissioner for Human Rights (OHCHR) (2014) Report of the Special Rapporteur on the human right to safe drinking water and sanitation – Mission to Jordan. New York: OHCHR.

O'Keefe, M., Luethi, C., Tumwebaze, I.K., and Tobias, R. (2015) 'Opportunities and limits to market-driven sanitation services: evidence from urban informal settlements in East Africa', Environment and Urbanization 27(2): 421-440 (http://eau.sagepub.com/content/27/2/421.abstract?rss=1).

O'Reilly, K. and Louis, E. (2014), 'The toilet tripod: Understanding successful sanitation in rural India', Health & Place 29: 43-51.

Ostanel, E. (2011) 'Citizenship in the making: Mozambicans in Johannesburg. Paper presented at the International Research Committee 21 conference: The struggle to belong: Dealing with diversity in 21st century urban settings'. Amsterdam, 7-9 July 2011. Madrid: International Sociological Association.

Oxfam (2013a) Integrated Assessment of Syrian Refugees in Host Communities – Jordan: Emergency Food Security and Livelihoods; Water, Sanitation and Hygiene. Oxfam Jordan: Amman (http://www.alnap.org/pool/files/ogbjordan-finalreport-integratedhostcommunityassessment-4share-march2013.pdf).

Pantuliano, S., Metcalfe, V., Haysom, S., and Davey, E. (2012) 'Urban vulnerability and displacement: a review of current issues', Disasters 36(S1): S1-S22 (http://www.academia.edu/5622633/Urban_vulnerability_and_displacement_a_review_of_current_issues).

Piguet, E., Pecoud, A. and deGuchteneire, P. (2011) 'Migration and Climate Change: An overview', Refugee Survey Quarterly, 1-23.

Qaisrani, A. (2014) 'Strengthening Human Capital by Reducing Climate Change Vulnerabilities'. PRISE Thematic Review, draft, December.

Raleigh, C., Jordan, L. and Salehyan, I. (2008) 'Assessing the impact of climate change on migration and conflict', World Bank Seminar on Exploring the Social Dimensions of Climate Change, Washington, DC: World Bank (http://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/SDCCWorkingPaper_MigrationandConflict.pdf).

REACH (2014) 'Multi-Sector Assessment of Syrian Refugees in Informal Tented Settlements in Jordan'. Amman: Reach (http://www.reachresourcecentre.info/system/files/resource-documents/reach_jor_informalsettlements_msnasyriarefugees_aug2014.pdf).

Refugee Law Project (2005) A Drop in the Ocean: Assistance and Protection for Forced Migrants in Kampala. Refugee Law Project Working Paper 16.

Rigg, J., Nguyen, T.A. and Luong, T.T.H. (2014) 'The Texture of Livelihoods: Migration and Making a Living in Hanoi', Journal of Development Studies 50 (3):368-382. DOI: 10.1080/00220388.2013.858130.

Sabates-Wheeler, R. (2009) Social security for migrants: Trends, best practice and ways forward. Working Paper 12. ISSA project 'Examining the Existing Knowledge on Social Security'. Geneva: International Social Security Association.

Satterthwaite, D. and Mitlin, D. (2013) Reducing urban poverty in the global south. London: Routledge.

Scott, P., Cotton, A. and Sohail Khan, M. (2013) 'Tenure security and household investment decisions for urban sanitation: The case of Dakar, Senegal', Habitat International 40:58-64.

Senkwe, B.K. (2014) An Emerging Fecal Sludge Management System in a Post-Conflict Situation: The Case of Juba (http://www.afriwater.org/sludge-management/673-an-emerging-).

Skeldon, R. (2013) 'Global Migration: Demographic Aspects and Its Relevance for Development'. UN DESA Technical paper 2013/6 (www.un.org/esa/population/migration/documents/EGM.Skeldon_17.12.2013.pdf).

Sward, J. and Codjoe, S. (2012). 'Human mobility and climate change adaptation policy: a review of migration in National Adaptation Programmes of Action (NAPAs)'. Brighton: Migrating out of Poverty.

Su, A. (2014) 'A nation of refugees: Jordan struggles with those fleeing regional crises' in Aljazeera America, Published 25 July 2014. Accessed 09/03/2016 (http://america.aljazeera.com/articles/2014/7/25/jordan-refugees-iraq.html).

Tacoli, C., McGranahan, G., and Satterthwaite, D. (2015) Urbanisation, rural–urban migration and urban poverty. IIED Working Paper, March. http://pubs.iied.org/pdfs/10725IIED.pdf.

The Government Office for London Migration and global environmental change: future challenges and opportunities (UK government, 2011) (see more at http://www.scidev.net/global/migration/analysis-blog/migration-cities-climate-front-line.html#sthash.CquunGAb.dpuf).

