

## Challenges Hindering the Resourcing for Post-Disaster Housing Reconstruction in Gaza

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**Abstract:** Resourcing post-disaster housing reconstruction (PDHR) entails many drawbacks creating bottlenecks to reconstruction projects. Understanding these vulnerable issues is of utmost to identify the appropriate interventions to mitigate their effects. The devastating aggression in 2014 in Gaza Strip served as a typical example of resources hampers. Based on the quantitative approach, the research employed a self-administrated questionnaire survey to identify the most significant challenges hindering the resourcing for post-2014 aggression housing reconstruction. The questionnaire targeted 55 of the key people in the implementing agencies of post-2014 aggression housing reconstruction. The data collected was analysed using descriptive statistics, through frequency distribution and effect index (EI); and using inferential statistics through one sample Wilcoxon signed rank test. Findings indicated that the challenges related to political issues have the most significant effect on resourcing the PDHR. The main key challenges are: (1) Difficulties to obtain permits from the Israeli side to flow the reconstruction materials into the Gaza Strip, (2) Insufficient funds for reconstruction efforts and (3) Refusal of the international community to contact the local de facto government. This research fills the knowledge gap relating to Gaza and provides the basis for more research on resourcing problems. This research has also extended, updated and confirmed the current knowledge regarding challenges hindering the resourcing for PDHR. The results draw attention of the implementing agencies in Gaza to the factors that creating bottlenecks to resource the reconstruction projects in order to overcome them and to mitigate their negative effects.

**Keywords:** Challenges, Resourcing, PDHR, Gaza Strip, Post-disaster

### INTRODUCTION

According to Bilau and Witt (2016), disaster is "a serious disruption of society that exceeds its coping capacity". The occurrence of natural and manmade disasters is on increase and causes massive destruction, damage and human losses around the world yearly (Shafique and Warren, 2016; Enshassi et al., 2017; Alston, Hargreaves and Hazeleger, 2018). Although, disasters have severe social, economic and environmental impacts, it can be an opportunity to improve the living conditions of the affected people through an effective reconstruction process (Vahanvati and Mulligan, 2017; Alston, Hargreaves and Hazeleger, 2018). Reconstruction is a subset of the recovery stage, which concerned with rebuilding the physical structures affected by a disaster (Chang et al.,

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2010a). The construction and implementation of the permanent houses in post-disaster is known as post-disaster housing reconstruction (PDHR) (Baradan, 2007). Previous experiences of PDHR showed that availability of resources is a recurrent problem facing reconstruction stakeholders in a post-disaster situation (Chang et al., 2012a). For instance, resourcing the reconstruction after the 2014 aggression on Gaza-Palestine has proven problematic to both the international and local agencies (Barakat, Milton and Elkahlout, 2018).

On 7 July 2014, the Israeli army launched a military aggression on the Gaza Strip (Kear, 2016; Barakat, Milton and Elkahlout, 2018). The Protective Edge Operation, as it was called, killed at least 2,251 people, injured more than 11,231 and internally displaced around 485,000, which was equal to 28% of the Gaza's population (Barakat and Shaban, 2015). The aggression caused a widespread destruction to the economy of Gaza. It was already weak, due to the almost 10 years of blockade and three major escalations of hostilities within six years (Shelter Cluster, 2017; UNDP [United Nation Development Programme], 2017; Barakat, Milton and Elkahlout, 2018). The 2014 aggression caused a wide array of devastations in the housing sector: 11,000 housing units were completely destroyed; 6,800 suffered severe damage; 5,700 suffered major damage and 147,500 suffered minor damage. Of these, 17,800 housing units were estimated to be uninhabitable (Shelter Cluster, 2017). The total physical damage and economic losses were estimated at USD3.1 billion (UNDP, 2017; Barakat, Milton and Elkahlout, 2018). The share of the infrastructure sector was the highest, with total damage and losses close to USD2 billion (UNDP, 2017). During the aggression, the housing sector was the greatest component of infrastructure losses in terms of physical damage which was close to USD180 million (Barakat, Milton and Elkahlout, 2018).

Following the aggression, the Palestinian Authority (PA) in Gaza appealed for urgent international assistance for the Gaza Strip (Barakat and Shaban, 2015). Despite the high concern of donors during the Cairo Conference in October 2014 to provide promises to rebuild Gaza, much of the donations remain unfulfilled (Barakat and Masri, 2017). Of the USD5.4 billion pledged at the conference, over half was committed to reconstruction projects in Gaza, but only 53% had been disbursed as of 1 March 2018. Barakat, Milton and Elkahlout (2018) stated that after nearly two years of reconstruction, only 11% of the totally destroyed housing was fully reconstructed compared to 65% of the severely damaged houses and 52% of the houses with minor damage. This can be due to numerous bottlenecks facing the implementing agencies in Gaza-Palestine after the 2014 aggression in resourcing the housing reconstruction (Barakat, Milton and Elkahlout, 2018; Enshassi, Shakalaih and Arain, 2017; Enshassi, Shakalaih and Alkilani, 2018).

Santiago et al. (2017) reported that research on PDHR is the most limited of the stages of disaster management; especially on resourcing and its implications on PDHR (Chang et al., 2010b; 2012a; Enshassi and Shakalaih, 2016; Islam, Kolade and Kibreab, 2018). Moreover, very little research has been done to investigate the reasons for any resourcing difficulties and the possible solutions to address them (Chang et al., 2011; 2012a). Against this backdrop, this article aims at comprehending the challenges arising in post 2014 aggression which hinder the resourcing for housing reconstruction. In order to fulfil this objective, a review of previous experiences of PDHR was conducted to identify the various challenges in resourcing operation. In the following step, a list of challenges was obtained to develop the research method which is described in research methodology

with the adopted analysis methods. Findings and discussion of this article is hoped to draw attention of implementing agencies in Gaza to the most significant challenges to overcome them in the future reconstruction projects and mitigate their effects. The article provides some recommendations that could be taken into consideration in order to overcome the most significant challenges. The following section starts with reviewing the resourcing for PDHR then presents the challenges investigated in the previous literatures.

## **LITERATURE REVIEW**

### **Resourcing for PDHR**

Resourcing plays a central role for recovery of livelihoods and shelters in post-disaster chaotic environment (Islam, Kolade and Kibreab, 2018). Resourcing is broader than resource acquisition for construction projects. It involves resource planning and preparedness, resource procurement, resource delivery and development of resource alternatives (Chang et al., 2012a; 2010a; 2010b). It aims at increasing the flows and stocks of resources in the market, by integrating all resource related activities, processes and interfaces to achieve resource availability (Chang, 2012). Resourcing process calls for an integrated connection with all reconstruction stakeholders and a cohesive resourcing approach to embraces those actors into an adaptive process for resource provision (Chang et al., 2010a) The involved stakeholders in PDHR projects are the impacted community, governments, civil society organisations, professional groups and media (Davidson et al., 2007; Lawther, 2009).

