

Approaches to the design of refugee camps

An empirical study in Kenya, Ethiopia, Greece, and Turkey

The design of
refugee camps

323

Marianne Jahre

*Department of Accounting Auditing and Business Analytics,
BI Norwegian Business School, Oslo, Norway*

Joakim Kembro

*Department of Industrial Management and Logistics, Lund University,
Lund, Sweden*

Anicet Adjahossou

*Shelter and Settlement Session, United Nations High Commissioner for Refugees,
Geneva, Switzerland, and*

Nezih Altay

*Department of Management & Entrepreneurship,
DePaul University, Chicago, Illinois, USA*

Received 29 July 2017

Revised 20 December 2017

Accepted 24 December 2017

Abstract

Purpose – An unprecedented scale of human migration has lead humanitarians to view camps as long-term settlements rather than temporary holding facilities. The purpose of this paper is to increase the understanding of and identify challenges with this proposed new approach to camp design.

Design/methodology/approach – Based on the camp design literature, the authors developed an interview guide and checklist for data collection. A multi-site case study and within- and cross-case analysis was then conducted.

Findings – The findings suggest that the proposed new approach is implemented only to a limited extent, and mostly in a stepwise manner. As camps mature, there is a shift toward the new approach, but most camps are established using the traditional top-down, temporary, and isolated approach.

Research limitations/implications – The findings are based on four camps in four different countries and do not provide an exhaustive global coverage.

Practical implications – The insights the authors derived and the challenges identified from the empirical evidence can be used to better plan future camps.

Social implications – The results can support improvements in camp design, thus alleviating suffering for both refugees and host communities, particularly in developing countries. In particular, the trade-off between a permanent solution and the temporary must be accounted for.

Originality/value – The study contributes to the literature by developing and proposing a conceptual framework to camp design. The cross-case analysis provides an initial understanding and categorization of challenges with implementing the new approach. It also suggests an evolutionary perspective of camp design.

Keywords Refugee, Embeddedness, Camp design, Humanitarian operations, Layout

Paper type Research paper

© Marianne Jahre, Joakim Kembro, Anicet Adjahossou and Nezih Altay. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

The authors thank Johan Christofferson and Erik Müller for helping out with part of the data collection, and also anonymous reviewers and the editors for constructive comments in improving the paper.



Journal of Humanitarian Logistics
and Supply Chain Management

Vol. 8 No. 3, 2018

pp. 323-345

Emerald Publishing Limited

2042-6747

DOI 10.1108/JHLSCM-07-2017-0034

1. Introduction and purpose

Since 2008, there has been a staggering growth of displaced people due to rapid-onset natural disasters, conflict, and violence. By the end of 2016, the global number of persons of concern (PoCs) had increased by 58 percent to reach 67.7 million (UNHCR, 2016). This rapid increase of PoCs, including both refugees and internally displaced people, has required significant expansions of existing camps and development of new camps. In parallel, many camps have become long-term accommodation (Kennedy, 2005) following the persistence of armed conflicts, persecution, food insecurity, environmental degradation, poor governance, and countless other factors (UNHCR, 2016). Also taking into consideration funding constraints, the humanitarian sector is urged to explore and implement more efficient and long-term approaches to camp design (Kleinschmidt, 2015). Such refined design principles must support spatial planning and natural resource sustainability while minimizing tension and accounting for the needs, perspectives, and integration of refugees and host communities (Kennedy, 2008; Adjahossou, 2015; Gibson, 2016).

Camps have, for several decades, been recognized as “temporary space[s] in which refugees may receive humanitarian relief and protection until a durable solution can be found to their situation” (Ramadan, 2013, p. 65). Locations have often been selected to isolate refugees from the local community and decisions regarding camp design have generally been made top-down. This can be referred to as the “traditional” approach to camp design. In contrast, a proposed new approach based on longer-term, participatory solutions, meaning that refugees and the local community actively participate in camp development and operation, is gaining increased attention among governments and humanitarian organizations. However, multiple challenges hinder its expansion. This paper increases our understanding of what we term the new approach by answering two questions: to what extent are camps currently being designed according to the new approach?; and what are the challenges to adopting the new approach?

As stated in the special issue’s call for papers, there is limited research on refugees in the humanitarian logistics (HL) and operations (HO) field (Banomyong and Oloruntoba, 2016). We have reviewed the extant HL and HO literature on refugees, camp design, and local community participation, and find that the recent literature reviews (Kunz and Reiner, 2012; Leiras *et al.*, 2014; Overstreet *et al.*, 2011) do not mention refugees’, even if they point to man-made disasters as focus for future studies. A few empirical studies within HL/HO can be identified: Kunz *et al.* (2015) on the use of vehicles for transport of refugees; Jahre *et al.* (2016) on the integration of supply chains for emergencies and ongoing operations (i.e. camps) in UNHCR; and Choi *et al.* (2010) on aid distribution to camps. The HL/HO literature has paid more attention to local communities (e.g. Sheppard *et al.*, 2013; Apte *et al.*, 2016; Bealt *et al.*, 2016), but not in relation to refugees or camp design. Finally, similar to beneficiaries in general (Oloruntoba and Gray, 2009), the refugees’ perspective of what they want and need has often been overlooked. We aim to fill part of this gap by reviewing the practitioner and academic literature on camp design. Building on the literature review, we develop an analytical framework for an exploratory case study based on data from UNHCR refugee camps in Kenya, Ethiopia, Turkey, and Greece.

Our findings suggest that the proposed new approach is implemented only to a limited extent, and mostly in a stepwise manner. As camps mature, there is a shift toward the new approach, but most are established using the traditional top-down, temporary, and isolated approach. Implementation depends on a number of factors, making the universal design approach impossible. Our literature review indicates that local adaptations and long-term thinking have also been evident earlier. Our study suggests that camps engaging in local services exchange, however, is more recent and poses some specific

challenges, partly explaining the limited implementation of the new approach (Table III). The main theoretical contribution in this study is the three key framework dimensions, namely, time, space, and resources, and the way we have operationalized them. We tested the framework in our case analysis and it proved useful for distinguishing camp designs. The necessity of differentiating between an early and mature stage led to a slightly revised framework, which we have termed an evolutionary model. After presenting the review of relevant literature and the framework in Section 2, Section 3 describes the research design. Section 4 provides the case analysis, followed by discussion in Section 5. Finally, Section 6 concludes and suggests further research.

2. Literature review

We did a structured keyword search using terms related to “camp design” and “refugees.” For the gray literature (M Library, 2017), we used Google to identify relevant websites, articles, organizations, and content experts. For the academic literature, we used four recognized databases (Business Source Complete, Emerald, Sciencedirect, and Wiley) to capture a broad set of HL and non-HL journals. In total, we scanned more than 450 articles, 10 of which were deemed particularly relevant.

Kennedy (2008, p. 33) defined a refugee camp as “a planned and specially-constructed settlement for a number of displaced households significant enough to also need dedicated non-residential buildings as part of the planned settlement,” while Pan (2016, p. 118) described it as a “spatialization of exception.” While camps are not the only solution for displaced people (Tatham and Houghton, 2011), they are the focus in this study. The traditional camp design approach is to set up “a temporary space in which refugees may receive humanitarian relief and protection until a durable solution can be found to their situation.” (Ramadan, 2013, p. 65 (italics added)). Next, we compare this approach to the new one using the three dimensions: time, space, and resource.

2.1 Time dimension

According to Kennedy (2008), camp designers in the 1970s saw them as being rather permanent, for example, Cuny’s 1977 views on camp design as “creat[ing] settlements rather than simply an area of emergency shelter” (p. 133). However, from the early 1980s, the now traditional camp design approach is seen in the Sphere standards, as well as UNHCR documents: “UNHCR would remove from camp planning any elements which might be seen as leading towards turning a camp into a permanent settlement, (a process which amongst other things would in years to come see the removal of all vocabulary references to ‘permanent’ settlement features, such as ‘villages’, ‘streets’ and ‘housing’ (replaced by ‘shelters’).” (Kennedy, 2005, p. 107). There is the notion of seeing camps as temporary warehouses, that is, “refugee warehousing” (Ilcan and Rygiel, 2015). Kleinschmidt (2015) described the controversy in the following words: “We were building camps: storage facilities for people. But the refugees were building a city.”

