# Weaknesses during the disaster response management resulting from war operations and terrorism in Iraq

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ABSTRACT

Weaknesses in responding to disasters can increase the vulnerability of the people and cause damages to the property. Before tackling such weaknesses, it is important to identify these weaknesses in order to improve the immediate response process which will ultimately minimise the loss of lives and damage to property, and will in turn enhance disaster response practices. The purpose of this paper is to discuss the weaknesses of disaster response management in the context of Iraq. This paper presents the findings of an evaluation conducted on the disaster response management resulting from war operations and terrorism in Iraq. Both primary and secondary data have been reviewed through a multi-method qualitative research approach. Primary data has been gathered through intensive interviews with executives responsible for disaster response in the Iraqi General Directorate of Civil Defence, which is the main organisation responsible for responding to disasters in Iraq. Eleven weaknesses are identified in this paper, and linked to the four key components of effective disaster response management; namely, policy and administrative decisions, actors, operational activity, and technologies. The weaknesses identified are related to lack of resources, poor planning and coordination, poor distribution of resources, lack of awareness and education, unplanned development and attitudes and culture of local citizens. Weaknesses of disaster response lead to delays in the immediate aftermath of the disaster, hence the response is often fragmented, inefficient and ineffective leading to increased number of casualties and deaths.

## 1. Introduction

With the increasing threat of terrorism, there is an ever-greater need to prepare for the unexpected [33]. Disaster response is regarded as the most critical phase in the disaster management life cycle [22,4], because a delay of a minute can cost a number of lives. In agreement, Hofmann et al. [25] stress that an efficient, effective, and flexible process execution in disaster response management is crucial to the safety and survival of systems, people, and properties. Further, Hale et al. [22] encourage a distinct research effort, due to the unique environment present during disaster response, such as stress, time pressure, and immediate risk of significant loss. Arora and Arora [3] added that first responders must have an awareness of what to expect during suicide attack events along with their specific security, safety and management considerations. An understanding of the threat posed by explosive devices specifically targeting first responders is considered a key to such awareness, as the most important aspect of responder knowledge is awareness of the threat of such devices. In addition to that, the most important initial steps in suicide attack responses are

ensuring that the threats on scene have been neutralised [3].

Based on the measurements of the Global Terrorism Index, Iraq suffers the highest impact from terrorism [27] as shown in Fig. 1. Within the context of Iraq, Goodyear [19] and Humayun and Al-Abyadh [26] found that disaster response have a traditional reactive nature. As a result of the war and post-war conflicts, essential services that are needed to manage hazards, reduce risks and respond to disasters have been crippled in Iraq [26]. In addition to that, the post-war transitions in Iraq have affected the institutional capacities of the state to respond in an efficient manner. Accordingly, the focus of this paper is on the response stage of war operations and terrorism in Iraq. There is a dearth of research on the impact of current disaster response management in Iraq although this would have significant benefits in addressing the problems in disaster response. Accordingly, this paper examines weaknesses within the disaster response stage, the stage that involves the immediate minutes, hours, days, or weeks after the disaster is triggered while significant risk of immediate damage is still present.

The paper is structured as follows: Firstly a literature review has been provided about man-made disasters, disaster response and

Fig. 1. Top nine countries with the highest impact from terrorism as measured by the GTI [27].

**Table 1**
Top 10 countries ranked by terrorism Risk, 2010 [10], p. 118.

| Rank | Country |
|------|---------|
| 1 | Iraq |
| 2 | Afghanistan |
| 3 | Pakistan |
| 4 | Somalia |
| 5 | Lebanon |
| 6 | India |
| 7 | Algeria |
| 8 | Colombia |
| 9 | Thailand |
| 10 | Philippines |

management in the context of Iraq. Secondly, the research methodology adopted has been discussed, and, thirdly, the findings that emerged from the primary data were presented, discussed and analysed revealing the weaknesses of disaster response management in Iraq. Finally, the conclusions are drawn.

## 2. Man-made disasters in Iraq

The frequency of man-made disasters has increased in the recent past, especially after the 1980s [1]. According to Haigh and Amaratunga [21] undoubtedly disasters of human origin have affected many people in the last decade. Wars often result from conflict in some regions, for example, Somalia, Afghanistan and Darfur and losses from such wars exceed or match the losses from "natural" disasters [21].