The way and extent to which the stakeholders organise and manage the resourcing activities identified the type of the resourcing approach (Chang et al., 2010a). Various approaches are suggested for enhancing the overall resourcing capability for successful PDHR (Jha et al., 2010; Ophiyandri, Amaratunga and Pathirage, 2015; Tambe et al., 2018). Chang et al. (2010a) identified four resourcing approaches including (1) Government-driven approach wherein the resource availability is mainly driven by governmental agencies (2) Donor-driven approach in which donors has the main role in resourcing efforts, (3) Market-driven approach where the instruments, forces and rules in the construction market have a significant impact on resource availability and (4) Owner-driven approach in which house owners are responsible for reconstructing their houses with conditional financial assistance and technical support.

Experiences of PDHR showed that resourcing operation could be hindered by many challenges (Bilau and Witt, 2016; Richard et al., 2017; Islam, Kolade and Kibreab, 2018). As an example, post conflict management in Kosovo has proven challenging to international organisations and local communities alike (Earnest, 2015). In the same manner, aid agencies in Gaza-Palestine after 2014 aggression faced many bottlenecks challenges in resourcing (Barakat, Milton and Elkahlout, 2018). Identification these challenges helps in achieving a better future for affected communities and facing another disaster (Chang et al., 2012a; Hidayat, 2014; Ismail et al., 2014). The following sections presents these challenges based on different PDHR interventions:

## **Resourcing challenges of PDHR**

Many non-governmental organisations (NGOs), international non-governmental organisations (INGOs) and United Nations (UN) agencies highlighted the significance of addressing the potential bottlenecks when resourcing the PDHR (Singh and Wilkinson, 2008). A range of scholars have investigated the various challenges facing the implementing agencies of PDHR and hampered the resourcing for PDHR (Chang et al., 2010a; 2011; 2012a; Ismail et al., 2014; Richard et al., 2017; Bilau, Witt and Lill, 2018; Celentano et al., 2019). Some researchers grouped these challenges into challenges related to: (1) Coordination and communication, (2) Financial management, (3) Human resources, (4) Health and safety, (5) Logistics and supplies, (6) Workmanship and quality, and (7) Monitoring and control (Bilau and Witt, 2016; Bilau, Witt and Lill, 2018). Others categorised them into challenges related to: (1) Construction market, (2) Internal transportation, (3) Reconstruction project, (4) Stakeholders and (5) Project operational environment (Chang et al., 2011; 2012b; Richard et al., 2017). For the purpose of this article, challenges were classified in five categories (Chang et al., 2011; 2012b; Richard et al., 2017). Accordingly, challenges hindering the resourcing for PDHR are categorised into challenges related to: (1) Construction market, (2) Internal transportation, (3) Reconstruction project, (4) Stakeholders and (5) Project operational environment. Besides these categories, a new category is added in this article due to its importance and its significant implications on resourcing issues, which is the challenges related to political matters. In what follows, a discussion is presented on the main categories of challenges:

### **Challenges related to the construction market**

After a large-scale disaster, the high demand of resources associated with shortage of resource supply impact the local construction markets (Bilau, Witt and Lill, 2018; Islam, Kolade and Kibreab, 2018; Celentano et al., 2019; Fayazi and Lizarralde, 2019). For instance, in New Zealand, the shortage of aggregate, human resources and heavy equipment has been recognised to be one of the potential constraints to the reconstruction process if a large-scale disaster strike (Chang et al., 2010b). Above that, some countries do not have the adequate production capacity to acquire resources to meet the reconstruction needs in post-disaster which negatively influence the resourcing for PDHR (Jayasuriya and Mccawley, 2008; Chang et al., 2010c; 2012a). After the 2012 flooding in Nigeria, the local production capacity was highlighted as a challenge affecting the resourcing for PDHR (Richard et al., 2017).

The dramatic increase in the demand for resources after disaster stressed the local and international agencies to compete for the available resources (Ahmed, 2011; Baroudi and Rapp, 2014; Bilau, Witt and Lill, 2015; Richard et al., 2017). Accordingly, a sharp escalation in the cost of resources is resulted (Hidayat and Egbu, 2010; Karunasena and Rameezdeen, 2010; Fayazi and Lizarralde, 2019), which compound market inflation (Chang et al., 2012a; Celentano et al., 2019). In tsunami (Aceh, Indonesia), there was a shortage of construction materials such as red brick, timber, cement and reinforcement steel due to the high demand, which changed the price two or three times in a day (Nazara and Resosudarmo, 2007; Soelaksono, 2009). Similarly, in Gaza-Palestine, the imposed

controls on the flow of goods into the Gaza Strip since June 2007 negatively influenced the reconstruction following the aggression of 2008, 2012 and 2014 (Barakat, Milton and Elkahlout, 2018).

### **Challenges related to internal transportation**

In post-disaster, there is a necessity to import resources (material and labour) in order to balance the reconstruction demand and supply (Kovács, Matopoulos and Hayes, 2010; Barakat, Milton and Elkahlout, 2018; Bilau, Witt and Lill, 2018). However, damages to roads, infrastructure and services after disasters restrict the accessibility to the reconstruction environment (Ismail et al., 2014; Bilau and Witt, 2016; Enshassi et al., 2017). This imposes difficulties to resources' procurement from outside rebuilding area during the reconstruction period (Chang et al., 2010b; Richard et al., 2017; Bilau, Witt and Lill, 2018). Chatat (2012) clarified that the continuous blockade on the Gaza Strip, Palestine obstructed the reconstruction after 2008 Operation Cast Lead, as they placed constraints on the amount and type of material permitted to pass through the borders. Additionally, external resource procurement caused further delays to the reconstruction process (Enshassi Al-Najjar and Kumaraswamy, 2009; Wilkinson et al., 2014; Bilau, Witt and Lill, 2018). Same like Gaza-Palestine, restrictions on resources access into the Gaza slowed the reconstruction process after 2014 aggression (Barakat and Masri, 2017; Barakat, Milton and Elkahlout, 2018). Moreover, PDHR suffers a challenge of materials transportation high cost over a long distance (Pathirage et al., 2012; Bothara et al., 2016; Tambe et al., 2018). As illustrated by Richard et al. (2017) after 2012 flooding in Nigeria, the agencies experienced the great cost of transportation as a challenge impeding the resourcing for PDHR.

### **Challenges related to reconstruction projects**

The common problem found at initial stages of reconstruction is funds (Keraminiyage, Amaratunga and Haigh, 2008; Chang et al., 2011; 2012a; Enshassi et al., 2017). Insufficient funds for reconstruction projects create a termination and suspension of the reconstruction process (Ismail et al., 2014; Wilkinson et al., 2014; Fayazi et al., 2017; Islam, Kolade and Kibreab, 2018). In Lebanon, resourcing the housing reconstruction following the Civil War (1975–1991) has been greatly hampered due to the shortage of funds provided for reconstruction (El-Masri and Kellett, 2001). Similarly, inadequate funding was a major challenge in post 2014 aggression housing reconstruction in the Gaza Strip, which was mainly due to the lack of donor support (Barakat and Masri, 2017; Barakat, Milton and Elkahlout, 2018).