Camps increasingly provide long-term accommodation, such as in Dadaab (Somalis), Lebanon (Palestinians), and Algeria (Sahrawi), and are now considered human settlements that continuously change (e.g. Beehner, 2015; Dozema, 2016; Gibson, 2016; Dzeamisi, 2008). Kleinschmidt (2015) suggested that governments should stop thinking about refugee camps as temporary places. Kennedy (2005, 2008) claimed that because camps are much more long-term (average of seven years) than assumed, a standardized approach is not effective due to different cultures and situations. Furthermore, standards for non-residential buildings such as economic enterprises, schools, clinics, warehouses, administrative offices, and community centers are missing. Many camps lack space for

outdoor facilities such as latrines, showers, cooking areas, water sources, and waste disposal. Kennedy concluded that the current state of camp design insufficiently considers the refugees themselves. In line with this thinking, Adjahossou (2015) suggested organizing a series of U-shaped compounds with enough space to care for a small garden; facilitating interactions between families by providing larger communal spaces; and providing durable housing solutions and flexible design accounting for lifestyles. One must also take into account that needs change, which means the camp must be able to adapt.

2.2 Space dimension

Camp design originally focused on technical/physical aspects such as size, layout, plots, and internal services (health, education, etc.), with physical access as the only connection to the “outside” (Kennedy, 2008; Armstrong, 1990). Such aspects typically lead to warehouse-typical layout elements aiming to increase physical space utilization, decrease traveling distance and time, and increase throughput (Huertas *et al.*, 2007; Bartholdi and Hackman, 2010), with zones, each dedicated for a specific purpose, are common (Hassan, 2002; Gu *et al.*, 2007). In refugee camps, various zones could represent, for example, living quarters, schools, areas for medical care, or markets. A camp can be regarded as a node where people arrive, reside for shorter or longer time, and depart. To support refugees, camps, like warehouses, involve large material flows.

Internal physical aspects still constitute a large part of many standards and guidelines (Adjahossou, 2015), for example, the UNHCR Emergency Handbook (<https://emergency.unhcr.org/>) and Sphere (www.spherehandbook.org). Contrary to the view that camps are merely physical spaces, Ramadan (2013) argued that camps must be viewed as social, cultural, and political spaces to understand everyday politics and material practices of refugees, adding new dimensions to the traditional one-dimensional perspective. The most recent guidelines focus on integration with the local community (CCCM Cluster, 2015a; Gibson, 2016). Characteristics relating to the “outside” include surroundings, for example, closeness to refugees’ home and existing refugee settlements; topography for water and electricity installations and dwellings; community considerations such as separation between certain groups of refugees and surveillance to control unknown threats (Pan, 2016); risk of floods, conflict, etc.; infrastructure such as proximity to ports and roads; and social criteria, for example, proximity to the local population (Çetinkaya *et al.*, 2016). A main idea in the new approach is to break the isolation that refugees living in camps often experience (Adjahossou, 2015). Segregating refugees from the host community in terms of employment, education, and social and cultural networks has negative consequences (Beehner, 2015).

Host communities are increasingly seen as important stakeholders with whom one should build relationships, particularly regarding extraction of natural resources, such as water, trees for fire, and land. New guidelines recommend establishing contacts with the host community, and ensuring that their representatives are consulted and attend camp coordination meetings (CCCM Cluster, 2015b). The integration of camps in the local context can be seen as embeddedness (Granovetter, 1985), a concept that clarifies interfaces between an entity and its environment in terms of other entities and their relations that form a network (Håkansson *et al.*, 2009). The basic assumption is that network embeddedness develops due to interdependencies between the activities undertaken, the resources involved in the conduct of these activities, and the actors controlling resources and undertaking activities (Håkansson and Snehota, 1995). From this perspective, the new approach should consider interconnectedness between activities, actors, and resources.

2.3 Resource dimension

Previously, there was a disbelief in refugees' and the local population's own resources: "With a few invaluable exceptions they are usually unskilled and not used to working in an organized fashion" (McAdam, 1987, p. 110). Refugees were simply seen as receivers of aid with few of their own resources, and had to be cared for, necessitating a top-down camp design approach. It was difficult to make changes once decided and built. Resources were seen as flowing only one way: from local communities and their governments to the refugees.

This view has largely changed: "Refugee camps should be seen as engines of economic growth both for the host governments and the sending countries [...]" (Beehner, 2015). Sanyal (2011) compared camps with urban development wherein "refugees are active agents in the creation and consolidation of their community [...]" (p. 885). The new approach emphasizes additional considerations, such as the camp residents' civil rights (Woroniacka-Krzyzanowska, 2017). Kleinschmidt (2015) referred to how "refugees at the vast Zaatari refugee camp in Jordan took things into their own hands, hacking the electricity supply to power businesses, erecting fountains and even building swimming pools." Ellis and Barakat (1996) suggested participatory projects to avoid refugees being passive recipients. Recent guidelines do indeed define refugee participation in camp design and development: a process that requires collective action taken to contribute to solutions (CCCM Cluster, 2015a).

The new approach sees resource sharing as essential (Kleinschmidt, 2015). Adjahossou (2015) considered camps, their services, and inhabitants as resources for the local community. By building hospitals, schools, and markets at strategic points accessible by all, and no longer at the center of the camp as in the traditional approach, refugees, and local populations can share core resources such as water, electricity, education, and health services. Gibson (2016) suggested that "refugee camps should be rebadged as cities and turned into enterprise zones so inhabitants can set up businesses and build their own infrastructure." Such an approach, he claimed, could benefit both the refugee and the host populations, as well as giving inhabitants useful skills for their eventual return to their homelands: "Surrounding communities would enjoy new investment and infrastructure, and governments would welcome refugees as a benefit rather than a burden." This requires more of a bottom-up approach to camp design which should also be seen as a dynamic process, not a single instance of design intervention (Kennedy, 2008).

2.4 A summarizing framework for data collection and analysis

Table I summarizes the findings from the literature review. The three key dimensions have been operationalized to be used for data collection and analysis.

Dimension	Traditional approach	Proposed new approach
Time	Temporality Static	Permanence Dynamic
Space	Isolation One-dimensional	Integration Multi-dimensional
Resource	One-way Physical	Two-way Physical, cultural, political, social, economical

Table I.
Framework with
operationalizations
for data collection
and analysis

3. Methodology for empirical study

3.1 Case selection

An exploratory multi-site case study was conducted following theory-building principles (Eisenhardt, 1989; McCutcheon and Meredith, 1993; Miles and Huberman, 1994). Multi-site studies enable in-depth investigation of a phenomenon (Voss *et al.*, 2002; Yin, 2014), as well as the opportunity to generalize findings beyond isolated cases (Meredith, 1998), thus considered suitable for increasing our understanding of and identifying challenges with the new camp design approach.

The unit of analysis was defined as the approach to camp design, taking into account both the actual camp layout, the process for building and developing camps, and the integration between the camp and the host community. We conducted the study in collaboration with UNHCR considering their leading role on camp coordination and management worldwide with the mandate to provide international protection to refugees and forcibly displaced persons (mandate not exclusive with respect to internally displaced persons) inside as well as outside camp settings.

The first step in selecting cases was to identify countries where UNHCR has set up and manages camps for displaced people. We applied stratified sampling to “capture major variations rather than to identify a common core” (Patton, 2002, p. 240), and, based on a scoping study, identified four countries with differing contexts where UNHCR has adopted varied approaches to camp design. These four countries include Ethiopia and Kenya, both of which host several camps that have existed for a long time (e.g. Dadaab, Kakuma, and Bokolmanyo), and Turkey and Greece, two countries that have hosted numerous new camps since the start of the Syria crisis (e.g. Karkamis and Lagkadikia). All four countries have major ongoing UNHCR operations supporting displaced people: Ethiopia is currently the second-largest refugee hosting country in Africa and the fifth-largest worldwide; Kenya hosts the world’s largest refugee camps, including Kakuma, Hagadera, Dagahaley, and Ifo, all established in 1992; Turkey is the top hosting country in the world, providing shelter to 2.9 million displaced persons, primarily refugees from Syria; and Greece has received over 1 million sea arrivals since 2015, representing one of UNHCR’s most complex refugee operations dispersed across multiple Aegean islands (e.g. Lesvos, Chios, Samos, and Leros) (www.unhcr.org).

In the second step, we applied critical-case sampling to identify one case within each country. Critical cases can “make a point quite dramatically or are, for some reason, particularly important in the scheme of things” (Patton, 2002, p. 236). Hence, for the purpose of this paper, we selected cases that are particularly important from the perspective of developing the new approach of camp design. In Ethiopia, we selected Bur-Amino, which presented many challenges spurring UNHCR to rethink their approach. In Kenya, we selected Kalobeyei, which represents a settlement approach meant to empower refugees to become more self-reliant in the long term. In Turkey, Karkamis represents the country’s approach to camp design in a situation characterized by emergency and high influx, as well as resource constraints. Finally, Lagkadikia in Greece represents camps where the government and UNHCR implemented most integration with the local community.

