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Housing Conditions in Palestinian Refugee Camps, Jordan

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Abstract

This paper evaluates the quality of housing in a Palestinian refugee camp in Jordan. More than two million registered refugees live in Jordan, most of whom living in thirteen refugee camps established in the late 1960s following the Arab-Israeli conflict of 1967. Many of these camps are characterized by poor living conditions and associated health, social and environmental problems. However, there is scant empirical evidence regarding the quality of the housing in these camps. This paper addresses this gap by reporting on the findings of a questionnaire survey of 382 household units in Baqa'a Camp, the largest of the camps. The quantitative survey was triangulated by a series of extensive fieldwork visits to the area. Findings reveal that the housing in the camp is generally substandard. Poor structure and maintenance are key problems and this paper identifies and discusses various challenges, political and practical, that stand in the way of housing improvements. The paper concludes by suggesting that new models of ownership and responsibility need to be forged between the stakeholders in order to break the current stalemate of inaction.

Keywords: Housing conditions; Maintenance; Refugees; Palestine; Jordan

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Highlights

We report on the quality of housing in a refugee camp in Amman, Jordan.

We discuss the specific characteristics of the refugee problem in the region

We outline the shared responsibility model that has evolved in Jordan

We find most housing to be poorly constructed and poorly maintained

We argue the need for a new stakeholder engagement model

Introduction

As a result of the Arab-Israeli wars in 1948 and 1967, many thousands of Palestinian refugees fled their homelands to find safety in Jordan. In order to accommodate this influx temporary refugee camps were established. Although these camps were not intended to provide permanent accommodation, today there remain 13 refugee camps in Jordan. Shelter, originally provided by tents and marquees, has evolved over the decades and refugees now live in stone, steel and brick houses that have gradually been built in a haphazard piecemeal manner. The resulting townscapes look less like temporary ‘camps’ and more like permanent low income housing settlements. Of these refugee camps, ten are regarded as official (Department of Palestinian Refugees in Jordan, 2008), which means that their physical infrastructure and social services are provided by the UNRWA (United Nations Relief & Work Agency for Palestinian Refugee). The situation in Jordan regarding refugees is complex and demands some explanation.

Although Jordan is party to the international human rights instruments with regard to refugees (The 1948 Universal Declaration of Human Rights) Jordan has not acceded to the 1951 Convention Relating to the Status of Refugees and its 1967 Protocol. Barnes, (2009) argues that this is because of the fear that if future refugees are accorded the rights set down in the 1951 Convention they may end up staying permanently, something that is seen by the Jordanian government as unacceptable for political and practical reasons. Jordan has attempted to manage this by granting Palestinian refugees who arrived before 1967 formal citizenship, but maintaining their right of return.

Kagan (2011) argues that although the middle-east hosts and generates millions of refugees, few international or domestic legal instruments have been activated in the region and Zaiotti (2006) says ‘policies towards these individuals.....have been formulated on an ad hoc basis. As a result, refugees have enjoyed few guarantees and minimal protection’.

However, refugees arriving in Jordan, and other middle-eastern countries like the Lebanon and Syria (although of course Syria is now more likely to be a source of refugees than a host) do get support and help and are generally able to find shelter or a 'protected space'. This is provided by two UN refugee agencies that operate in the area, UNWRA for Palestinians and UNHCR for non-Palestinians. The involvement of the UN in refugee management has been described as the 'surrogate state pattern (Slaughter and Crisp, 2008) and started with the establishment of UNRWA at the beginning of the Palestinian refugee crisis. When UNHCR was established later in 1950-1951, Arab states preferred to maintain UNRWA, which Hathaway (1991) argues was because they wanted to keep the Palestinian refugee problem prominent in world politics. The Arab consensus that Palestinian return is the only acceptable solution to the refugee problem was, and continues to be, problematic because of its unenforceability. This placed Arab states, including Jordan, in a difficult position that Kagan (2011) argues was partially solved by shifting the refugee problem to the UN because 'it accommodated the practical reality of long term exile without surrendering in principle the insistence on the return as the only acceptable permanent solution'.

As a result Palestinian refugees in Jordan are primarily supported by UNRWA, with the Jordanian government limiting their involvement to refugees' residency status. This has meant that the ten refugee camps in Jordan are managed by UNRWA which 'has direct responsibilities broadly analogous to those of a government's health, education and social welfare authorities' (Morris, 2008).