Sometime, disaster communities are relocated through resettlement programmes outside the hazardous zone (Arslan and Johnson, 2010; Binder, Baker and Barile, 2015; Bilau and Witt, 2016). This decision led to other challenges like selection of appropriate sites for reconstruction and difficulties in resolving issues of land (Kennedy et al., 2008; Singh and Wilkinson, 2008; Ophiyandri, Amaratunga and Pathirage, 2010; Bilau, Witt and Lill, 2015). In post 2011-Typhoon Washi in Philippines, some beneficiaries did not occupy their reconstructed houses because of their inappropriate and unsafe location (Carrasco, Ochiai and Okazaki, 2016). Moreover, the land issue of reconstruction in a new location in

post-Sidr Cyclone reconstruction was a critical challenge facing the implementing agencies in Bangladesh (GFDRR [Global Facility for Disaster Reduction and Recovery], 2014).

The dominant feature of reconstruction projects is the deficiency of proper planning and ineffective formulation of reconstruction policy (Jayasuriya and Mccawley, 2008; Al-Qeeq and El-Wazir, 2010; Earnest, 2015; Bilau, Witt and Lill, 2018). Accordingly, the quality of implementation of reconstruction projects is influenced (Arroyo, 2014; Barenstein, 2015; Earnest, 2015; Carrasco, Ochiai and Okazaki, 2016; Islam, Kolade and Kibreab, 2018). In Pakistan, the reconstruction policy was announced six months after the 2005 Kashmir earthquake due to the lack of strategic planning (Bothara et al., 2016). Similarly, Sri Lanka did not prepare a pre-existing policy or institutional framework that could be readily adapted to deal with the aftermath of the 2004 tsunami (Bilau, Witt and Lill, 2015). With the lack of planning, the pressure to quickly rebuilding after disaster may lead to the adoption of construction projects that are poorly designed (Al-Qeeq and El-Wazir, 2010; Chang et al., 2012b). This challenge was faced by agencies in post 2012 flooding in Nigeria and in post 2004 tsunami in Indonesia (Chang et al., 2012b; Richard et al., 2017).

### **Challenges related to stakeholders**

Reconstruction projects are recognised with the diverse stakeholders involved including: governments, aid agencies, impacted community and contractors (Davidson et al., 2007; Lawther, 2009). Diversity of stakeholders causes inadequate distribution of roles and responsibilities, which leads to gaps, overlaps and duplication of efforts (Fayazi et al., 2017; Bilau, Witt and Lill, 2018). A real example for duplication is the reconstruction after tsunami in Aceh-Indonesia; where Soelaksono (2009) reported that some beneficiaries who have received one house from one NGO came to other NGO asking for house. This reflected the absence of coordination between agencies involved in reconstruction projects (Baroudi and Rapp, 2014; Bilau, Witt and Lill, 2015; Earnest, 2015; Fayazi et al., 2017; Islam, Kolade and Kibreab, 2018), which hinders the information exchange between them (Norling, 2013; Fayazi et al., 2017). Accordingly, the learning cycle is affected and involved agencies cannot benefit either from their various experiences, or from its successes and failures (Karunasena and Rameezdeen, 2010; Ismail et al., 2014). Moe and Pathranarakul (2006) stated that the post-tsunami reconstruction in Thailand reported an inadequacy of effective collaboration between institutions in various levels.

Over and above, lack of communication with local governments affects the government control of grants to ensure equity in distribution (Singh and Wilkinson, 2008; Al-Qeeq and El-Wazir, 2010; Chang et al., 2011). After 2008 aggression on Gaza-Palestine, it was noticed that several agencies were working in reconstruction without coordination with the local competent authorities (Al-Qeeq and El-Wazir, 2010). Likewise, many international agencies have restrictions on the direct communication with Hamas, as the local authority, in post 2014 aggression on Gaza (Barakat, Milton and Elkahlout, 2018). Ineffective cooperation of donors, implementing agency, home owners and monitoring parties produce poor housing projects (Leitmann, 2007; Bilau, Witt and Lill, 2018; Fayazi and Lizarralde, 2019).

In the aftermath of disaster, the affected countries have limited local governance capacity; which gives the external agencies a free hand to achieve their specific objectives and perspectives at reconstruction (Chang et al., 2011; Ophiyandri et al., 2013; Enshassi, Shakalah and Arain, 2017). Implementing agencies in the affected countries like Afghanistan, Iraq, Lebanon, Mozambique and Kosovo faced an inadequate local institutional capacity to carry out the reconstruction programmes (Fengler, Ihsan and Kaiser, 2008; Andrew et al., 2013; Bilau, Witt and Lill, 2018; Maly, 2018; Fayazi and Lizarralde, 2019). In Gaza, the reconstruction after 2008 aggression was hindered by weak institutions capacities and lack of skills necessary for the complex and urgent reconstruction projects (Al-Qeeq and El-Wazir, 2010). Lebanon also faced the challenge of limited capacity of ministries and municipalities; which allow the UNDP personnel to make a significant difference after the 2006 aggression (Hamieh and Ginty, 2010).

In the same manner, scarcity of human resources capacities may be a major constraint in implementing reconstruction projects in post-disaster (Davidson et al., 2007; Ophiyandri, Amaratunga and Pathirage, 2010; Bilau, Witt and Lill, 2015; Earnest, 2015). Experts, local builders and skilled workers are always scarce after disasters (Ismail et al., 2014; Wilkinson et al., 2014; Bilau, Witt and Lill, 2015; Bothara et al., 2016; Islam, Kolade and Kibreab, 2018; Celentano et al., 2019). Inadequacy of experts or personnel for project monitoring, evaluation and control in some organisations led to the failure of PDHR projects (Leitmann, 2007; Steinberg, 2007; Boen, 2014; Bilau, Witt and Lill, 2018). In New Zealand, the shortage of skills was reported as a problematic issue after Christchurch earthquakes (Chang et al., 2012a). Moreover, Hayles (2010) stated that reconstruction projects in post-tsunami in Sri Lanka and in post-earthquake in Pakistan experienced lack of strategic and professional experience. Implementing agencies usually have difficulties to find the required skills to execute reconstruction planning and implementation (Earnest, 2015). In the case of Indonesia, there was lack in project management skills such as project scheduling, resource planning and logistical arrangements (Chang et al., 2012a).

Adding to challenges related to stakeholders, inadequate pre-qualification of participating organisations in reconstruction is identified (Chang et al., 2011; 2012a; Bilau, Witt and Lill, 2018); with the incompetence of implementing organisations (Arroyo, 2014; Barenstein, 2015; Carrasco, Ochiai and Okazaki, 2016; Islam, Kolade and Kibreab, 2018). Hidayat and Egbu (2010) found in the reconstruction in Sri Lanka that field staff have not had the relevant experience to manage large and complex project. After 2004 Thailand's tsunami, there was a lack of competencies of project managers in PDHR (Moe and Pathranarakul, 2006).