3.2 Data collection and analysis

Based on the literature review, we developed a framework (see Table I), which was used as a foundation and “guideline when entering the empirical world” (Dubois and Gadde, 2014, p. 1279). Data collection comprised multiple primary and secondary sources, including situational reports and website links (Appendix 3) and field trips, visits to camps, and structured interviews (Appendices 1 and 2). Interviewees were selected based on their role in camp design and management, established contacts, and by using the snowballing technique, i.e. asking one interviewee to suggest others (Bryman and Bell, 2015). A total of

19 interviews were conducted either face-to-face or via Skype, lasting from 30 minutes to 2 hours. When necessary, we conducted follow-up conversations; in cases where the internet connection was poor, interviewees were also asked to write their answers and submit by e-mail.

Although skewed toward the organizations and people who provide services rather than the affected themselves, the sources were varied enough to enable triangulating different perspectives and complementary aspects. It also enabled the collection of a wide range of data, such as: the camp context, including the name, location, age, capacity, ownership, and distance to closest neighboring community; the approach to camp design both in start-up and mature stages; services and facilities available; the existing infrastructure including hygiene, electricity, and shops, education, health, and materials used; the usage of standards/guidelines; and the extent of integration with the host community. All collected data, including the tapes, notes, and summaries from the interviews, were stored in a database shared by the group of researchers.

The four cases were written up following a similar structure, including background and overview, and the three design dimensions. The insights from each case were then compared through cross-case analysis to shed further light on the research questions. Here, we could, for example, see that the local context has impact on camp design, and that there is often a difference in the approach between early vs mature stages. Furthermore, each identified challenge was discussed among the authors and coded. From multiple data analysis iterations using color coding, five categories of challenges emerged. These are presented in Table III and include examples related to the new approach identified in at least one of the cases. Naturally, more challenges were identified in cases where the new approach has been applied.

4. Empirical findings and analysis

This section presents data collection and analysis in three steps: general guidelines as a baseline for all camp design; findings from the four cases; and challenges.

4.1 General guidelines for camp design: UNHCR and Sphere standards

UNHCR guidelines, together with Sphere standards, constitute the basis for camp design concerning, for example, the size and type of shelter space, space for activities including sleeping and washing, care of infants, storage of food, and cooking and eating facilities. The guidelines also concern non-food items such as clothing, blankets, bedding materials, light and heating, equipment for cooking and eating, and tools for maintenance. Other standards include water supply, which should be minimum 15 liters per person per day, sanitation and hygiene promotions, nutrition, and health. These goods can be provided directly (in-kind) or through other interventions (cash). Camps typically contain health centers/hospital, child-friendly centers, water supply, public storage, workshops, vocational training center, schools, markets, and roads.

4.2 Time, space, and resource dimensions in the four cases

Bur-Amino (Ethiopia). Ethiopia, whose population of 105 million currently experiences severe drought, ranks 173rd of 186 countries in the Human Development Index and is one of the world's fastest-growing economies also focusing on sustainability (Green Climate Fund, 2017). The Government of Ethiopia has an open door policy and currently hosts more than 800,000 refugees, primarily from South Sudan, Somalia, Eritrea, and Sudan (UNHCR, 2017a). The majority resides in 25 camps located in eight different areas across the country (UNHCR Ethiopia, 2017), of which one is Bur-Amino.

Bur-Amino was opened in October 2011 in response to an influx of Somali refugees caused by drought and increased insecurity. The camp, with an original capacity for 25,000 people, was initially designed based on UNHCR and Sphere standards, with adaptations for host country requirements and context. One interviewee adds: "Unfortunately, because of the ongoing emergency situation at that time, the camp was planned as a 'storage facility' not as a settlement." Although planned as a temporary shelter, the camp has become a long-term operation followed by the implementation of a transitional shelter strategy to provide more sustainable housing solutions, as well as the construction of some semi-permanent facilities like schools and health centers. In addition, the number of refugees has increased to 40,000, which has required continuous expansion and redesign of the camp.

UNHCR collaborates with multiple stakeholders including, for example, the Administration for Refugee and Returnee Affairs (ARRA, representing the Ethiopian Government), the Norwegian Refugee Council (NRC), the International Organization for Migration (IOM), local organizations, the municipality, various contractors, and the refugees themselves. Initially, during the emergency influx, the refugees and local population were not consulted concerning camp design and there was neither a local development plan nor formal discussions with local officials on how to integrate the camp in the host community. However, with the prolongation and expansion of the camp, a community-based approach has been adopted including, for example, a recently established shelter-working group.

Bur-Amino does not have a mobile or physical-transport network, and access roads had to be constructed when establishing the camp. A natural resources rehabilitation project in the vicinity of soils harvesting sites for use in construction was also set up. The need for self-reliance necessitated the widening of plots and creating family gardens. The only existing water source for the entire population – the Genale river runs through the local community – was essential when choosing land for the camp, providing water supply for refugees and for construction. Since then, the water supply system has been improved and expanded to the host community as a permanent solution. Local resources accommodated during the planning decision included land deterioration and environmental protection. Most construction materials, such as eucalyptus and bamboo were procured locally, while cement and some hardware material were sourced from Addis-Ababa, about 870 km from the camp. Local workers, with relatively poor technical capacity, were hired for the construction of shelters and infrastructure, and therefore required regular technical assistance. The "compact bamboo wattle," developed in 2012, was a waterproof, locally suitable transitional shelter that provided more privacy, while also saving on costs of material, logistics, and transportation.

In parallel with Bur-Amino, UNHCR has developed neighboring-communities support projects. First, the host community was welcomed to use water taps, health services, and schools in the camp while UNHCR constructed primary schools, solar street lighting, and sanitations facilities in the host community. Second, local materials, trucks, and communication networks are increasingly used in the camp operation. Third, there is an exchange of food and workers between the camp and the host community. An informal market has developed in the camp, and there is inter-marriage between the communities.

Kalobeyei (Kenya). Kenya has a population of over 48 million. With a rapidly growing and young population, the country is experiencing great economic growth. Yet, recent severe drought has resulted in poor agricultural output and soaring food prices. Kenya currently ranks 146th of 186 countries in the Human Development Index with a poverty rate of about 39 percent. For the last few decades, the country has hosted close to 600,000 refugees from Somalia, South Sudan, the Democratic Republic Congo, Ethiopia, and other countries. The main camps include Dadaab and Kakuma. Having learned lessons from the poorly planned conditions with ad hoc development patterns of previous camps, which have

also served as a catalyst for conflicts between host communities and refugees, UNHCR, and the Refugees Affairs Secretary agreed with the Turkana County Government in 2015 to develop a new settlement – Kalobeyei – to shift from the old approach. The new vision was to integrate refugees and members of the host community in an accessible, vibrant, and functional settlement, complete with adequate social and physical infrastructure to provide diverse economic and business opportunities. The Kalobeyei Integrated Social and Economic Development Program (KISEDP) was established in 2015 with a main objective of ensuring that the new settlement arrangement empowers refugee and host communities through self-reliance and livelihood opportunities. The idea is to have as many of the goods, services, and businesses as possible produced by, sourced from, and run by refugees and local community members in Kalobeyei, while progressively improving their quality of life, basic services, and opportunities for learning, enterprise, and employment.

In the context of promoting self-reliance of refugees and host communities, it was agreed to allocate 60 percent of the total space for development of economic activities, including agriculture. In addition to the influx of refugees, the host community is experiencing significant development in terms of devolution, resource discovery, and extraction of oil and freshwater aquifers in the county. Kalobeyei opened in June 2016 after significant preparatory activities including an environmental impact assessment, a hydrological survey for water availability, a topographical survey to determine terrain configuration and agricultural suitability of the soil, and a socio-economic baseline survey with area mapping of existing infrastructures and natural resources within and around the proposed site. Turkana county and most of the Kalobeyei area is historically an important grazing area to the pastoralists (60 percent of the local population), while others rely on rain-fed agriculture, irrigation, fishing, and mining, and other types of employment. Aligned with the county's integrated development plan, the objective is to promote sustainable urban and agricultural/livestock development as well as socio-economic integration of approximately 60,000 refugees and 20,000 people in the host community.