Jordanian Refugee Camps

At present, Jordan accommodates over 1.5 million refugees (Jaber and Probert, 2001), and 65% of them live in 10 camps, plus a further three which are not considered official because they are not managed by UNWRA but by the Jordanian government (Jordan, Department of Palestinian Refugees, 2008). Some key characteristics of the ten official camps are shown in Table 1.

Table 1 Official Refugee Camps in Jordan

Name of Camp	Location	Area/M ²	Established	% of Refugees
Wehdat	Amman	477000	1955	15.37
El-Husseini	Amman	338000	1952	8.95
Baq'a	Amman	1307000	1968	27.66
Talbieh	Amman	133000	1968	1.90

Souf	Jearsh	596000	1967	5.93
Husn	Irbid	754000	1968	6.55
Irbid	Irbid	219000	1950	7.55
Gaza	Jearsh	507000	1968	7.05
Heteen	Zarqa	894000	1968	13.47
Zarqa	Zarqa	189000	1949	5.57

Such high numbers of refugees in relatively small areas puts great pressure on the refugees themselves, and the host state and raises issues on how it can manage and accommodate the influx in a sustainable and humanitarian manner. A key aspect of this is the challenge of providing adequate housing. However, very little attention in either the local or international literature has been given to housing conditions in Palestinian refugee camps. Thus, the empirical findings from this study may contribute to support local decision making processes as well as providing a base to conduct comparative studies between such camps in Jordan and other camps or informal settlements in other parts of the world. The findings also highlight the problems of essentially permanent refugees living in camps that, for political reasons, can only be officially regarded as temporary. The findings also exemplify problems where responsibility for refugees is shared between a government and the UN.

Understanding Urban Housing Quality

The urban built environment has been defined as the buildings, structures, physical and social infrastructure that enable people to live, work and play, circulate and communicate (Bagaeen, 2006; Alnsour, 2006; Gwebu, 2003). Urban homes are the most important part of the whole urban built environment (Gwebu, 2003) and their conditions reflect many issues of the community including socio-economic status, public health and the spatial environment (Meaton & Alnsour, 2012). Therefore, the form and conditions of the housing unit can be considered the first nucleus to the creation of a sustainable environment.

The sustainability of houses and the quality of life they support are strongly related to the quality of construction of the buildings and their consequent maintenance (Alnsour, 2011). The myriad of planning regulations and building codes around the world that have emerged to manage the built environment demonstrates that consensus. Planners agree that a well constructed house in a well designed neighbourhood is a key factor for sustainable societies (Alnsour & Meaton, 2009).

All buildings, well constructed or otherwise, need some level of maintenance and this necessarily requires some investment. Various authors have discussed housing conditions from an investment perspective and have found that it is closely related to levels of maintenance, patterns of ownership, income levels, and the age of the housing. For example, Ahlbrandt & Brophy (1975) argue that the determinants of maintenance, as part of the neighbourhoods decline cycle, include income level and the type of ownership. The financial capability of the homeowner to undertake maintenance work is a fundamental issue and has been explored over several decades, by Thomas (1975) and more recently Omar (2003). The literature also reveals a relationship between ownership and housing conditions. For example in the middle-east Omar (2003) found a relationship between the type of ownership and maintenance in the case of Libya, and Diacon (1991) found similar patterns in the UK. Andersen (1998) and Carley (1990) also noted that privately rented housing was generally less well maintained than privately owned housing. Any discussion on housing conditions must take into account the cost of maintenance and the age of housing. Several studies suggest that there is a positive relationship between the cost of maintenance and the age of house, where the increase in the age of the house leads to increased costs of repair and maintenance (Thomas, 1975; Carley, 1990).

Because the literature reveals that initial construction of buildings and their consequent maintenance are key issues determining housing quality, these two areas will be core to the discussions regarding housing conditions in refugee camps in Jordan. However, other less quantifiable factors may also be important. For example, the literature on Arab cities often focuses on socio-economic conditions as the fundamental cause of deteriorating urban housing but very little attention has been paid to other linkages between people and their urban environment (Alnsour, 2011). This has been shown in studies of the old city of Jerusalem (Bageen, 2006) and the city of Amman, (Zagha, 2003) where researchers concentrated on socio-economic factors in describing housing conditions. Neither explored less tangible factors like the relationship between housing quality and people's senses and perceptions towards their homes. These vary hugely from place to place since such perceptions are dependent on a whole range of political, cultural and socio-economic characteristics. People's relationships with the built environment, and most specifically the buildings in which they live, often reflect their personal circumstances, their histories, and in many cases, their identities (Alnsour, 2011). As a result their engagement or emotional cohesion with their homes is of primary importance with regard to their pride and hence their willingness to maintain them. This paper therefore also aims to explore some of the issues that this premise raises.