It is complicated to define terrorism as disaster as it is difficult to establish at what point a terrorist violence become a disaster. The level of destructions made by terrorism violence has increased in the recent past. Thus, the shift to mass casualty and mass destruction attacks by some terrorist organisations has increased the potential for disaster and fundamentally changed the nature of the hazard [42,43]. Terrorism is often defined as those acts intended to create fear or "terror", typically deliberately targets civilians or "non-combatants," may be practiced either by informal groups or nation states, and is usually perpetrated to reach certain goals which may be ideological, political, religious, economic, or of some other nature [23], p. 66. McEntire [34] defined terrorism as "the threat or use of violence to intimidate someone or a government. The perpetrators usually have ideological motives and a political objective to reach". Council of Foreign Relations [11], pp. 118–119, have grouped terrorism into six major categories as nationalist, religious, state-sponsored, left-wing, right-wing and anarchist. Moreover, conflicts cause disasters related to terrorist actions such as in the countries of New York and Washington (2001), Madrid (2004), Bali (2005), London (2005) and Sri Lanka. Consequently, Haigh and Amaratunga [21] emphasised that military conflict and actions carried out by terrorists should be placed within the context of wide-ranging disaster planning. There has also been some discussion among researchers regarding the behavioural response to disaster as applicable to large-scale destruction and acts of terrorism [14–17].

It is widely believed that the world has changed forever after the events of 11 September 2001. Waugh and Streib [44] further states that emergency management has also changed since 9/11 and the catastrophic hurricanes of 2004 and 2005. It has become a more dangerous and uncertain place, and no-one is safe or immune from the threat of terror. Terrorism is the most salient hazard due to a remarkable upsurge

in terrorist acts during the past decade [11,14–16]. Similarly, McEntire [34] considered terrorism as one of the most deadly civil/conflict risks throughout history, and has unfortunately become even more pronounced in the past few years.

With regard to Iraq, the situation is not an exception. As shown in Table 1, Iraq was ranked number 1, out of the top 10 countries most at risk of terrorism. It is generally believed that Iraq contains many terrorists and terrorist organisations [15].

Violence in Iraq has also become normalized, ranging from the Iraqi and US military assaults and sectarian militias, threat of suicide bombings, to violent street crime [45]. Arora and Arora [3] noted that it is important to briefly mention the threat of a radiological or chemical attack being integrated into a suicide bombing. Though these have not yet been used with success, it has been attempted in bombings in Iraq using chlorine tankers. According to Hafez [20], 443 suicide attacks took place in Iraq between 22 March 2003–20 February 2006. Moreover, due to the development of insurgency after the US led invasion in March 2003, the lethality of suicide attacks increased. According to the statistics from the [37], more than 60,000 people were killed and injured in terrorist operations in 2006, mostly because of the attacks on 22 February 2006 in Samarra on the holy shrines of Ali Al-Hadi and Hassan Al-Askary, which are sacred to the Shia people. This attack led to a significant increase in tension between Shia and Sunni Muslims in Iraq. Consequently, there was a significant increase in the number of killed and injured in terrorist operations throughout 2006, 2007 and thereafter. This number has also increased to more than 40,000 people that have been killed or injured throughout 2014, 2015 and the first half of 2016, due to the war against the so called Islamic State, and particularly after the fall of Mosul in June 2014.

## 3. Disaster response in Iraq

Although appropriate actions at all stages in the disaster management cycle lead to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters [41], the response phase is considered as one of the critical phases in the Disaster Management life cycle [22,4]. It is widely acknowledged that minutes of delay in disaster response can cost lives and property, so effectiveness and efficiency is typically essential when responding to disasters. The ability to save lives, protect the public, limit damage and restore normal conditions will depend on the existence of adequate civil protection [2]. In order to avoid actions that are impulsive and possibly counterproductive speed of response should be balanced with intelligent assessment and good planning [31].