Following UNHCR guidelines, an initial settlement master plan was prepared in May 2016 in a consultative manner involving all stakeholders in spite of the emergency situation caused by the influx of South Sudan refugees. Under the KISEDP framework, the Turkana County Government was to be involved in the settlement planning, development, monitoring, and evaluation, and to take over its management in the medium to long term. In this regard, a spatial-planning and infrastructure-development working group coordinated by UNHCR was established consisting of UN agencies and partners such as UN-Habitat, UNDP, UNOPS and UNICEF, Norwegian Refugee Council, Danish Refugee Council (DRC), National Council of Churches of Kenya, Peace Winds Japan, Turkana Ministry of Lands, physical planning and urban areas management, Refugee Affairs Secretariat, and local organizations operating through UNHCR partnerships. In July 2016, UNHCR signed a memorandum of understanding with UN-Habitat to jointly collaborate with the Turkana County Government for the new settlement planning and other institutional and governance activities. Other working groups involved in the planning include the sustainable integrated service delivery and skills development group, the agriculture and livestock group, and the private sector and entrepreneurship group. The host and refugee communities' vulnerabilities and integration potential were further analyzed. The National, County, and International Policy, Kenya Vision 2030, Kenyan National Spatial Plan, County Integrated Development Plan, Sustainable Development Goal 11 and The New Urban Agenda played instrumental roles in informing the planning.

Kalobeyei site is located in a semi-desert with high temperatures, and unreliable and low rainfall; there are few water-harvesting initiatives at the site. In order to supply water, three boreholes were drilled in 2016 and equipped with submersible pumps. Due to the emergency situation and the continued lack of a sustainable water-supply infrastructure, the refugees

do not have individual connections and are instead served by communal taps with a minimum of 20 liters per person per day pending the development of permanent systems. In terms of housing, UNHCR has adopted a sustainable approach with interlocking-stabilized soil blocks (ISSBs), which allow upgrading and optimizing of the initial basic housing unit according to differing needs (e.g. size and culture). Meanwhile, the World Food Programme (WFP) has introduced a restricted digital cash transfer program using mobile phones, which can be redeemed solely for food. The program is called "BAMBA CHAKULA," which translates to "Get your food" in Kiswahili. WFP has also established a local trading market, with more than 300 local traders who make the food readily available to the refugees. Cash-based interventions have further allowed refugees and the host community to develop a community-based organization for ISSB production using skilled laborers, who are trained through vocational centers established in both communities. A permanent health post, and primary and secondary schools are constructed and will serve both communities.

Karkamis (Turkey). Turkey, with a population over 80 million, is the 18th largest economy in the world based on GDP and ranks 71st out of 186 in the Human Development Index. The country shares a long border with Syria and hosts half of all Syrian refugees, approximately 2.8 million people. However, less than 10 percent (248,000) of these refugees live in one of the 23 designated camps, which fall under the responsibility of the Disaster and Emergency Management Presidency (AFAD). AFAD coordinates camp management with the local governor's office and Turkish Red Crescent (TRC), the latter taking care of aid distribution logistics.

All camps, including Karkamis, have been designed following Sphere guidelines, accommodating 10,000 residents. Camps are not allowed to grow, and if more refugees apply to live in camps, AFAD decides when and where to open a new camp. When opening a new camp, the first task is to secure a water source. In the case of Karkamis, the camp is located next to the Karkamis Dam, 65 km from the nearest big city, and 3 km from the nearest village. Thereafter, the local municipality handles site preparation and the construction of infrastructure for water, sewage, electricity, and phone lines. TRC then takes charge of building the camp, neighborhood by neighborhood. In total, 40 workers built the entire Karkamis camp, including 2,000 tents, over a period of 40 days. One problem faced by the TRC was the lack of tents appropriate for long-term residency. This problem was resolved by funding from the Saudi Government to replace tents with containers, each with a space of 22 m², two bedrooms and a living room, as well as a small garden in front of them. In mid-2017, 15 camps had been completely converted to container camps.

Karkamis camp includes a school, medical clinic, prayer room, laundry room, social space, grocery store, toilets/shower facilities, and central camp security. Schools give education in Arabic, and the refugees select the teachers from among themselves. Refugees cook their own food based on ingredients from the grocery store in the camp. Originally, TRC was providing food in every camp, but the amount of food waste was tremendous. As a result, TRC partnered with WFP to implement cash transfers and open a food market in each camp. They also distributed cooking supplies to each family. The new program was successfully tested in 2012 in Kilis and, as of today, all refugees have a smart card called KizilAy Kart that they can use to buy food. This approach allows TRC to save personnel and logistics costs while improving refugee satisfaction.

Due to security concerns, entry and exit to each camp is restricted. However, camp residents can apply for permission to leave the camp temporarily to handle personal affairs back in Syria or work in nearby towns in Turkey. AFAD asks the residents of each camp to pick a leader and spokesperson. Integration with the host country's citizens has not been a problem around the camps, since most of the refugees have a relative in Turkey: Syrians across the Turkish border used to be part of the Ottoman Empire until borders were

arbitrarily drawn after WWI. However, integration has proved to be more challenging for the refugees living outside of camps both because they are not related familywise and because there is competition for jobs and other resources. To alleviate this issue, TRC opened nine community centers in various cities around the country where they bring Syrian and Turkish people together.

Lagkadikia (Greece). Greece, with a population of almost 11 million, is experiencing financial turbulence and declining GDP per capita. It has the highest unemployment rate – 25 percent in 2015 – in the Eurozone and currently ranks 29th of 186 countries in the Human Development Index. Since the beginning of the refugee crisis in 2015, over 1 million migrants and refugees have embarked on the dangerous journey to Greece, taking the route via Turkey and the Aegean Sea. Early on, a daily average of 2,000 new arrivals was registered on the Greek islands. Instead of staying in Greece, most transited further via Piraeus Port and Athens to other countries in Europe. In March 2016, however, the situation changed dramatically with the agreement of the EU-Turkey statement, and the closure of the Greece and Macedonia (FYRoM) border for all nationalities. Following these changes, the number of new arrivals to Greece decreased significantly. Those that do arrive remain for a longer time. As of December 19, 2016, there were 62,455 PoCs in Greece, of which 12,712 were hosted by UNHCR in approximately 50 accommodations across the islands and the mainland. One of these camps, Lagkadikia, is situated in the rural areas of Thessaloniki and falls under the responsibility of the Greek authorities. The camp was set up as part of emergency response in 2016, but later developed into a long-term site for 1,000 people. The site, which is an old military premise located approximately two kilometers from the neighboring municipality, currently hosts 239 refugees, primarily Syrian families (93 percent).

The original camp design of Lagkadikia was aligned with the existing military premises, and the camp has thereafter been developed section by section into a settlement with long-term focus. This design process has followed the SPHERE standards and Greek law, with all aspects of growth being controlled by UNHCR and approved by the government (involving e.g. Ministry of Defense and Ministry of Migration). In certain cases, non-governmental organizations such as the DRC and the International Rescue Committee have been involved in camp management and related activities. Reassessment and redesign of the camps only takes place when potential issues are encountered. One such example relates to the required winterization where all tents are replaced by containers. Another example is the ongoing project of connecting the camps (including containers, toilets, showers) to the external sewer systems and installing rainwater drainage systems. Only smaller decisions regarding camp design allow for a bottom-up approach involving the community. Examples include the renovation of certain buildings to accommodate communal activities such as an informal gym and prayer room in the center of the camp, and installing kitchen modules in each container.

UNHCR mostly applies cash-based interventions in the Greek camps. Instead of, for example, daily food distributions, PoCs prefer cooking and access markets, stores, and other facilities in the nearby towns by using public transportation. Refugees are welcomed by the neighboring municipalities, and are able to benefit from existing education and medical services. In return, UNHCR provides financial support to the host community, for example, by developing existing playgrounds, providing IT equipment to local schools, and offering medical care for both locals and refugees.

In summary, the four different camps represent a range of different approaches to camp design. Table II displays the findings from the exploratory multi-site study. Since Kalobeyei opened recently, we have not differentiated between early and mature stages. This camp was also the only one designed upfront using the new approach, whereas our analysis shows that Karkamis has been the most persistent in using the traditional approach. Bur-Amino has changed from the traditional to the new, whereas Lagkadikia, although to some extent having attempted resource sharing, seems to stick to the traditional approach.