Research Methodology

In order to assess housing quality, a quantitative survey was undertaken alongside field observations conducted by the lead author.

Baqa'a camp is the largest of the ten official camps in Jordan in terms of population size, housing units, and spatial area (See Table 1). The camp accommodates nearly a third (28%) of all refugees in all ten camps. There are 11433 housing units in the camp (Department of Statistics, 2010). Because Baqa'a shares the same characteristics as the other camps and is subject to the same policies, it will provide a base for generalising the phenomenon of housing conditions in Palestinian refugee camps.

As Baqa'a camp consists of 11433 housing units (Department of Statistics, 2010), a random sample of 1143 housing units was regarded as a representative sample of the research population, bearing in mind the necessity of achieving an acceptable response rate. To ensure the randomization of the sample, it was necessary to produce a systematic period among responses. A systematic period was calculated by the following formula

$$S.P = n/N$$

$$\text{Hence, } 11433/1143=10$$

This suggests that the questionnaire would distribute into households by selecting one house and leaving other ten dwelling units, and so on. 1143 questionnaires were distributed in Baqa'a Camp and 382 completed questionnaires were returned. The questionnaire asked respondents to self evaluate the quality of their housing. It was tested prior to distribution to ensure validity and reliability.

The evaluation of housing conditions often depends on personal judgement and local knowledge (Bagaen, 2006; Gwebu, 2003) but generally the quality of housing structure can be divided into three levels: high quality, medium quality and poor quality. According to Gwebu (2003) these three levels can be defined in the following way.

- High quality buildings are erected with an appropriate roof, with walls, windows and doors in the right position.
- Medium quality buildings have some features of high quality structures, but have some low quality structural features. For instance, a house may be erected with appropriate building materials but without sufficient ventilation spaces.

- Low quality buildings are those built without compliance to environmental and planning standards. For example they may lack proper foundations, have no proper doors and have windows made with poor building materials.

Bagaeen (2006) looked at various physical conditions that relate to a residential building's suitability for habitation. He considered ventilation spaces, the amount of natural light, humidity and general appearance and generated the following criteria:

Very good buildings - fit for habitation and adhering to planning and health standards. Very good buildings equate to Gewbu's 'high quality' category (2003).

Good buildings - have some problems in terms of ventilation space and the amount of natural light but are habitable. Good buildings equate to Gwebu's category of medium quality.

Medium buildings - suffer from some problems, and these need solutions in the future and are equivalent to Gwebu's medium quality category.

Poor buildings - those not appropriate for human habitation and in need of urgent restoration. Poor buildings equate to Gwebu's low quality category.

This paper uses these two sets of criteria to evaluate the quality of housing in the Baqa'a camp.

Field observations were undertaken by the lead researcher in order to triangulate the results. According to Bagaeen (2006), Alnsour (2006) and Gwebu (2003) the assessment of housing conditions requires field observations. A series of photographs of the houses was taken by the researcher, in order to visually demonstrate housing conditions.

Results

Assessing housing conditions requires an understanding of the socio-economic characteristics of the inhabitants. Such characteristics have an important role in formulating housing policies. Findings reveal that there is quite a variation among dwellers in terms of household size, sex, age, education, occupation, and household income. Table 2 summarises the characteristics of the sample.

Table 2: Characteristics of the sample

Characteristics	Averages and percents
Average household size	6.42 members
Average occupant's age	46.58 year
Overall ratio of males to females	106/100
Occupant's educational level	Primary 30.2% Secondary 47.8% Undergraduate 18% Postgraduate 4%
Occupational type of householder	Public sector 32% Private sector 17.3% Jobs by UNRWA 28% Informal sector* 31.7%
Household income	5758 JD per year (i.e. \$6709)

* Informal sector refers to those employees who are not subject to social security and medical insurance.

Ownership

Despite the fact that the housing units are located on land rented by the UNRWA from original landowners for 99 years, 69% of refugees surveyed considered themselves as homeowners with only 31% describing themselves as tenants. This interpretation of their housing status is interesting and reflects findings from studies in other refugee camps in Lebanon, where the head of the household is considered the owner of the physical structure, but not the land on which it is built. This dominant view seems to suggest that the occupants have a long term level of engagement with their homes. Whether this reflects a sense of stability and permanence for the refugees is unclear.