According to the Emergency Management Australia [13], p. 32 response is an "action taken in anticipation of, during, and immediately after an emergency to ensure that its effects are minimised, and that people affected are given immediate relief and support". Further, the unique environment present during disaster response such as immediate risk of significant loss, time pressure, and stress requires knowledge and awareness to save lives and property [22].

Perry and Lindell [36] argue that whilst it is possible to use the general basic structures of disaster response management, in terms of using the planning knowledge, terrorist incidents are very different to other types of disaster, having unique aspects which need to be considered in the response plans. In agreement to this Waugh and Streib [44] state that with the addition of terrorist threats, unnatural hazards present special problem for emergency responders. The disaster response management after a terrorist violence is quite challenging due to the unclear nature of terrorism. Regarding the effectiveness of the organisational response to disasters, Fischer [15] presented three factors which affect the organisational response, namely: the extent to which emergency plans are rehearsed; the degree of prior disaster experience; and the level of prior planning. As it is very difficult to predict the act of terrorism and do prior planning, achieving the said factors to improve the effectiveness of the response is really challenging in this context. The nature of terrorist acts in Iraq is evidently in the form of sequential suicide bomb attacks. This nature along with the weaknesses associated with disaster response management in Iraq pose further challenges in responding effectively.

Accordingly, based on the aforementioned literature, characteristics of the disaster response stage, requirements and expectations of disaster management can be synthesised as shown in Fig. 2.

Historically, in Iraq, response to disasters has largely remained ad-hoc and reactive in nature [26]. As humanitarian crises become more complex, with new and varied actors on the ground, strong partnerships and collaboration between experts, organisations, and disciplines are necessary to build capacity especially for the disaster response stage in Iraq.

Goodyear [19] claims that a comprehensive and coordinated disaster management plan is lacking in Iraq, which includes a risk analysis based on an examination of hazards, vulnerabilities, and capacities of local communities. The need for stronger infrastructural and technical capabilities within the Government of Iraq and other disaster risk reduction stakeholders is imperative to plan for an effective response to future disasters in Iraq.

Humayun and Al-Abyadh [26] emphasise that serious shortcomings have been revealed in the disaster risk reduction plan relating to legal and institutional arrangements in Iraq. At the governorate tier, disaster response management is traditionally operated based upon conventional experience. Moreover, the institutional setups as well as the laws are poorly equipped to respond to diverse types of disasters. It further emphasises that the lack of standards and criteria for assessing cases of disasters is considered one of the most significant weaknesses in Iraq's existing disaster legislation. In particular, existing legal and institutional systems are ill-equipped to assess and respond to multi-hazard risks [26].

Iraq has traditionally followed a relief- and response-oriented approach to disaster risk management and the existing institutional architecture is focussed on such activities, even though there is no focal agency at the national or governorate level to coordinate and integrate the multiple disaster risk reduction related roles of various institutions [26]. The institutional structure consists of several organisations such as Prime Minister's Office (PMO), National Operations Centre (NOC), Ministry of Environment (MOENV), Ministry of Displaced and Migrants (MODR), Inter-Ministerial Committee on Disaster Risk Management, Directorate General of Civil Defence and Governorate Emergency Cells (GEC), all of these will be responsible in disaster response rather than planning [26].

Despite the number of institutions involved in disaster response, the Directorate of Civil Defence which is working under the Federal Ministry of Interior, can rightly be termed as the focal response agency [26] as this is the main administrative directorate which acts as the main responder during disasters resulting from war operations and terrorism in Iraq.

This above discussion clearly indicates that the effective response to disasters is a complex challenge for the responders, and a proper evaluation of the current system and practices would help to identify the gaps and to enhance the system to provide an affective disaster response.

## 4. Research methodology

In order to identify and evaluate the weaknesses of the disaster response stage, 28 intensive semi-structured interviews were conducted. All the respondents were executives responsible for disaster response in the Iraqi General Directorate of Civil Defence which is the main organisation that is responsible for responding to disasters in Iraq. The interviewees were selected based on their rank, knowledge, experience, and involvement with disaster response management. Interviews were conducted from Lieutenant Colonel military rank, which is a senior rank in the Directorate, and above. The interviews were conducted in Arabic and translated and transcribed into English.