Table II.
Overview of empirical findings from the multi-site study

		Bur-Amino (Ethiopia)	Kalobeyei (Kenya)	Karkamis (Turkey)	Lagkadikia (Greece)
Time	Early stage	Planned as temporary	Planned for promoting long-term self-reliance, dynamic and sustainable urban and agricultural/livestock development	Planned as temporary	Planned as temporary
	Mature stage	Dynamic support of long-term development	Static view in that camps are not allowed to grow	Static view in that camps are not allowed to grow	Dynamic development of section by section
				Refugees benefit from neighboring education and medical services	
Space	Early stage	Construction of key physical facilities and access roads	Sustainable approach to water supply and housing allow upgrading socio-economic integration of refugees and host community	Construction of key facilities around water source	Replacing tents with containers, connect to external sewer system
	Mature stage	Expansions, water supply system to host community; community support projects		Restricted entry and exit	
Resource	Early stage	Designed top-down by UNHCR and the Ethiopian Government	Designed bottom-up in consultative manner with all stakeholders incl. sustainable housing, local trading market; permanent health post, school for both	Designed top-down and controlled by the Turkish Government	Designed top-down by UNHCR and the Greek Government
	Mature stage	Exchange of food and workers between camp and host; informal market in the camp	Cash transfer program, cooking supplies, and food market within camp	Cash transfer program, cooking supplies, and food market within camp	Financial support to host community, medical care for both

4.3 Challenges to adopting the proposed new camp design approach

As revealed by, for example, the Bur-Amino case, the time pressure of saving lives and sometimes the beneficiaries' lack of knowledge and skills can hinder a bottom-up settlement design process. Another critical aspect of the new approach is the long-term perspective, that is, building permanent settlements rather than temporary shelters. There are, however, political challenges at the international (UNHCR), national (host country's attitude toward refugees), and local levels (provision of local resources and investment into infrastructure) that undermine long-term visions. The Lagkadikia case highlights this, with the Greek Government intending to evacuate refugees and instead using the camps as back-up solutions for their own future use. The long-term approach is made even more difficult due to the lack of proper infrastructure and shelter inventory. For example, in the Karkamis case, the TRC has built a camp using short-term shelter despite the knowledge that the armed conflict in Syria will not be resolved in the near future.

The new approach fosters an external-facing view of camp design where settlers are encouraged to integrate with the local host community and vice versa. However, as revealed in the Bur-Amino case, limited local resources, lack of local capacity to interact with, and lack of knowledge about, the refugee population, as well as a shortage of time to ease into such integration, all challenge implementing long-term settlement designs. Another is climate and access to raw material and basic resources. In the Kalobeyei case, the hot and dry climate exacerbates the pressure on the water supply infrastructure resulting from the increasing total population in the camp or local community. Expanding camps is also a challenge once the facilities and infrastructure have been designed in the first place. The cases indicate that managing growth is difficult due to a range of political, social, cultural, and physical constraints. While the requirements from local municipalities and

global standards (e.g. Sphere) may sometimes clash, the social yarn of the refugees presents a bigger challenge. Refugees arrive often with serious psychological problems and practically without any possessions. Separately, poor local infrastructure makes operating and expanding a camp difficult. Infrastructure and resource problems directly affect integration with the host communities by hindering the two-way flow of know-how and resources. Table III summarizes the challenges into five categories developed based on the case analysis. Specific challenges are not linked with specific case design dimensions because most are root-cause challenges impacting more than one dimension.

335

The design of refugee camps

5. Discussion and implications

First, the study shows that the proposed new approach representing a bottom-up, community-based approach to camp design is implemented only to a limited extent, particularly in the initial implementation phase. Karkamis and Lagkadikia reveal a strict top-down decision-making process. Also for Bur-Amino, the initial approach was controlled top-down. The only exception is Kalobeyei, where a large number of stakeholders, including the refugees and local community, influenced the initial camp design. Second, as camps mature, there is a shift toward the new approach, exemplified by the partnership agreements in Bur-Amino, where development increasingly accounts for the refugees' perspectives and wishes. Also in the other cases, it is apparent that the camps are increasingly integrated with the local community as time goes by. However,

Challenge	Examples (Bur-Amino: B-A; Kalobeyei: Kal; Karkamis: Kar; Lagkadikia: Lag)
Time pressure	Focus on life-saving response and need to receive and/or to relocate refugees and new arrivals (B-A) Difficult to change camp design while refugees are living in the camp (Lag) Lack time for comprehensive assessments, site mapping, engagement of stakeholders (B-A; Kal) Bureaucracy (Kal)
Politics	UNHCR and other stakeholders not involved in selection of site (Lag) Government changes plan/purpose of camps (Lag) Coordinate and share responsibilities with multiple authorities is challenging (Lag) Adhere to country legislation and harmonize with SPHERE guidelines when developing camp (Lag)
Lack of resources in local community	Lack of transport and communication infrastructure (B-A) Lack of construction materials, equipment, and other items (B-A; Kal) Lack of building capacity and capacity to interact with (B-A; Kal) Shortage of land, energy, e.g. firewood, food, livelihoods, water (B-A; Kal) Lack of waste management solutions (B-A) Little statistics/information on local community (B-A) No development plan for integration with local community (B-A) High level of poverty (B-A; Kal) Environmental degradation (B-A)
Lack of resources among refugees	Psychosocial problems (Kar) Many vulnerable and unskilled refugees unable to engage in, e.g. construction of their homes (Kal) High level of poverty (B-A; Kal)
Lack of resources among implementing partners	Lack of long-term relief-shelter inventory (Kar) Delays in materials procurement (B-A) Limited supervision and quality control (B-A) Lacking competence in logistics, including fleet and warehouse management, real-time information, and integration with forecasting and procurement (B-A) Shortcomings in shelter design and costing (B-A)

Table III.
Challenges to adopting the proposed new camp design approach

the adoption of the new approach differs and seems to depend on a number of contextual factors. From the case studies, we see that, despite being set up as an emergency response, the two camps in Africa adopt a more permanent approach compared to the examples from Europe. Kalobeyei seems to be adopting something similar to the new approach, emphasizing socio-economic integration, extensive environmental impact assessments and alignment with local development plans. Meanwhile, Karkamis and Lagkadikia seem to follow a more traditional approach with fixed and controlled design and centralized decision making as in the mature stage, even if Lagkadikia has some aspects of the new approach.

The third insight is that a universal approach does not seem to be possible to adopt. In other words, one size does not fit all. Our study does not allow for in-depth analysis of which factors determine what approach, but the findings support the notion that certain factors are important in the initial phase, and another set must be considered as the camp matures. Political and cultural circumstances in the host country are important. The matter of urgency when camps are set up is also a key factor: the more rush, the more temporary and the less integrated the approach. Meanwhile, as illustrated by Kalobeyei, it appears that if the local community can benefit from the camp and its future development, there is a higher chance for enabling a long-term, community-based design approach.

Building on the second and third point, the fourth insight relates to the necessity of stepwise development, what could be termed an evolutionary model for camp design, depicted in Figure 1.

Given the emergency setting of establishing refugee camps, the first focus is on establishing key facilities and road access, bring in food supplies, and secure access to water. Only in later phases when the operation and influx of refugees has stabilized can the focus be shifted to, for example, starting community-based groups, opening markets, implementing cash-transfer programs, and promoting camp design that facilitates movement between communities. Thus, to a certain extent, there appears to be a kind of paradox that separates the initial approach from how the camp is operated and further developed. Most countries view refugee crises as something temporary and therefore follow the traditional guidelines. As it turns out, many camps persist over time, and there seems to be a change in perspective as the camps develop. Accounting for the long-term perspective already in the initial phase would be ideal, but seems to be very difficult.