### **Challenges related to project operational environment**

PDHR projects may fail to attain their objectives due to the insufficient regulatory mechanisms that enforce the building codes, construction guidelines and quality management procedures during implementation (Chang et al., 2010a; 2011; 2012a; Bothara et al., 2016; Bilau, Witt and Lill, 2018). Implementing agencies often lack consistent standards and adequate enforcement regulations (Leitmann, 2007; Steinberg, 2007; Hidayat and Egbu, 2010; Boen, 2014; Islam, Kolade and Kibreab, 2018). In Sri Lanka, although there are construction

guidelines for housing reconstruction, their enforcement was not uniform (Bilau and Witt, 2016). Further, Bothara et al. (2016) found that Pakistan registered a non-compliance of basic standards in the reconstruction.

Lack of supervision and monitoring of reconstruction is also challenging the reconstruction projects (Andrew et al., 2013; Wilkinson et al., 2014; Bilau, Witt and Lill, 2018; Maly, 2018; Fayazi and Lizarralde, 2019a). In Turkey after 1999 Marmara earthquake, poor supervision of reconstruction process negatively impacted the quality of produced houses (Bilau and Witt, 2016). Moreover, lack of monitoring in post 2007 Sidr cyclones in Bangladesh affected the beneficiaries' use of the assistance for other purposes; as they sold donated house construction items and bought other essential commodities (Islam, Kolade and Kibreab, 2018). One of the most significant challenges in reconstruction projects is to find and assist the most vulnerable beneficiaries in order to improve the living standards as overall (Soelaksono, 2009; Kovács, Matopoulos and Hayes, 2010; Ahmed, 2011).

Adding to the previous challenges, there is also inadequate opportunities for communities to participate in the process of reconstruction (Davidson et al., 2007; Kovács, Matopoulos and Hayes, 2010; Bilau, Witt and Lill, 2018; Islam, Kolade and Kibreab, 2018). Earnest (2015) argued that agencies were working after conflict in Kosovo without any involvement of the local community. Lack of households participation in reconstruction projects led to cultural inappropriateness in size, style and design of houses; as well as, choice of building materials and infrastructural services (Ahmed, 2011; Chang et al., 2011; 2012a).

In addition to the previous categories of challenges, a new category relating to the political matters is added in this study due to its importance. The following section discusses the challenges related to the political matters.

### **Challenges related to political matters**

The political situation of the disaster affected areas influences the resourcing for PDHR projects, particularly in the developing countries (Al-Qeeq and El-Wazir, 2010; Pathirage et al., 2012; Ismail et al., 2014; Bilau, Witt and Lill, 2018). The political instability of the disaster area in post disaster usually impeded the accessibility of resources to the reconstruction projects (Hidayat and Egbu, 2010). Political issues posed obstacles to the resourcing efforts during the PDHR projects in China and Indonesia (Chang et al., 2010a), in Kosovo (Earnest, 2015), in Sri Lanka (Hidayat and Egbu, 2010), in Lebanon (Ginty, 2007) and in Gaza Strip, Palestine (Enshassi, Al-Hallaq and Tayeh, 2019). The progress of the 2004 tsunami reconstruction was impacted by the political challenges as Aceh was a conflict area for a long time. Thus, there was a shortage of qualified construction labour (Steinberg, 2007; Kennedy et al., 2008), which stressed the need to import personnel from outside and the cost of housing reconstruction is highly increased as a consequent (Steinberg, 2007).

The political challenges of reconstruction have already been faced by many developing countries. However, none would have faced the same political conditions, as Palestinians in the Gaza Strip (Al-Qeeq and El-Wazir, 2010; Enshassi and Shakalaih, 2016). Gaza Strip is ceased by Israel nearly four-decade, which included several conflicts and successive strikes resulting in a protracted process of destruction and reconstruction (Enshassi, Kumaraswamy and Jomah, 2010; Barakat and Shaban, 2015; Barakat, Milton and Elkahlout, 2018). Moreover, a suffocating siege is imposed on the Strip in which all borders are under the



Israeli control and frequently closed (Barakat, Milton and Elkahlout, 2019; El-Sawalhi and Lafi, 2019). Enshassi, Kumaraswamy and Jomah (2010) added that Gaza Strip depends on the international donors to fund the reconstruction projects. Accordingly, many donors have attached their conditions to how the money could be used (Barakat, Zyck and Hunt, 2009; Barakat and Shaban, 2015). Seneviratne, Amaratunga and Haigh (2015) confirmed that donor assistance on PDHR is often followed by donors' political requirements. Ultimately, the extraordinary political situation of Gaza negatively affected the resourcing for reconstruction projects, where donors may suspend or terminate ongoing projects, or even stop their donations to Gaza Strip projects (Enshassi, Al-Najjar and Kumaraswamy, 2009; Enshassi, Kumaraswamy and Jomah, 2010).

## **RESEARCH METHODOLOGY**

This article was conducted within a larger doctorate (PhD) research. It provides an investigation of challenges hindering the resourcing for housing reconstruction after the 2014 aggression on the Gaza Strip. The article adopted a quantitative research approach through questionnaire survey to collect the required data. A questionnaire was preliminarily designed based on the factors identified from the literature review of different experiences of PDHR. Based on the literature reviews, 43 challenges hindering the resourcing for PDHR were identified which are classified into six categories. The questionnaire was revised based on the pilot study to develop the best version with high clarity and relevant items. Some items have been modified, some have been removed, while some have been merged with other items. Moreover, some challenges have been added based on the comments from reviewers of questionnaire. Accordingly, the final version of questionnaire listed a total of 28 challenges categorised into six main factors with the following headings related to: (1) Construction market, (2) Internal transportation, (3) Reconstruction projects, (4) Stakeholders, (5) Project operational environment and (6) Political matters.

The questionnaire was drafted in two languages, English and Arabic. This is necessary since the native language of people in Gaza is Arabic. The questionnaire targeted the key people in the implementing agencies of post 2014 aggression housing reconstruction employing a combination of purposive and snowball sampling. A list of expertise respondents in PDHR was prepared and they were contacted using phone, email or field visits to inquire them to be a part of the research. The questionnaire was self-administered and was distributed by personal delivery or by email. From 57 questionnaires that distributed to the respondents, 55 questionnaires were received resulting in a response rate of 96.49%. The questionnaire asked respondents to indicate the effect level (EL) of the 28 challenges hindering the resourcing for post 2014 aggression housing reconstruction, using the 5-points Likert scale from 0 (No effect) to 4 (Extreme effect). Then, the collected quantitative data was analysed using Statistical Package for Social Sciences (SPSS), through descriptive and inferential statistics.

Descriptive statistics was employed using frequency distribution and central tendency. Frequency distribution was used to obtain the valid percentage of each challenge to calculate the effect index (EI). EI is equivalent to the relative importance index (RII). As RII can be described differently to reflect its application to a particular study such as "RII" (Enshassi, Shakalaih and Arain,

2017); "EI" (Hassanain et al., 2017); "severity index" (Oyewobi and Ogunsemi, 2010). Holt (2014) stated that questionnaire data resulting from the use of response scales are frequently analysed using the RII method. In this article, the term of EI has been adopted similarly to Hassanain et al. (2017) who used EI to rank the challenges to the implementation of building management systems in Saudi Arabia. Accordingly, EI is used in this study to obtain the EL and the rank of each challenge. EI of the challenge determines its EL on resourcing the PDHR according to the scale of Hassanain et al. (2017): No effect (NE)  $EI < 12.5$ ; Slight effect (SIE)  $12.5 \leq EI < 37.5$ ; Moderate effect (ME)  $37.5 \leq EI < 62.5$ ; Strong effect (SE)  $62.5 \leq EI < 87.5$ ; Extreme effect (EE)  $87.5 \leq EI$ . The EIs are calculated as the following formula (Hassanain et al., 2017):

$$EI = \frac{\sum_{i=1}^4 a_i x_i}{4 \sum x_i} * 100\%$$

where,  $a_i$  = Constant expressing the weight assigned to  $i$ ;  $x_i$  = Variable expressing the frequency assigned to  $i = 0, 1, 2, 3, 4$ .