Conceptual content analysis has been used to analyse the interview data. The use of conceptual content analysis helped to extract the themes related to the weaknesses of disaster response management in Iraq. A multiple stages approach was used to code the transcriptions, where the key themes were identified using open coding, then categorised using axial coding and further supported by using statements from the transcripts by using a selective coding process. The data analysis was supported by Nvivo 11 software for easy management and execution of content analysis. Moreover, to enhance the reliability and to triangulate the data, the existing information in archival records and
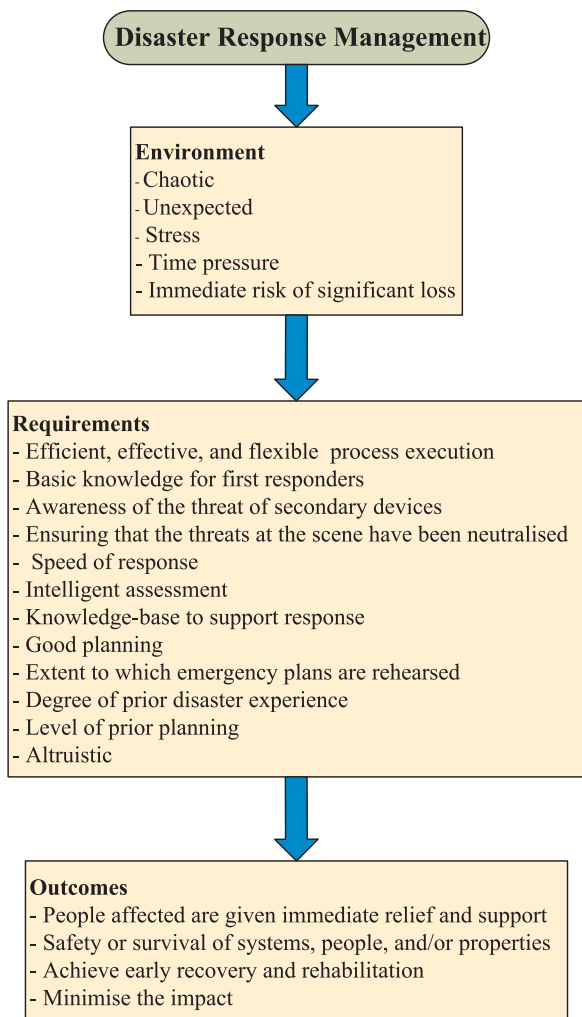
**Fig. 2.** Key points in disaster response management (based on secondary data).

**Disaster Respose Management in Iraq**

| Name | Sources | References |
|---|---|---|
| Weaknesses | 27 | 330 |
| Citizens' Irresponsible Intervention | 16 | 21 |
| Lack of Effective Coordination between Organisations | 6 | 7 |
| Lack of Effective Education on Disaster Risk | 16 | 37 |
| Poor Planning Process | 19 | 51 |
| Poor Provision of Equipment, Tools and Infrastructure | 18 | 51 |
| Poor Security Situation | 23 | 41 |
| Road Congestion | 21 | 38 |
| Unplanned and Random Development | 12 | 29 |
| Weak Financial Resources | 20 | 28 |
| Weak Human Resources | 12 | 15 |
| Weak Supporting Ordinances | 7 | 12 |

**Fig. 3.** Nodes for weaknesses during disaster response management.

documents were reviewed.

## 5. Findings

This section discusses the main findings of the research in terms of weaknesses of disaster response management in Iraq. These findings cover both the weakness that are internal to the directorate and other external challenges they face. The findings presented in Fig. 3 are based on the primary data gathered from interviews and a documentary review.

### 5.1. Citizens' irresponsible intervention

Disaster response planning is only as good as the assumptions on which it is based. However, some of these assumptions are very difficult to imagine, particularly when it relates to citizens' intervention at the scene and the consequences of such an intervention. The culture of the community in Iraq is such that they tend to help people during difficulties. Interviewees referred *"lack of knowledge and understanding about the disaster risks"* among the people who try to help during disasters have make the situation difficult for effective disaster response. For example, interviewee E11 mentioned: *"It is difficult to contain the chaos during the incident because of the irresponsible intervention of citizens"*. This affects proper implementation of the disaster response plans. Further, this intervention can be attributed to security breaches and to the failure to impose a proper security cordon by local police (E4, E11, and E20). Interviewees E4 and E20 believe that citizens' intervention can be exploited by suicide bombers or terrorists, who could cause dual or sequential bombings.