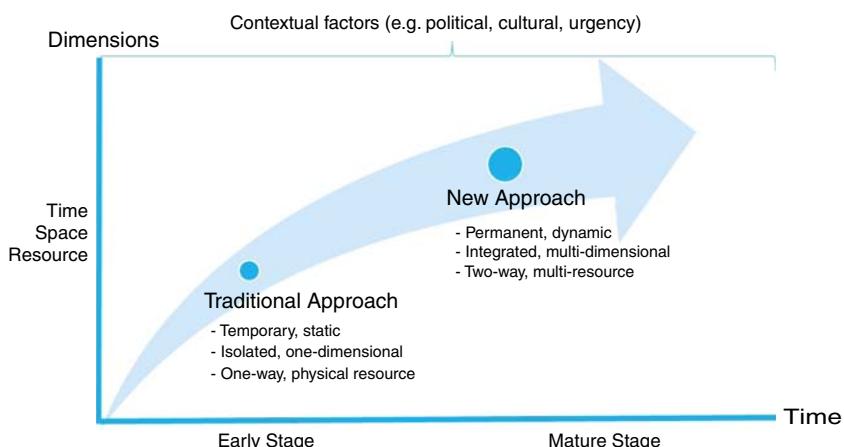


Figure 1.
A proposed
evolutionary model
of camp design

Related to the above discussion, the fifth insight is that there is a wide range of challenges that must be addressed to enable the new approach. In fact, the many challenges can partly explain its limited implementation. Some of the identified challenges appear to be particularly difficult to overcome, and relate to what we have termed contextual factors in the model. Examples include the time pressure to set up a camp in an emergency setting and the lack of willingness from the government to allow for long-term settlements and extended integration with local community. Other challenges appear to be more susceptible to influence. For example, there could be improved guidelines regarding the access to inventory (e.g. shelter) supporting a longer-term perspective. Also, the limited expertise of refugees and the local community seems responsive to increased training and local capacity building. Other challenges such as limited access to energy and water could be overcome by making use of new technology (e.g. solar power). Certain equipment, for example, used in health clinics, could also be produced locally using emerging 3D-printing technology. The lack of resources could generally be mitigated by supporting increased trade between the communities and across the regions where the camps are located. Successful examples to support this approach include establishment of large marketplaces and the use of cash-based interventions. On that note, the sixth insight from this study is that the two-way flows between camp and local community are a recent development. The two-way flows, represented, for example, by the joint investments and sharing of health, school services, water and energy infrastructure, increase once the camps become more permanent and established in the local community. Two-way flows can benefit refugees as well as the local community, and humanitarian aid can support both communities. For example, camps can supply water and markets while the local community can provide existing health education facilities and security.

6. Concluding remarks and further research

This paper aimed to increase our understanding of the proposed new approach to refugee camp design. Traditionally, camps are built as temporary holding shelters until reconstruction phase is finalized and the displaced can go back to their homes. However, long-term events with lasting impact are forcing us to rethink our approach to camp design. In this paper, we analyze the differences between the traditional and the new approach. Based on studies in four countries, we found that the new approach, although theoretically making perfect sense, faces some tough challenges. Our findings suggest that the new approach is implemented only to a limited extent, and mostly in a stepwise manner. As camps mature, there is a shift toward the new approach, but most camps are established using the traditional top-down, temporary, and isolated approach. The adoption depends on a number of factors making a universal design approach impossible. While our literature review indicates that local adaptations and long-term thinking have previously been evident, our study suggests that camps integrating with the society in which they are placed, in terms of exchange of services, is more recent. This poses some specific challenges, partly explaining the limited implementation of the new approach (Table III). The main theoretical contribution in this study is the analytical framework with its three key dimensions: time, space, and resources, and the way we have operationalized them (Table I). We tested the framework in our case analysis, and it proved useful for distinguishing camp designs. The necessity of differentiating between an early and mature stage led to a slightly revised framework, suggesting an evolutionary perspective (Table II and Figure 1).

In terms of managerial implications, practitioners can use the insights we derived and the challenges we identified to better plan for future camps. The findings can help them to understand which conditions/contexts are required to enable a design based on the new approach. For example, camp design guidelines must be developed to fit with the

empirical reality rather than vice versa, for example, for urban displacement and out-of-camp living (CCCM Cluster, 2014), dignified reception (NORCAP, 2016), and site planning to reduce gender-based violence (Shelter Cluster, 2016). At time of this writing, a group of international organizations including IOM, IFRC, UNOPS, NRC, and others was developing a new manual for physical camp design and construction (www.globalcccmcluster.org/categories/news).

This study provides an initial understanding of the new approach to camp design, but more research is needed to provide normative advice on specific design principles. First, a natural extension of our research would be the validation of our case-driven insights with further empirical research, both in depth and breadth. More in-depth studies of the hosting countries themselves in terms of politics, culture, resources, etc., are also necessary to improve the understanding of the countries' differences and similarities and how such contextual factors influence camp development. In particular, the trade-off between a permanent solution and the temporary must be accounted for. Furthermore, research is needed to establish a deeper understanding of what we have identified seem to be an evolutionary model for camp design. Questions to be answered include who are the actors involved at the different stages, what additional activities and resources come in focus as time goes by, what factors (contextual and others) impact on the development, and how can they be influenced for the new approach to be adopted. Second, the challenges we identified clearly highlight that camp design and management is not just a logistical problem, but rather is an interdisciplinary issue. The warehouse theory is an interesting theoretical perspective to use in further research on improving camp designs, but will capture only some aspects. Thus, research on camp design should also be interdisciplinary. For example, if refugee camps are to be long-term human settlements, it makes sense that urban planners and architects be an essential part of the process to provide an effective and sustainable design (Jacobs, 2017). "In the long run, refugees are an asset, not a liability – an economic benefit that can help revitalize a region, not a drain on resources" (Jacobs, 2017). This type of research can also make use of the industrial network theory for analysis of the interconnectedness between activities, actors, and resources. The social network theory provides yet another interesting avenue for future research. Furthermore, socio-political factors playing a role in camp design require knowledge from political science and the organizational theory.

References

- References used in the cases are listed under secondary data in appendix 3.
- Adjahossou, A. (2015), "Redesigning refugee communities", UNHCR Innovation, UNHCR, available at: <http://innovation.unhcr.org/redesigning-refugee-communities/> (accessed January 25, 2016).
- Apte, A., Goncalves, P. and Yoho, K. (2016), "Capabilities and competencies in humanitarian operations", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 6 No. 2, pp. 240-258.
- Armstrong, A. (1990), "Evolving approaches to planning and management of refugee settlements: The Tanzanian experience", *Ekistics*, Vol. 57 Nos 242/243, pp. 195-204.
- Banomyong, R. and Oloruntoba, R. (2016), "Special issue on logistics and SCM in the context of relief for refugees and internally displaced persons (IDPs)", *Journal of Humanitarian Logistics and Supply Chain Management*.
- Bartholdi, J.J. III and Hackman, S.T. (2010), *Warehouse & Distribution Science*, 0.93 ed., Georgia Institute of Technology, Atlanta, GA.
- Bealt, J., Fernández Barrera, J.C. and Mansouri, S.A. (2016), "Collaborative relationships between logistics service providers and humanitarian organizations during disaster relief operations", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 6 No. 2, pp. 118-144.

- Beehner, L. (2015), "Are Syria's do-it-yourself refugees outliers or examples of a new norm?", *Journal of International Affairs*, Vol. 68 No. 2, pp. 157-175.
- Bryman, A. and Bell, E. (2015), *Business Research Methods*, 4th ed., Oxford University Press, Oxford.
- CCCM Cluster (2014), "UDOC desk review: urban displacement & outside of camp", UNHCR-IOM-NORCAP/NRC, available at: www.globalcccmcluster.org (accessed April 24, 2017).
- CCCM Cluster (2015a), "Camp management toolkit", available at: www.globalcccmcluster.org/tools-and-guidance/publications/camp-management-toolkit-2015 (accessed January 2, 2017).
- CCCM Cluster (2015b), "Localising CCCM responses", Retreat Report, October, NRC, Oslo.
- Çetinkaya, C., Özceylan, E., Erbaş, M. and Kabak, M. (2016), "GIS-based fuzzy MCDA approach for siting refugee camp: a case study for southeastern Turkey", *International Journal of Disaster Risk Reduction*, Vol. 18, pp. 218-231.
- Choi, A.K.-Y., Beresford, A.K.-C., Pettit, S.J. and Bayusuf, F. (2010), "Humanitarian aid distribution in East Africa: a study in supply chain volatility and fragility", *Supply Chain Forum: An International Journal*, Vol. 11 No. 3, pp. 20-31.
- Cuny, F.C. (1977), "Refugee camps and camp planning: the state of the art", *Disasters*, Vol. 1 No. 2, pp. 125-143.
- Dozema, M. (2016), "Rethinking the refugee camp", available at: www.citylab.com (accessed November 3, 2017).
- Dubois, A. and Gadde, L.-E. (2014), "'Systematic combining' – a decade later", *Journal of Business Research*, Vol. 67 No. 6, pp. 1277-1284.
- Dzeamisi, M.K. (2008), "Refugees, the UNHCR and host governments as stake-holders in the transformation of refugee communities: a study into the Buduburam refugee camp in Ghana", *International Journal of Migration, Health and Social Care*, Vol. 4 No. 1, pp. 28-41.
- Eisenhardt, K.M. (1989), "Building theories from case study research", *The Academy of Management Review*, Vol. 14 No. 4, pp. 532-550.
- Ellis, S. and Barakat, S. (1996), "From relief to development: the long-term effects of 'temporary' accommodation on refugees and displaced persons in the republic of Croatia", *Disasters*, Vol. 20 No. 2, pp. 111-124.
- Gibson, E. (2016), "Humanitarian experts propose turning refugee camps into enterprise zones called 'refugee cities'", Concept paper "Refugee Cities: Expanding Options for Displaced People Through Special Economic Zones", A project of Refugee Cities in Partnership with IPA Switchboard, HTIL, Living Design Lab, Middle East Investment Initiative, November, available at: www.dezeen.com/2016/12/09/refugee-cities-turn-camps-into-enterprise-zones/ (accessed January 2, 2016).
- Granovetter, M. (1985), "Economic action and social structure: the problem of embeddedness", *American Journal of Sociology*, Vol. 91, pp. 481-510.
- Gu, J., Goetschalckx, M. and McGinnis, L.F. (2007), "Research on warehouse operation: a comprehensive review", *European Journal of Operational Research*, Vol. 177, pp. 1-21.
- Håkansson, H. and Snehota, I. (1995), *Developing Business Relationships in Networks*, Routledge, London.
- Håkansson, H., Ford, D., Gadde, L.-E., Snehota, I. and Waluszewski, A. (2009), *Business in Networks*, John Wiley and Sons, Chichester.
- Hassan, M. (2002), "A framework for the design of warehouse layout", *Facilities*, Vol. 20 Nos 13/14, pp. 432-440.
- Huertas, J.I., Ramírez, J.D. and Salazar, F.T. (2007), "Layout evaluation of large capacity warehouses", *Facilities*, Vol. 25 No. 7, pp. 259-270.
- Ilcan, S. and Rygiel, K. (2015), "'Resiliency humanitarianism': responsibilizing refugees through humanitarian emergency governance in the camp", *International Political Sociology*, Vol. 9, pp. 333-351.