However, central tendency was determined using median; to reflect the middle for a set of data that has been arranged in order of magnitude (Naoum, 2007). Matthews (2017) stated that median is the best measure of central tendency for ordinal data. Meanwhile, inferential statistics using one sample Wilcoxon signed rank test was used; to test the null hypothesis that the median of the sample is statistically equal to a hypothesised median (Niroumand, Zain and Jamil, 2013). The one sample Wilcoxon signed rank test is the non-parametric version of one sample  $t$ -test (Carver and Nash, 2005). In this study, the hypothesised median is determined as 2.5 to be exactly between moderate and strong EL based on the adopted scale from "No effect" rating = 0 to "Extreme effect" rating = 4. Then using the test, the median of each challenge was checked to provide a significance value to accept or reject the hypothesis. If the significance value is less than 0.05, the null hypothesis is rejected; otherwise, the hypothesis is accepted. The test was two tailed at a confidence level of 95%.

## Respondents File

Table 1 summarises the respondents profile including gender, educational level, type of implementing agency, job title and years of experience. It is presented that from 55 respondents; 46 (83.6%) were males and nine (16.4%) were females. For educational qualification, 33 of the respondents have a bachelor degree which represents 60% of the total respondents; while, 40% have a master degree or above. Moreover, the table illustrates 22 governmental agency respondents, 13 UN (United Nations) agency respondents, six local NGOs respondents, six INGOs respondents and eight private agency respondents. Respondents were working in various positions during the PDHR: 18.2% of the respondents were working as project managers, 21.8% were project coordinators, 36.4% were supervisor engineers and 18.2% were site engineers. Other than that, 5.5% of respondents worked in other jobs as office engineers. Furthermore, over 80% of the respondents had more than five years of experience, which reflect the quality of collected data.

Table 1. Respondents profile

	Frequency	%
Gender		
Male	46	83.6
Female	9	16.4
Educational Qualification		
Bachelor	33	60.0
Master or above	22	40.0
Type of Implementing Agency		
Governmental agency	22	40.0
UN agency	13	23.6
Local NGOs	6	10.9
International NGOs	6	10.9
Private agency	8	14.5
Job Title in the Reconstruction Projects		
Project manager	10	18.2
Project coordinator	12	21.8
Supervisor engineer	20	36.4
Site engineer	10	18.2
Other	3	5.5
Years of Experience		
< 5 years	10	18.2
5 years to 10 years	14	25.5
> 10 years	31	56.4

## RESULTS AND DISCUSSION

Twenty-eight challenges were identified to assess their effects on resourcing for PDHR and were classified under six categories which were related to: (1) Construction market, (2) Internal transportation, (3) Reconstruction projects, (4) Stakeholders, (5) Project operational environment and (6) Political matters. Table 2 reports the results for challenges under their main factors including medians, EI, EL, ranks within the category and rank among all challenges. The median of the ratings for the challenges shows that out of 28 challenges, 16 were assessed to have moderate effect (rating = 2), nine with "Strong effect" (rating= 3), two with "Slight effect" (rating = 1) and only one with "Extreme effect" (Rating = 4). The 28 challenges were ranked according to their effect indices in their categories and among all challenges.

One sample Wilcoxon signed rank test was employed to determine whether or not the respondents considered the proposed challenges significant to affect the resourcing for PDHR. The results implied that most of challenges had a *p*-value less than the significance level of 0.05 and rejected the hypothesis that the sample median is statistically equal to the hypothesised median of 2.5. Out of 28 challenges, eight have a *p*-value more than the significance level of 0.05 and accepted the hypothesis that the sample median is statistically equal to the hypothesised median of 2.5, which are highlighted in the Table 2.

Table 2. Challenges hindering the resourcing for post 2014 aggression housing reconstruction

Challenges	Median	EI%	EL	Rank within Categories	Overall Rank	<i>p</i> -value
Challenges Related to the Construction Market						
Shortage of resources because of the high demand after disaster.	3	73.25	SE	1	4	0.001
Sharp escalation in the costs of resources due to high demand.	3	70.93	SE	2	5	0.009
Inadequate local production capacity to acquire resources to meet reconstruction needs in post disaster.	3	62.33	ME	3	10	0.794
Competition among aid agencies for resources.	2	54.10	ME	4	15	0.011
Challenges Related to Internal Transportation						
High transportation cost of materials over a long distance.	2	53.60	ME	1	18	0.018
Inaccessibility to reconstruction sites due to damages to roads, infrastructure and services resulted from disaster.	2	53.20	ME	2	19	0.015
Political Challenges						
Difficulties to obtain permits from the Israeli side to flow the reconstruction materials into the Gaza Strip.	4	88.18	EE	1	1	0.000
Refusal of the international community to contact the local de facto government in Gaza (Hamas).	3	75.95	SE	2	3	0.000

(Continued on next page)

Table 2. *Continued*

Challenges	Median	EI%	EL	Rank within Categories	Overall Rank	p-value
Repeated aggressions launched on the Gaza Strip which increase difficulties to quantify damages.	3	69.55	SE	3	7	0.034
Restrictions on the access to the damaged houses close to the borders.	3	66.83	SE	4	8	0.169
Challenges Related to Reconstruction Projects						
Insufficient funds for reconstruction efforts due to donor fatigue of the repeated aggressions on Gaza and the destruction that keeps happening as a result.	3	81.83	SE	1	2	0.000
Difficulties in resolving land issues after aggression.	2	58.20	ME	2	11	0.257
Deficiency of proper planning resulted from rush for quick reconstruction.	2	57.73	ME	3	12	0.198
Ineffective reconstruction policy with unclear goals of reconstruction project.	2	54.55	ME	4	13	0.064
Poor designs of some reconstructed houses.	1	37.70	ME	5	27	0.000
Challenges Related to Stakeholders						
Limited capacity of the local government which gives external aid organisations a free hand to achieve their specific objectives and perspectives at reconstruction.	3	70.08	SE	1	6	0.017
Beneficiaries corruption and lying to get more compensation	3	66.35	SE	2	9	0.225
Inadequate distribution of roles and responsibilities among stakeholders resulted gaps, overlaps and duplication of efforts between stakeholders.	2	54.10	ME	3	16	0.030
Lack of coordination between stakeholders.	2	50.03	ME	4	20	0.002

(Continued on next page)