The proportion of tenants (31%) might indicate a more transient sub-population. The availability of low cost living accommodation in the camp makes it attractive for tenants working in the informal labour market whose incomes are typically very low. Alternatively it may reflect the lack of acceptance of the permanent nature of these respondents' predicament. These initial findings suggest that further, qualitative research is required so that a more perfect understanding of residents' perceptions of their housing status can be achieved.

Construction

The development of Baqa'a camp has taken place without compliance to the planning regulations of Jordan, without any formal plans and with no direction on the manner in which the houses must be built. As a result the houses within

the camp are all of different designs, sizes, styles and colours, with most contravening planning law. For example, although attached housing (where individual houses are not freestanding but share walls) is not allowed under the Jordanian planning system, it is the main feature of camp. Most plots are fully occupied with these attached dwellings, most of which have been built without regard for ventilation spaces and other legal requirements. The housing has gradually evolved in an irregular way and has resulted in severe spatial overcrowding. The evolution of the camp, from a tented emergency encampment to this current day densely populated 'shanty town' is a result of the growing numbers of refugees arriving from various war zones in the region and the early residents gradually populating the area with their own Jordanian born offspring. The lack of UNWRA control on this gradual morphology and the relative lack of interest by the Jordanian authorities has allowed this to happen.

However, although the housing looks dense and haphazard, each housing unit is of a reasonable size and accommodates the average family size of 6.4 members. The survey results show that the average housing unit area is between 90 m² and 190 m² with most houses occupied by individual households. The survey results revealed that most households consider the size of their properties suitable to their needs. So although housing density is high, the homes themselves are not perceived by their inhabitants as overcrowded.

Many houses were found to be of poor quality in terms of their external appearance (Figure 1), but it is difficult to judge their quality in terms of building materials. Gwebu (2003) found that observers can misjudge housing quality because structures with a proper finish may appear initially to be of good quality, but closer inspection reveal bricks or blocks made from inadequate materials.

The survey found that the building materials used in construction include cement, iron, stone, galvanized metal, bricks, concrete and sand. Galvanized metal is used as a structural framework for buildings, or as an external surface covering. Iron is the usual choice for metal structural building materials. All houses were constructed using iron, but iron is considered as a traditional material compared with steel which is of lower density and has better corrosion resistance. The bricks are made of cement and soil and are formed in a molding and then wire-cut to achieve the proper size. The survey results indicate that all surveyed houses were erected using brick. All houses surveyed also used concrete in their construction which is considered the basic material in Jordanian building. Only 7% of respondents had used stone in the construction of their properties and it was reported as being expensive. When it can be afforded stone is used with cement acting as mortar.

On a practical note, it is not easy to maintain a house with these building materials, so any housing alterations, internally and externally are difficult and if attempted are often ‘botched’ (Figure 2). This can cause problems for healthy habitation, and for the sustained use of a building, but it also causes problems in terms of energy consumption. The construction materials and the absence of thermal insulating materials results in the houses being hot in the summer and cold in winter. This is exacerbated by the lack of tiling, which would help all year round. As a result, houses required more energy in both winter and summer times, for heating and air conditioning respectively. Apart from the discomfort and the costs this imposes on the inhabitants, there is a bigger issue surrounding national energy use. Jordan has limited energy resources and imports 95% of energy (Meaton & Alnsour, 2012). The link between energy production, use and the local and global environment is causing increasing concern worldwide (Arslan, 2007; Jaber and Probert, 2001).

Figure 1 Poor External Appearance



Figure 2 Poor structural quality of houses



The fieldwork revealed that many houses suffered from humidity problems. Building materials such as cement have aggravated the level of humidity in houses. The lack of compliance with Jordanian residential planning regulations, the subsequent dominance of attached housing, and the lack of adequate ventilation spaces between the houses all exacerbate the situation. This can cause or aggravate health problems such as asthma, particularly amongst children. In addition the amount of natural light in the houses has been compromised. Extensions to the original houses have compounded the poor physical condition of many of them.

The research found that many external cement walls suffered from erosion and cracking. In many houses, the mortar used was not of good enough quality or there was simply not enough of it used to ensure a lasting result

It was observed that there were no adequate treatment systems for rainfall on roofs. Existing drainpipes were generally in a poor condition due to lack of maintenance. Many houses appeared to have leaky roofs and there was an absence of water proof material being used in their construction. Rain was also observed to have penetrated many walls and windows. Efforts to manage these problems are typically very low cost and low 'tech', involving the use of plastic material (Figures 3 and 4).