- Jacobs, K. (2017), "What's next: rethinking the refugee camp", *Architect*, Vol. 106 No. 1, pp. 78-115.
- Jahre, M., Kembro, J., Rezvanian, T., Håpnes, S.J., Ergun, O. and Berling, P. (2016), "Integrating supply chains for emergencies and ongoing operations in UNHCR", *Journal of Operations Management*, Vol. 45, pp. 57-72.
- Kennedy, J. (2005), "Challenging camp design guidelines", *Forced Migration Review*, Vol. 23, pp. 46-47.
- Kennedy, J. (2008), "Structure for the displaced: service and identify in refugee settlements", PhD thesis, Delft Technical University, Delft.
- Kleinschmidt, K. (2015), "Refugee camps are the 'cities of tomorrow', says humanitarian-aid expert", available at: www.dezeen.com/2015/11/23/refugee-camps-cities-of-tomorrow-killian-kleinschmidt-interview-humanitarian-aid-expert/ (accessed January 2, 2017).
- Kunz, N. and Reiner, G. (2012), "A meta-analysis of humanitarian logistics research", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 2 No. 2, pp. 116-147.
- Kunz, N., Van Wassenhove, L.N., McConnell, R. and Hov, K. (2015), "Centralized vehicle leasing in humanitarian fleet management: the UNHCR case", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 5 No. 3, pp. 387-404.
- Leiras, A., de Brito, I., Peres, E.Q. Jr, Bertazzo, T.R., Tsugunobu, H. and Yoshizaki, Y. (2014), "Literature review of humanitarian logistics research: trends and challenges", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 4 No. 1, pp. 95-130.
- McAdam, R. (1987), "Engineering management in refugee camps", *Disasters*, Vol. 11 No. 2, pp. 110-112.
- McCutcheon, D.M. and Meredith, J.R. (1993), "Conducting case study research in operations management", *Journal of Operations Management*, Vol. 11, pp. 239-256.
- M Library (2017), "Research guides", available at: <http://guides.lib.umich.edu/greyliterature> (accessed November 22, 2017).
- Meredith, J. (1998), "Building operations management theory through case and field research", *Journal of Operations Management*, Vol. 16, pp. 441-454.
- Miles, M.B. and Huberman, A.M. (1994), *Qualitative Data Analysis: An Expanded Sourcebook*, 2nd ed., Sage Publications, Inc., Thousand Oaks, CA.
- NORCAP (2016), "Dignified reception guidelines: key essentials to dignified reception of refugees and asylum seekers in Europe", available at: www.nrc.no/resources/guidelines/dignified-reception-guidelines/ (accessed May 7, 2017).
- Oloruntoba, R. and Gray, R. (2009), "Customer service in emergency relief chains", *International Journal of Physical Distribution and Logistics Management*, Vol. 39 No. 6, pp. 486-505.
- Overstreet, R.E., Hall, D., Hanna, J.B. and Rainer, K. Jr (2011), "Research in humanitarian logistics", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 1 No. 2, pp. 114-131.
- Pan, T. (2016), "Architecture in crisis: exception as a form of decay", *Architectural Research Quarterly*, Vol. 92, pp. 114-117.
- Patton, M.Q. (2002), *Qualitative Research and Evaluation Methods*, Sage Publications, Thousand Oaks, CA.
- Ramadan, A. (2013), "Spatialising the refugee camp", *Transactions of the Institute of British Geographers*, Vol. 38 No. 1, pp. 65-77.
- Sanyal, R. (2011), "Squatting in camps: building and insurgency in spaces of refuge", *Urban Studies*, Vol. 48 No. 5, pp. 877-890.
- Shelter Cluster (2016), "Site planning: guidance to reduce the risk of gender-based violence", Shelter Protection Guidelines, available at: www.sheltercluster.org/sites/default/files/docs/siteplanninggbvguidance_2016_0.pdf (accessed May 7, 2017).
- Sheppard, A., Tatham, P., Fisher, R. and Gapp, R. (2013), "Humanitarian logistics: enhancing the engagement of local populations", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 3 No. 1, pp. 22-36.

- Tatham, P. and Houghton, L. (2011), "The wicked problem of humanitarian logistics and disaster relief aid", *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 1 No. 5, pp. 15-31.
- UNHCR (2016), "Global report", UNHCR, available at: http://reporting.unhcr.org/sites/default/files/gr2016/pdf/Book_GR_2016_ENGLISH_complete.pdf (accessed December 12, 2017).
- Voss, C., Tsikriktsis, N. and Frohlich, M. (2002), "Case research in operations management", *International Journal of Operations & Production Management*, Vol. 22 No. 2, pp. 195-219.
- Woroniecka-Krzyzanowska, D. (2017), "The right to the camp: spatial politics of protracted encampment in the West Bank", *Political Geography*, Vol. 61, pp. 160-169.
- Yin, R.K. (2014), *Case Study Research – Design and Methods*, 4th ed., Sage Publications, Thousand Oaks, CA.

Appendix 1. Interview guide

Name of interviewee	Title/affiliation	Date	Name of interviewer

1. Introduce myself, background, purpose of this study, and thank interviewee for their time and contribution to the study.
 - a. We focus primarily on the physical design of the camp and we are interested in the approach both when you set it up and how it develops.
 - b. We are interested in the general approach and processes and for this exact camp. Examples are welcome.
 - c. Is it ok if we tape the conversation? (Summary of transcribed interview as well as final report will be forwarded to interviewee).
2. What is your role in relation to the camp design/development/management?
 - a. How many years of experience in this role?
 - b. How many years of experience in similar roles or other work related to camp design/management?
3. Describing the context of the camp:
 - a. Name of camp
 - b. Geographical location (Country, region)
 - c. Age (number of years since start-up)
 - d. Size/capacity: actual (current) vs. historical (start-up) vs. future (planned) number of inhabitants and their profile (if possible country of origin, family composition) and supporting (local/international) staff
 - e. Map of area and camp (current vs. start-up, if available)
 - f. Inventory of all building types available in this camp? (i.e. shelters, kitchen, latrines, school, clinic, library, cinema, etc.)
 - g. Closest neighboring community /border (distance from camp?) (include more than one if relevant)
4. Approach to camp design in set up (start-up phase) and development over time (growth phase)

Facility (yes or no)	Start-up phase	Growth phase
Education		
Medical treatment (first-aid)		
Water-supply		
Markets		
Economic enterprise resources		
Storage (relief items, clothes)		

- a. How were/are needs/demands assessed? (Forecast through informal guesstimates, formal scenario planning or other, or needs assessments: by/from whom)
- b. Was any member of host government/community involved in needs assessment and the decision-making process?
- c. Any existing local resources taken into consideration during planning process? How?
- d. Temporary vs. permanent? (what is the perceived end use of the camp: should it only stay for a temporary period of time, or will it be permanent)
- e. "Storage" vs. settlement? (perception of camp as a "storage facility" or a settlement)
- f. Planned vs. not? (formal vs. informal process)
- g. Top-down (centrally controlled) vs. bottom up (community involved in decision-making)?
- h. Is the camp organized as part of the emergency response or development (longer-term ongoing operation) in your organization?
 - i. What factors determine the above decisions?
5. Principles of camp design when set up (start-up phase) and when it develops over time (growth phase)
 - a. Housing (gardens)
 - b. Infrastructure (waste, hygiene, cooking, water, energy, communication, transport, enterprise)
 - c. Services (school, medical, markets, community spaces, child friendly spaces, protection areas, outdoor spaces, workshops)
 - d. Types of material – durable or temporary? Available locally?
 - e. Security
 - f. In-/out-/through-flows
 - g. Easily expandable or not?
 - h. Flexibility regarding life-style, size of families, etc.