Table 2. Continued

Challenges	Median	EI%	EL	Rank within Categories	Overall Rank	p-value
Lack of communication with local governments.	2	50.03	ME	4	21	0.002
Lack of project management skills in local organisations (as needs assessments, financial management, procurement, logistics, grant writing, monitoring and evaluation).	2	48.65	ME	6	23	0.001
Inadequate pre-qualification of participating organisations in reconstruction (as contracting companies).	2	47.38	ME	7	25	0.000
Inadequate experts or personnel for project monitoring, evaluation and control in some implementing organisations.	1	35.00	SLE	8	28	0.000
Challenges Related to Project Operational Environment						
Inadequate selection of the most vulnerable beneficiaries.	2	54.53	ME	1	14	0.063
Misuse of financial assistance by beneficiaries.	2	54.03	ME	2	17	0.088
Insufficient regulatory mechanisms which enforce building codes, construction guidelines and quality management procedures during implementation.	2	49.13	ME	3	22	0.001
Inadequate participation of beneficiaries in reconstruction process.	2	47.75	ME	4	24	0.001
Cultural inappropriateness of reconstructed houses (size, style and design of houses, choice of building materials and infrastructural services).	2	44.13	ME	5	26	0.000

Notes: NE = No effect; SIE: Slight effect; ME = Moderate effect; SE = Strong effect; EE = Extreme effect.

Figure 1 summarises the average effect index (AEI) for each category of challenges. It is shown that the highest AEI between all categories belongs to the challenges related to "Political matters" with AEI = 75.13%; which equals to a strong effect based on Hassanain's scale. Similarly, category of challenges related to the "Construction market" has a strong effect with AEI = 65.15%. However, challenges related to "Internal transportation", "Reconstruction projects", "Stakeholders" and "Project operational environment" have moderate

effects with AEI of 53.40%, 58%, 52.70% and 49.91, respectively; where challenges related to "Project operational environment" has the lowest AEI among all categories of challenges. Accordingly, categories can be ordered according to their AEI as challenges related to: (1) Political matters, (2) Construction market, (3) Reconstruction projects, (4) Internal transportation, (5) Stakeholders and (6) Project operational environment. However, the study of Richard et al. (2017) in Nigeria concluded that "Market-related factors" ranked first, "Project operational environment-related factors" ranked second, "Project-related factors" ranked third, "Stakeholders-related factors" ranked fourth and "Transportation-related factors" ranked fifth.

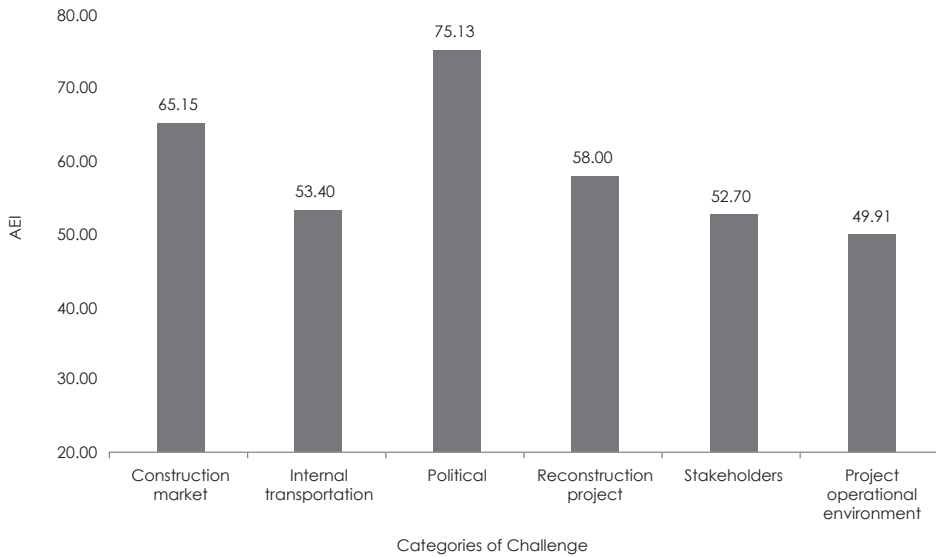


Figure 1. AEI of challenges categories

The first rank among the categories was positioned by the challenges related to political matters due to the extraordinary political situation of the Gaza Strip. The political situation in the Gaza Strip is complicated for many factors, including the political division between Gaza and the West bank, the blockade imposed on the Gaza Strip since 2007 and the restrictions on the movement of people and goods through land, sea and air. El-Sawalhi and Lafi (2019) stated that the Gaza Strip suffered from the difficult political conditions and a suffocating siege imposed on its inhabitants. Enshassi, Al-Hallaq and Tayeh (2019) reported that political pressure is one of the most failure causing factors affecting the PDHR in the Gaza Strip. The unstable political situation in Gaza, like closure of borders, created greater difficulties in obtaining the construction resources lead to suspension or termination of the entire project. This result is in line with Earnest (2015) who found that political challenges in Kosovo after the aggression in 1999 highly affected the progress of post-conflict housing reconstruction projects. Furthermore, Hidayat (2014) found that the political instability is a significant challenge associated with PDHR projects in Indonesia.

As shown in Table 2, the top four ranks were ordered as follows: (1) Difficulties to obtain permits from the Israeli side to flow the reconstruction materials into the Gaza Strip, (2) Insufficient funds for reconstruction efforts, (3) Refusal of the international community to contact the local de facto government in Gaza (Hamas) and (4) Shortage of resources. These challenges were recognised by the Gazans respondents as challenges with the strongest effect on resourcing the PDHR. On the other hand, the last two challenges were "Poor designs of some reconstructed houses; 27th" (EI = 37.70%) and "Inadequate experts or personnel for project monitoring, evaluation and control in some implementing organisations; 28th" (EI = 35%). However, the challenge of "Poor designs of some reconstructed houses" has a moderate effect and "Inadequate experts or personnel for project monitoring, evaluation and control in some implementing organisations" has a slight effect on resourcing the PDHR. Richard et al. (2017) found that the three main challenges hindering PDHR in Nigeria were positioned by "Inconsistencies in post-disaster housing policies; 1st", "Insufficient capacity of the construction industry; 2nd" and "Ineffectiveness in monitoring funds/corruption; 3rd" while "Existence of hostilities in the affected communities" and "Affected community's indifferent behaviour" ranked the last two positions. The following sections present the analysis results with detailed discussion of the significant challenges including the highest and the lowest according to their categories.

### **Challenges Related to the Construction Market**

This category has the second position among the categories of challenges with AEI = 65.15 (as shown in Figure 1), which has a strong effect according to the adopted scale. It included four challenges with EI ranges from 54.1% "Medium effect" to 73.25% "Strong effect". The results show that "Shortage of resources because of the high demand after disaster" ranked first in this category and fourth among the 28th challenges (EI = 73.25%, EL = SE). This challenge was followed by "sharp escalation in the costs of resources due to high demand" with EI = 70.93%, EL = SE, which had the fifth position among all challenges. However, "Competition among aid agencies for resources" was viewed to have the lowest rank in this category and 15th among all challenges with EI = 54.10%, EL = ME.