Figure 3 Poor maintenance



Figure 4 Plastic sheeting used for roof repairs



These problems are more evident in the older houses in the study area. Survey results found the average age of dwellings was thought to be about 24 years. It was difficult, however, to be exact on the specific dates of construction because there are no records and they were not built to any particular style. In addition, most have been subject to much extension and 'improvement' that the original structure is difficult to identify.

Although the houses had significant problems in their construction, the actual facilities they offer their inhabitants seem adequate. All respondents reported that they had complete bathroom facilities consisting of a bath or shower and toilet in their houses. Only 4% of these houses had two complete bathrooms. All houses were found to have separate functioning kitchens. Furthermore, all the surveyed houses were supplied with electricity, water pipes and sewerage systems. However, the infrastructure of these supplies is haphazard and poorly maintained. The sewerage and water systems are inadequate and the electricity wires criss-cross the camp posing a threat to the camp's inhabitants.

Only 9% of houses have telephone landlines, but given the widespread use of mobile phones, this is not seen as an indicator of deprivation. In terms of basic amenities, it does seem that most households have adequate provision although the standard of that provision is debateable.

The survey asked residents to assess the condition of their homes using the scales and descriptors put forward by Gwebu (2003) and Bageen (2006).

52.9% of respondents reported that their dwelling units were in poor condition and 26.7% of respondents regarded their dwelling as in medium condition. Only 3.1% thought they lived in a high quality home. Table 3 summarises these results.

Table 3 Respondents' perceptions of the quality of their housing

Condition of house		Frequency	Percent	Total
High quality	Very good	12	3.1	3.1
Medium quality	Good	66	17.3	44.0
	Medium	102	26.7	
Low quality	Poor	202	52.9	52.9
Total		382	100.0	100.0

Housing maintenance is the responsibility of both owners and tenants. Respondents were asked to state whether they maintained their dwelling or not. Findings reveal that there are significant differences between the level of maintenance in self-identified 'owner-occupied' housing and those living in rented housing, with 85.4% of homeowners maintaining their dwellings and only 15.8% of tenants doing the same.

This is a pattern found around the world. Tenants often do not consider their dwellings to be permanent homes and thus fail to take responsibility for maintaining them. This is then compounded by neglect on the part of the landlord. Studies in other historic cities such as Cairo, Fez, Seville, Jeddah and Havana found absentee landlords were largely disinterested in maintenance because of the low levels of income from the low rents of their properties (Steinberg, 1996). Thus rented properties are being neglected by both their inhabitants and their owners. In Baqa'a the situation is more complicated. The landlord is essentially UNRWA, but the level of responsibility this agency has for the upkeep of so many houses is debateable. UNWRA is not a government and while providing many of the services a government would provide, the upkeep of what is essentially a small town is clearly beyond their mandate and their budget.

These finding and observations are clearly of concern. Housing conditions reflect the quality of life in a community and a good quality home is greatly significant for a healthy life since it relates directly to the welfare of its inhabitants (Singh et al, 1996). The health and wellbeing of the camp inhabitants is compromised on a daily basis. In light of the increasing temperatures and water shortages that are anticipated as a result of global climate change, conditions can only get worse.

In addition, Jordan, because of its proximity to the Dead Sea rift valley, is vulnerable to earthquakes (Husein et al, 1995). The impact of a large seismic event on people living in the poorly structured and ill-maintained properties of the camp is unthinkable. Even a small fire could potentially cause a major disaster with significant loss of life.

The causes of these poor housing conditions are related to the particular circumstances surrounding the establishment and evolution of these camps. The unplanned, ad hoc construction is now being compounded by poor maintenance, which in turn is a result of the low incomes of residents and the high costs of maintenance and repair. The confused nature of perceived ownership and the refugee status of the residents and their generally low levels of emotional attachment to their homes all add to the problem. The lack of initial enforcement of residential regulations is certainly a major cause but it is impossible to rectify that particular problem at this stage. What is now compounding the problem is the lack of involvement from the Jordanian government and the UNRWA, in particular the lack of financial support for residents wanting to maintain their homes.

Solving these problems is fraught with difficulties and the next section summarizes the economic, social, administrative, and regulatory barriers that need to be overcome in order to find solutions that will mitigate the various threats the inhabitants currently face.