6. Standards/guidelines used for camp design when set up (start-up phase) and when it develops over time (growth phase)
 - a. Sphere, own, country, community (or other)?
 - b. Inhabitants have been involved/consulted in the camp design?
 - c. Focus group discussions been organized during camp design process?
 - d. Any challenges regarding use of (certain) standards?
7. Growth phase decisions
 - a. What triggers the re-evaluation of layout design of camp? (e.g. after a certain number of years/months; camp is reaching max capacity; other factors being considered?)
 - b. How often is the layout design re-evaluated?
 - c. Can the same design be applied to small-scale camps as large-scale camps, i.e. can design just be scaled up, or how do the design principles change over time?
 - d. Is the camp allowed to grow informally/organically or is there continuous monitoring and control to adapt layout?
 - e. During growth phase, is the camp layout designed based on a bottom-up (community based) approach or is it designed based on top-down approach?
 - f. What aspects of camp layout are designed informally (or bottom-up) and what aspects are controlled and designed top-down?
 - g. What are the key facilities (minimum standard vs. additional) included during growth phase compared to initial start-up phase? (e.g. school, hospital, water-supply, markets; economic enterprise resources such as workshops, granaries, tool storage)
8. Integration with neighboring community
 - a. Is there any integration with neighboring communities?
 - b. Is there a local development plan for integration and do discussions with local officials take place for integration? Any challenges in that matter?
 - c. If no, why not?
 - d. If yes, what is integrated and how?
 - e. What resources are available in the camp which neighboring communities can use and vice versa (e.g. water, food, electricity, hygiene, outdoor spaces)?
 - f. How is this (or could be) reflected in/supported by the physical layout (e.g. location of such services: in the middle of the camp or at strategic points accessible by all)?
 - g. What activities, i.e. services (e.g. education, health, sanitation and hygiene, food, transport, procurement, storage, trade, markets, communication, entertainment) are offered from the camp to the hosting community and vice versa?
 - h. What are the important actors (organizations, government, municipality, commercial service providers, suppliers, etc.) outside of the camp and how do you (or would like to) cooperate (formal agreements, frequent meetings, key people relationships, etc.) with them?
 - i. Is this cooperation in any way reflected (or could it be) in the physical camp layout (e.g. main entrances, information/communication, meeting rooms, other facilities, roads)?
 - j. Any examples of projects undertaken or planned to initiate/develop/maintain integration with neighboring communities (e.g. self-reliance, energy access, school, environmental rehabilitation)?
9. What are the main challenges when designing camps in the start-up and the growth phase?
10. What are the main experiences/learnings from this process to use for next – how do you see camp design in the future?
11. Who else should we talk to?

THANK YOU!

Table AI.
List of anonymized
interviewees

Affiliation at time of interview	Position at time of interview	Camp	Date and length
NRC, Ethiopia	Logistics and admin manager	B-A	Wednesday March 22: 2 hours
Norwegian Embassy	Advisor	B-A	Wednesday March 22: 1 hour
Norwegian Embassy	Advisor	B-A	Thursday March 23: 1 hour
Norwegian Embassy	Norwegian NGO Meeting: NCA, NPA, NRC, STC with ambassador employees	B-A	Thursday March 23: 2 hours
UNHCR Melkadida, Dollo-Ado	Shelter project coordinator	B-A	March 23, 2017, received answers in guide due to bad connection
Development Fund	Country director Ethiopia and Somalia	B-A	Friday March 24: 1.5 hours
UNHCR	Physical planning/shelter officer	B-A	April 24, 2017, received answers in guide due to bad connection
NRC NORCAP	CCCMCAP PM adviser	General	Friday May 12, 2017: 1.5 hours
NRC Displacement Conference 2017		General	April 24, 2017: 8 hours
UNHCR, Kakuma, Kenya	Physical planning assistant	Kal	Meeting on May 10, 2017: 3 hours 45 minutes
UNHCR, Kakuma, Kenya	Physical planning assistant	Kal	Meeting on May 10, 2018: 3 hours 50 minutes
NCCK, UNHCR partner, Kakuma, Kenya	Shelter engineer	Kal	Meeting on May 16, 2017: 4 hours 25 minutes
UNHCR	Physical planning/shelter officer	B-A	Diverse March-June
Turkish Red Crescent	Director of migrant and refugee services	Kar	May 15, 2017: 1 hour
UNHCR	Senior site planning assistant	Lag	March 22, 2017: 2 hours 15 minutes
UNHCR	Senior shelter assistant; site planner	Lag	March 22, 2017: 2 hours 15 minutes
UNHCR	Site WASH assistant	Lag	March 22, 2017: 2 hours 15 minutes

Appendix 3. Secondary data on cases

Etiopia, Halvårsrapport februar 2017, Norwegian Embassy.

Green Climate Fund (2017), Consideration of funding proposals – Addendum IX, Funding proposal package for FP046, Unpublished, Etiopia.

<http://innovation.unhcr.org/redesigning-refugee-communities/>

<http://innovation.unhcr.org/redesigning-refugee-communities/>

http://reporting.unhcr.org/node/2537#_ga=2.159984253.1305428370.1496132769-15368183.1492670626

http://reporting.unhcr.org/node/2544#_ga=2.102328001.1305428370.1496132769-15368183.1492670626

www.dezeen.com/2016/07/05/united-nations-high-commission-for-refugees-mit-overhaul-refugee-design-strategy-corinne-gray-interview/

www.dezeen.com/2016/07/05/united-nations-high-commission-for-refugees-mit-overhaul-refugee-design-strategy-corinne-gray-interview/

www.fmreview.org/sites/fmr/files/textOnlyContent/FMR/23/19.htm

www.fmreview.org/sites/fmr/files/textOnlyContent/FMR/23/19.htm

www.refworld.org/country/UNHCR,GRC,0.html

<https://emergency.unhcr.org/entry/35944/site-planning-for-camps>

<https://emergency.unhcr.org/entry/35944/site-planning-for-camps>

<https://emergency.unhcr.org/topic/29033/settlement-and-shelter>

www.nytimes.com/2014/02/16/magazine/how-to-build-a-perfect-refugee-camp.html

www.nytimes.com/2014/02/16/magazine/how-to-build-a-perfect-refugee-camp.html

IPSnews Ethiopia.

Kalobeyei (2017), Integrated Socio Economic Development Programme – Draft plan – UNHCR - UN-Habitat – Turkana county, March

NRC (2015), Ethiopia Shelter Evaluation, May, reliefweb: Ethiopia.

UNHCR (2012), Development of Hilaweyn Refugee Camp, Map and Drawing, Physical Planning & Shelter Section UNHCR Dollo-Ado Ethiopia.

UNHCR (2014), Global Strategy for Settlement and Shelter: A UNHCR Strategy 2014-2018.

UNHCR (2017), available at: www.unhcr.org/

UNHCR (2017a), National Shelter Strategy 2017-2020, ARRA Administration for Refugee and Returnee Affairs, UNHCR Representation Office in Ethiopia, Draft.

UNHCR (2017b), ARRA-UNHCR, National Shelter Strategy Ethiopia 2015-2018? (2017-2020), ARRA – UNHCR National Shelter Strategy, February.

UNHCR (2017c), Mission Report National Shelter Strategy (NSS) in the Ethiopia operation 23rd February to 8 of March 2017 by Olivier Siegenthaler (RSC Snr. Physical Planner), RSC Nairobi PPSS Unit, 22.03.2016.

UNHCR (2017d), Shelter Need Assessment Form, National Shelter Strategy (Ethiopia).

UNHCR (2017e), UNHCR Proposal Organigram – Shelter & Site Planning.

UNHCR Ethiopia (2017), available at: www.unhcr.org/ethiopia.html

Corresponding author

Marianne Jahre can be contacted at: marianne.jahre@bi.no