The findings show that "Shortage of resources because of the high demand after disaster" ranked first in this category and fourth among all challenges. The large devastation in the post 2014 aggression on the Gaza Strip created an imbalance between the demand and supply of the main resources needed for reconstruction. Alongside with the resulted imbalance, most of the construction materials are usually imported from outside Gaza, especially from Egypt and Israel, because Gaza lacks the capacities to produce construction materials. Nonetheless, the availability of resources in Gaza is driven by the frequent closure of borders, which encouraged the suppliers to monopolise the available construction materials in the post of 2014 aggression. Eventually, lack of resources greatly affected the progress of reconstruction projects. This result comes in line with El-Sawalhi and Lafi (2019) who stated that shortage of construction resources in Gaza highly increased their prices and affected the progress of construction projects.

Findings of Seneviratne, Amaratunga and Haigh (2015) also revealed that post-conflict housing reconstruction in Sri Lanka is mainly challenged by the scarcity of construction materials. Similarly, shortage of resources, such as



trained craftsmen and building materials, has been identified as one of the most significant challenges to the post-earthquake reconstruction in Nepal (Bothara et al., 2016). Furthermore, factors like the unavailability of skilled manpower and problems with material sourcing and supplies, affected negatively on housing reconstruction in post-earthquake in Gujarat, India (Bilau, Witt and Lill, 2015). In the aftermath 2008 Wenchuan earthquake in China, lack of materials availability, such as cement, brick and steel and labour scarcity created a major challenge for reconstruction progress (Chang et al., 2010c). Ismail et al. (2014) reported that shortage of resources was a challenge in post 2004 tsunami in Aceh and Sri Lanka and in post 2008 earthquake in Wenchuan. In the same manner, the 2006 aggression in Lebanon accelerated the brain drain, which intensified the shortage of human resources and as a result hindered the reconstruction efforts (Ginty, 2007).

### **Challenges Related to Internal Transportation**

Two challenges were included in this category namely, "High transportation cost of materials over a long distance" (EI = 53.60%, EL = ME) and "Inaccessibility to reconstruction sites due to damages to roads, infrastructure and services resulted from disaster" (EI = 53.20%, EL = ME). The respondents reported that both challenges have moderate effect on resourcing the PDHR. The average EI of this category was 53.40%, which showed that it has moderate effect, too. Challenges related to internal transportation was ranked as the fourth among the six categories of challenges.

### **Challenges Related to Reconstruction Projects**

This category was ranked as the third among the six categories with an AEI = 58%. The respondents assessed the five challenges included in this category to have strong effect and moderate effect. The strongest challenge was "Insufficient funds for reconstruction efforts due to donor fatigue because of the repeated aggressions on Gaza and destruction that keeps happening as a result". It was recognised to have a strong effect with EI = 81.83%, with positioning the second rank among all challenges. Furthermore, "Difficulties in resolving land issues after aggression", "Deficiency of proper planning resulted from rush for quick reconstruction", "Ineffective reconstruction policy with unclear goals of reconstruction project", "Poor designs of some reconstructed houses" challenges were perceived to have moderate effects on resourcing the PDHR.

"Insufficient funds for reconstruction" had the first rank in this category and the second rank among all challenges. Although the aggression of 2014 on Gaza was the most destructive in Gaza history, the reconstruction process was hampered due to insufficient funds. The 2014 aggression was the third on Gaza in less than ten years, which make the donors reluctantly donate money to Gaza due to the cycle of destruction and reconstruction. Barakat and Masri (2017) stated that numerous pledges were made to reconstruct Gaza after 2014, but much of the donations remain unfulfilled. Enshassi et al. (2010) reported that the poor political situation in Gaza discouraged donors to send their donations for the Gaza Strip projects. Meanwhile, the 2014 aggression was in parallel with other crises in the region like the Syrian crisis, where most of donors directed their

donations to these affected countries. In addition, shortage of resources after the end of aggression caused cost-escalation, which reduced the real value of aid funds in consistence with Fayazi et al. (2017). Enshassi et al. (2017) demonstrated that shortage of funding greatly impacted resourcing the reconstruction projects. Moreover, reconstruction activities after the 2006 aggression in Lebanon were challenged by the shortage of funds (Ginty, 2007). Alike in New Zealand, Wilkinson et al. (2014) confirmed that the insufficient funds affected the completion of reconstruction efforts. Ismail et al. (2014) affirmed the funding problem in the challenges facing the NGOs during reconstruction activities after the 2004 tsunami in Aceh, after the 2005 earthquake in Bam and after the 2008 earthquake in Wenchuan.

On the other hand, "Poor designs of some reconstructed houses" had the lowest effect in this category and ranked 27th of the 28 challenges hindering the resourcing for PDHR. This result contradicts the statement of Al-Qeeq and El-Wazir (2010) that the rushing for quick response after aggressions in Gaza may lead to the adoption of construction projects that are poorly designed. Most of housing reconstruction after the 2014 aggression was using self-help reconstruction approach, which mainly focused on participating the affected people in reconstructing their houses with a technical assistance from experts. Participation of the affected people in design of their reconstructed houses produced a high-quality design based on incorporating their requirements and desires. Moreover, the affected people in the 2014 aggression were keen to overcome the faults in their previous houses and improve their living conditions. Likewise, "Project design drawings" challenge did not greatly hinder the housing reconstruction after the 2004 tsunami in Indonesia and China after the 2008 Wenchuan earthquake (Chang et al., 2012a). Conversely, the study of Richard et al. (2017) in Nigeria ranked "Project design drawings" factor in the first position in the challenges related to project.

### **Challenges Related to Stakeholders**

The challenges related to stakeholders contained eight items as presented in Table 2. This category had an AEI = 52.70%, which was the fifth rank of the six categories of challenges. Two challenges, namely "Limited capacity of the local government which give external aid organisations a free hand to achieve their specific objectives and perspectives at reconstruction" and "Beneficiaries' corruption and lying to get more compensation" were assessed by the key people to have strong effects on resourcing the PDHR. However, "Limited capacity of the local government which give external aid organisations a free hand to achieve their specific objectives and perspectives at reconstruction" had a stronger effect with (EI = 70.08). This means that this challenge had strongest effect among challenges related to stakeholders. Besides, the other five challenges were identified to have moderate effects. Furthermore, the lowest EI in this category was for "Inadequate experts or personnel for project monitoring, evaluation and control in some implementing organisations" with EI = 35.00%, EL = SIE. This challenge was perceived by the respondents to have a slight effect on resourcing the PDHR. It is the lowest EI among all challenges, too (28th position).