Barriers to better homes for long term refugees

The low levels of income in the camp and the shortage of finance channels to facilitate maintenance and repair works are a clear problem. According to the survey the average household income is roughly 4750 JD per year (approximately \$6709). Such low income levels mean that most residents will be unable to afford the high price of building materials and the wages of construction workers. Although commercial banks provide loans for the maintenance and repair works of houses, the interest rate exceeds 9% (Jordanian Central Bank, 2011), and the monthly payments are not suitable for people on low incomes. Moreover, borrowing from commercial banks is forbidden in Islamic religion and the majority of people living in the camps are Muslim. Survey findings show that many Muslim households did not want to deal with commercial banks in order to repair their properties due to religious ideology. UNRWA does not provide loans or financial facilities for the maintenance and repair works of housing. As a result many households have no means of paying for repair work.

There is no monitoring of the construction process and the maintenance undertaken in the camp. The planning authorities have not produced regional or/and local plans concerning planning or maintenance works and neither local government nor UNRWA intervene. This exemplifies one of the problems of Slaughter and Crisp's (2008), surrogate state pattern. Where there is a joint responsibility, it is very easy for neither party to take responsibility. The lack of a strong monitoring body has meant that the inhabitants of the camp have been allowed to get on with it themselves, using the resources they can access.

As a result a haphazard urban form has evolved that now presents significant problems for both agencies, which go beyond simply housing quality.

Since the Jordanian authorities passively allowed the camps to evolve without compliance to Jordanian planning regulations, it would be very difficult for the Jordanian authorities to start trying to enforce regulations post hoc on such a large number of dwellings. There would be significant financial costs and administrative effort involved with any such change in attitude, and any such attempt would likely be unworkable. However, perhaps more importantly, any intervention by the Jordanian government might undermine their semi-detached responsibility for the camp, and might be seen to symbolize a change in their refugee policy.

The majority of people living in Baqa'a and the other UNRWA camps were forced to leave their homes and came to Jordan as a last resort. Most would prefer to be in their original homes and despite their years of exile continue to view Palestine as their homeland. Hence, the emotional cohesion with their new homes in the camps is very likely to be compromised by the historical events leading to their current living arrangements. A lack of full emotional engagement with a dwelling is likely to lead to lower levels of commitment to it and will thus undermine maintenance efforts.

Discussion

There is no silver bullet to solve this complicated problem as potential solutions are mired in international politics as much as in practical operational difficulties. However, inaction is no longer acceptable.

It is difficult for the Jordanian government and UNWRA to impose regulations and restrictions on the camp inhabitants given the confused, shared responsibility approach that has evolved. However, it would clearly be a good thing if greater adhesion to planning laws and higher levels of house maintenance could be encouraged. Since that has not happened in the past three decades, some intervention is required. Most people in the survey were aware of the health and environmental hazards of their living conditions, and wanted to be able to do something about it, but lacked resources and in some cases, the commitment. The authors propose that planners and officials from both government and UNRWA should initiate an empowerment process so that residents can become more fully engaged with decision-making in their neighbourhoods. This could unlock the stalemate that has resulted in nobody taking responsibility for the problems in the camp. This stakeholder engagement should initially focus on housing conditions and potential remedial interventions and would have to address the issue of identifying finance channels for carrying out repairs and maintenance. These should be compatible with the laws of Islam. As the dialogue develops it is possible that

new models of engagement could emerge that would empower residents to take greater responsibility for their own homes and localities, without the need for new legislation and laws.

In addition to the issues of housing quality, it is clearly imperative that some disaster and emergency planning is required so that should disaster strike, the resilience of the Baqa'a population is maximised. The authors concur with the growing evidence that bottom-up community resilience planning is likely to be the most effective, and suggest that this becomes a key priority for all stakeholders.

The authors are aware that these suggestions require further research and represent a significant shift in the current power dynamics of the camp. In order to identify the best ways forward, the authors suggest that further qualitative research, possibly using techniques from the participatory rural appraisal methodologies (Chambers, 1994) should be undertaken to initiate the new approach.

The lessons that could be learnt from such research would not only be beneficial for the practical management of Baqa'a camp and the other Jordanian and Middle-eastern camps, but also for those in other parts of the world. In 2011 UNHCR were trying to manage the needs of over 35 million refugees. In the next fifty years the global number of refugees will increase, fuelled by the huge number of predicted environmental refugees. Current estimates suggest that environmental refugees could number between 50 million and 20 million by 2080 (Nicholls, 2004; Black, 2001). It is imperative that these climate refugees do not find themselves in the same intolerable position as the Palestinian refugees in Jordan and other parts of the Middle-east. The need to develop models of good practice that deliver healthy, sustainable communities has never been more imperative.

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