UN (2016) 'One Humanity: Shared Responsibility, Report of the Secretary-General for the World Humanitarian Summit, A/70/XX', advanced unedited draft (http://reliefweb.int/sites/reliefweb.int/files/resources/Secretary-General%27s%20 Report%20for%20WHS%202016%20%28Advance%20Unedited%20Draft%29.pdf).

UN Department of Economic and Social Affairs World population policies 2013 (UN) (2013) World Population policies 2013 (http://www.un.org/en/development/desa/population/publications/pdf/policy/WPP2013/wpp2013.pdf).

United Nations Development Programme (UNDP) (2009) Human development Report 2009 – Overcoming barriers: Human mobility and development. New York: United Nations (http://hdr.undp.org/sites/default/files/reports/269/ hdr_2009_en_complete.pdf).

United Nations Task Team on Social Dimensions of Climate Change (2011) 'The Social Dimensions of Climate Change', International Labour Organization (http://www.who.int/globalchange/mediacentre/events/2011/social-dimensions-of-climate-change.pdf).

UN-Habitat (2003) The Challenge of Slums: Global Report on Human Settlements 2003 London: Earthscan.

UN-Habitat (2013) State of the World's Cities 2012/2013 – Prosperity of Cities. New York: Routledge. (http://unhabitat. org/books/prosperity-ofcities-state-of-the-worlds-cities-20122013/).

UNHCR (2004) 'Self-Reliance Strategy (1999-2003) for Refugee Hosting Areas in Moyo, Arua and Adjumani Districts, Uganda' (Report of the Mid-Term Review). Geneva: UNHCR.

UNHCR (2006) Global Trends Report. Geneva: UNHCR.

UNHCR (2010) 'United Nations Refugee Agency: Convention and Protocol Relating to the Status of Refugees'. Geneva, UNHCR (www.unhcr.org/3b66c2aa10.html).

UNHCR (2014) 'UNHCR Uganda Joint Assessment Mission'. Report from Government of Uganda, Office of the Prime Minister, Refugee Department, United Nations High Commission for Refugees, World Food Program. Kampala.

UNHCR (2013) 'Haiti Humanitarian Assistance Evaluation: From a Resilience Perspective' New Orleans, LA: Tulane University.

UNHCR (2015a) 'United Nations Refugee Agency: Mid-Year Trends 2014'. Geneva: UNHCR (http://unhcr. org/54aa91d89.html)

UNHCR (2015b) 'Vulnerability Assessment Framework – Baseline Survey'. Jordan: UNHCR (https://data.unhcr.org/ syrianrefugees/download.php).

UNICEF (2014) 'UNICEF Water, Sanitation and Hygiene Annual Report 2014' (http://www.unicef.org/ publicpartnerships/files/2014_Annual_Results_Report_WASH.pdf).

United Cities and Local Governments (UCLG) (2013) Basic Services for All in an Urbanizing World: The Third Global Report on Local Democracy and Decentralization. London: Routledge.

USAID (2013) 'National Strategic Wastewater Master Plan'. Washington, DC: United States Agency for International Development (http://inform.gov.jo/Portals/0/Report%20PDFs/6.%20Infrastructure%20&%20Utilities/iii.%20 Wastewater%20Treatment/2013%20Oct%20USAID-National%20Strategic%20Wastewater%20Master%20Plan. pdf).

USAID (2014) 'The Fiscal Impact of the Syrian Refugee Crisis on Jordan'. Amman: USAID.

Van der Helm, A.W.C., Bhai, A., Coloni, F., Koning, W.J.G., de Bakker, P.T. (2015) 'Developing water and sanitation services in refugee settings from emergency to sustainability – The case of Zaatari Camp in Jordan'. Proceedings of the IWA Water and Development Congress and Exhibition 2015, WDCE 2015, October (http://repository.tudelft.nl/view/ ir/uuid:7953d49d-194a-4ecb-81d8-63afcb3f6f60/).

van Dijk, M.P. (2012) 'Sanitation in Developing Countries: Innovative Solutions in a Value Chain Framework', in H. Sun (ed.), Management of Technical Innovation in Developing and Developed Countries (1st edition, pp 65-83) Rijkeka: Intech.

Vertovec, S. and Cohen, R. (eds) (2002) Conceiving cosmopolitanism: theory, context and practice. Oxford, UK: Oxford University Press.

Waldinger, M., and Fankhauser, S. (2015) 'Climate change and migration in developing countries: evidence and implications for PRISE countries'. Policy paper, GRI and PRISE (http://prise.odi.org/wp-content/uploads/2015/10/ Climate-change-and-migration-in-developing-countries3.pdf).

Wazani, K. (2014) 'The Socio-Economic Implications of Syrian Refugees on Jordan – a cost-benefit analysis'. Jordan: Issnaad Consulting (www.kas.de/wf/en/33.37808/).