The reason for that can be traced back to the following issues. In fact, implementing agencies of PDHR in the Gaza Strip continuously improve the skills of their employees through trainings and workshops to be up to date with

all recent topics. Moreover, reconstruction projects are usually implemented with international donation, which has a skilled team to monitor and follow up the reconstruction progress to continue the pledges. Similarly, UNPD and United Nation Relief Work Agency (UNRWA) have a skilled and experienced team in cooperation with the Ministry of Housing and Public Works (MHPW) to follow up the reconstruction projects. Furthermore, the repetitive aggressions launched on the Gaza Strip assisted in improving the skills of implementing agencies and enhanced their experiences especially in post 2014 aggression, which was the third in less than ten years. Interestingly, although this challenge has the lowest effect in post 2014 aggression, the reconstruction after 2008 aggression was hindered by two reasons; firstly, weak institutions capacities; and secondly, necessary skills for the complex and urgent reconstruction project are scarce (Al-Qeeq and El-Wazir, 2010). Likewise, reconstruction in New Zealand in the aftermath of the Christchurch earthquakes underlined a skills shortage in project management and site supervision (Chang-Richards et al., 2017). From the study carried out by Kennedy et al. (2008), it was found that the reconstruction in post-tsunami Aceh and Sri Lanka was mainly hampered by limited experience in housing construction.

### **Challenges Related to Project Operational Environment**

Lastly, the challenges related to project operational environment had an AEI = 49.91%; which was the last category among all categories of challenges. As shown in Table (2), this category included five challenges. These five challenges were assessed to have moderate effect on resourcing the PDHR. However, "Inadequate selection of the most vulnerable beneficiaries" had the highest EI in this category with EI = 54.53%, EL = ME. In contrast, "Cultural inappropriateness of reconstructed houses" had the lowest EI in this category with EI = 44.13%.

### **Challenges Related to Political Matters**

This category contained four challenges and was assessed to have the strongest effect on resourcing the PDHR in the Gaza Strip among all categories with EI = 75.13% (as shown in Figure 1). The respondents assessed the challenge of "Difficulties to obtain permits from the Israeli side to flow the reconstruction materials into the Gaza Strip" as a challenge with an extreme effect on resourcing the PDHR. It has the highest EI among the challenges related to political matters and among all other challenges with EI = 88.18%, EL = EE. Moreover, the other three challenges: "Refusal of the international community to contact the local de facto government in Gaza (Hamas)", "Repeated aggressions launched on the Gaza Strip which increase difficulties to quantify damages" and "Restrictions on the access to the damaged houses close to the borders" were recognised to have strong effect on the work of implementing agencies in resourcing PDHR with effect indices above 66.50%.

The first rank in political challenges is positioned by the difficulties to obtain permits from the Israeli side to flow the reconstruction materials into the Gaza Strip. The Gaza Strip is a besieged area, where all imports require permission from the Israeli authority. It enforces a strict monitoring and controlling mechanism on the construction material and restricts their amount, type and quality. As a

result, the Israeli government, in coordination with the Palestinian Authority and the UN, has established the Gaza Reconstruction Mechanism (GRM) to ease the entry of dual-use materials into Gaza for reconstruction like cement, steel bars and wood. However, this mechanism posed a challenge to reconstruction in the post 2014 aggression. Barakat, Milton and Elkahlout, (2019) and Barakat and Masri (2017) stated that GRM has institutionalised the Israeli blockade and limited the large-scale reconstruction. Ultimately, the reconstruction process, after the 2014 aggression in Gaza, was dominantly affected by the access to reconstruction materials. Similarly, Enshassi et al. (2017) and Bilau and Witt (2016) reported that PDHR is highly influenced by the difficulties in material procurement to Gaza in Palestine and Lokoja in Nigeria, respectively. This result is consistent with the study of Chang et al. (2011) who concluded that inadequacies of resource procurement is a main challenge following the 2008 Wenchuan earthquake in China. Further, Islam, Kolade and Kibreab (2018) also reported that access to resources exerts a significant impact in post-Sidr and post-Aila housing reconstruction in Bangladesh.

The second rank in this category was "Refusal of the international community to contact the local defacto government in Gaza (Hammas)" with EI = 75.95%, EL = SE. It also has the third position among all challenges. In the post 2014 aggression on Gaza, the Palestinian government in Gaza was led by Hamas. Hamas is a resistance movement described as a terrorist organisation by the Israeli community. Hence, the international donors rarely donate directly to the government in a belief that these donations might be used for other purposes than reconstruction. Barakat, Milton and Elkahlout (2019) confirmed that western donors had limitation to directly contact the Gazan Government led by Hamas. In the same line, Barakat and Shaban (2015) stated that Israel fears that Hamas would use reconstruction efforts as a pretext for rearming and rebuilding its defences on the ground. Qarmout (2017) also reported that many international civil society organisations refused to deal with the local government in Gaza in a fear of future punitive measures by their donors because of their cooperation with Hamas. This was in concordance with Ginty (2007), who found that reconstruction efforts in Lebanon after the 2006 aggression, were mainly challenged. This was because of the limited political allegiance and inefficiency of the Lebanese government.

## CONCLUSION AND RECOMMENDATIONS

PDHR projects are susceptible to several resourcing bottlenecks. It is advisable to identify these challenges to incorporate them in the reconstruction process. Very little researches have been conducted on the difficulties hampered the resourcing for PDHR in the Middle East. Based on questionnaire surveys, this article determined the EI of 28 challenges to identify their EL on resourcing and their ranks. These challenges were categorised into six categories related to: (1) Construction market, (2) Internal transportation, (3) Reconstruction projects, (4) Stakeholders, (5) Project operational environment and (6) Political matters. Challenges related to political matters are found as the strongest effect category on resourcing in the studies area. The major challenges hindering the resourcing for PDHR were: (1) Difficulties to obtain permits from the Israeli side to flow the reconstruction materials into the Gaza Strip, (2) Insufficient funds for

reconstruction efforts and (3) Refusal of the international community to contact the local de facto government in Gaza. The effect of the aforementioned challenges on resourcing the PDHR could be mitigated.

The implementing agencies are recommended to precisely predetermine the required quantity of reconstruction resources; and to assign priorities for reconstruction projects in post the aggression to decrease the high demand on resources. Further, there is a need to enact policies to regulate the construction market after the aggression by the governmental agencies to mitigate the resources monopoly. The sensitive political situation of Gaza Strip stressed the need of subcontracting parties like UN agencies and NGOs to implement the reconstruction process in coordination with the governmental agencies. Implementing agencies of PDHR are also recommended to adopt the self-help reconstruction approach to produce houses with high quality and well designed. It is advisable to establish an efficient monitoring mechanism to track the funding provided for reconstruction projects by implementing agencies. They are also recommended to continuously improve the skills of their employees through different training sessions in construction management in order to keep them up to date with all innovative approaches in management. Finally, there is a need to adopt the learning cycle by implementing agencies to focus on the failure factors in previous experiences and extract lessons for the future and effectively manage the PDHR process.

This article confirms many of the challenges mentioned in the previous studies. However, it highlighted the significant challenges facing the implementing agencies in resourcing the PDHR in the Gaza Strip. Further, findings of this article are useful for implementing agencies to develop strategies to address the significant challenges in future projects in the Gaza Strip. Based on the findings of this study, future studies can investigate the challenges from the beneficiaries' perspective, investigate other challenges affect the resourcing for PDHR in the Gaza Strip and create a roadmap to be followed by reconstruction practitioners to remove the hinders of resourcing the PDHR. In addition, future studies can broadly investigate challenges using qualitative approach through interviews with both of implementing agencies and beneficiaries of PDHR.

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