WHO and UN-Habitat (2010) 'Hidden Cities: Unmasking and overcoming health inequities in urban settings'. Geneva: WHO and UN-Habitat, p. 14. (www.who.int/kobe_centre/publications/hiddencities_media/who_un_habitat_hidden_ cities_web.pdf).

WHO and UNICEF (2014) 'Progress on sanitation and drinking-water – 2014 update'. Geneva: World Health Organization and United Nations Children's Fund.

WHO and UNICEF (2015) 'Progress on sanitation and drinking water – 2015 update and MDG assessment'. Geneva: WHO and UNICEF Joint Monitoring Programme for Water Supply and Sanitation.

World Humanitarian Summit (WHS) Urban Expert Group (2015) 'The Urbanisation of Emergencies - Adapting Humanitarian Action to a Changing World'. Published by ALNAP, April (http://www.alnap.org/resource/20281).

Winkler, I., Satterthwaite, M.L., and De Albuquerque, C. (2014) 'Measuring What We Treasure and Treasuring What We Measure: Post-2015 Monitoring for the Promotion of Equality in the Water, Sanitation and Hygiene Sector', Wisconsin International Law Journal, NYU School of Law, Public Law Research paper No.14-48 (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2498064).

World Bank (2009) World Development Report 2009: Reshaping Economic Geography. Washington, DC: The World Bank.

World Bank (2013) Jordan – Emergency Project to Mitigate the Impact of Syrian Displacement on Jordan (English). Washington, DC: The World Bank (http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/07/10/000442464_20130710103259/Rendered/PDF/781290PAD0JO0R0t0Box377365B00OUO090.pdf).

World Disasters Report (WDR) (2012) Focus on Forced Migration and Displacement, Geneva: International Federation of Red Cross and Red Crescent Societies (http://www.ifrc.org/Global/Documents/Secretariat/2012_WDR_Full_Report.pdf).

Zetter, R., and Deikun, G. (2011) 'A new strategy for meeting humanitarian challenges in urban areas', Forced Migration Review 38 (http://www.fmreview.org/technology/zetter-deikun.html).

3RP (2016) Regional Refugee & Resilience Plan 2016-2017, UNDP/UNHCR: Amman http://www.3rpsyriacrisis.org/wp-content/uploads/2015/12/3RP-Regional-Overview-2016-2017.pdf

Appendix 1

Some general steps for developing research around urban sanitation service delivery in response to acute migration

Overview

Our proposed research focuses on sanitation service delivery systems within 'urban hotspots' across migration trajectories (see IOM, 2015a). We aim to contribute to the definition of a research agenda that merges studies on urbanisation, migration and sanitation service delivery. The evidence thus generated will inform recommendations to improve operational standards of implementing agencies, with a focus on solutions that strengthen the collaboration between municipal and national authorities, service providers (both formal and informal) and international organisations providing humanitarian and development assistance.

Research questions

Our research wants to understand:

- What are the challenges of water supply and sanitation provision in urban contexts receiving large influxes of refugees and migrants, for example as a consequence of conflict?
- How can existing and new inequalities in access to drinking water and sanitation be overcome in the face of increasing demand? What examples are there of cities' creative/successful response to increased demand for urban water services, and how can these examples be scaled up?

These broader research questions can then be disaggregated into the following sub-questions – each can be part of an individual and smaller research project, or they can be considered together, depending on the available resources and time frame.

1. What are the main migration 'urban hotspots', and where are they situated?
2. What are the specific challenges that incoming migratory movements pose to urban service delivery?
3. What kind of technical/political/economic mechanisms were deployed to respond to the large influx of refugees/ migrants, and have they been successful in addressing the problem? Why or why not?
4. How do governments in transit countries, with limited resources, make choices between caring for large numbers of refugees and their own poor?
5. To what extent did public perception of migration (and which migrants) influence the city's response?
6. What kind of actors were involved in the response (private sector, civil society, community)?
7. What has the role of the international humanitarian and development aid community been in supporting urban service delivery in the face of refugee/migrant 'crises'?

Approach and methodology

In this section, we provide some general guidelines to inform projects addressing the research gaps identified in this study. It is important to note that the phases and activities we suggest are conceived to be general on purpose; this way, we hope that they will be easily adaptable to the broad set of questions they aim to answer.

First of all, the research project should be designed and implemented by a consortium of individuals and organisations with different but complementary disciplinary backgrounds, expertise and mandates. Ideally, each case study will be led by national researchers in order to capitalise on their context-specific knowledge and networks, thus facilitating data access, synthesis and interpretation. Political economy analysis (PEA) is a possible tool to analyse the constraints and opportunities for service delivery in urban areas with high migration.

Overseas Development Institute
203 Blackfriars Road
London SE1 8NJ
Tel +44 (0) 20 7922 0300
Fax +44 (0) 20 7922 0399

odi.org