### 5.2. Lack of effective coordination between organisations

It is widely acknowledged that to conduct an effective disaster response, proper inter-organisational coordination should be considered. As stated in Joint Emergency Services Interoperability Programme (JESIP) [28] co-location, communication, coordination, jointly understanding risk and shared awareness are the five major principles in interoperability in emergency situation. However, interviewees E4, E13, and E14 stated that lack of coordination between the responding organisations as a weakness during disaster response. Such a failure might lead to other problems such as *"overlapping in responsibilities with other organisations"* (E14) and *"intersections between the executive authorities"* (E13). These intersections have a negative impact on plan implementation when responding to any disaster. The documentary review upheld this view stating that, on the subject of disaster, there

was weakness of the mechanisms of coordination between the federal ministries and local governments [9]. Similarly, Planning Department [38], within document analysis, attributes this failure to the limited attention that has been given by organisations and institutions in terms of preparing a disaster response plan.

### 5.3. Lack of effective education on disaster risk

In disaster situations, education is an integral part of the planning and provision of the humanitarian response, as lives can be sustained and saved by providing quality education. Such education can give physical, psychosocial and cognitive protection to learners. In Iraq, education on disaster risk still needs improvement. Enabling the staff to complete their studies or enabling staff to attend courses outside the country would be a major contributing factor to improving education, as highlighted by the interviewees. Because of this restrictions, *"Knowledge about work and how to deal with orders and instructions is absent",* as interviewee E11 mentioned. Moreover, it might reduce the possibilities for staff gaining knowledge and exchanging information and experience from other countries. Interviewee E20 adds that one of the weaknesses of disaster response in terms of staff education is *"the failure of staff being educated about the importance of periodic maintenance of machines and equipment"*. This failure causes delays in the implementation of the response plan, thus, education becomes an integral part of the response process, collaboration and coordination process, between educators and other disaster sectors. It is vital that there is an adequate collaboration so that delays are minimised and in turn, an effective response is provided. Also, there is a lack of citizens' awareness with respect to the Civil Defence (E4). Interviewee E17 emphasised that lack of citizen awareness is because of *"the subject of civil defence is not covered in the curriculum as it was in the past"*. As a result, based on interviewee E4's responses, citizens' awareness has a significant effect on the response process, particularly with respect to Civil Defence. Such awareness makes implementing response plans very difficult in reality. Despite school students, employees in organisations and projects having training on the acts of the civil defence [38], such training does not cover all segments of society.

### 5.4. Poor planning process

According to Planning Department [38], within document analysis, since the concept of disaster management is a new idea in Iraq, it needs political support to include it in future programs and plans. Based on interviewees E1 and E10, sometimes the plans are unenforceable and cause confusion due to the *"lack of understanding of what has been*

planned" (E3). Moreover, interviewee E8 pointed out the "ignorance of the importance of planning" by key officials, besides the fact that there is a "failure in adopting long-term plans". As a result, there is weakness in the implementation of such a plan. This view was also supported by Committee 101 [9], within document analysis, which stressed the weakness in contingency planning for disaster risk reduction.

Planning Department [38], within document analysis, state that there is a lack of study of, and documenting of, the previous experiences for the purpose of re-using them in program development. This lack of feedback on planning was considered as a weakness from experts' perspectives.

The amendments to the plans are made on a regular basis, however the process is very centralised and only the General Directorate of Civil Defence has the authority to make changes, which leads to oversight of any important amendments that could otherwise be made by junior managers in planning.

To obtain a flexible response to a wide range of disaster scenarios, generic plans for evacuation and shelter should be developed. Within this context, interviewees E2, E17, E21, and E25-E28 brought up a new weakness point for the planning process regarding public shelters, saying that there was a "lack of planning for public shelters". Interviewee E17 explained that there are basically no public shelters in any Iraqi cities except in the capital city Baghdad, and these shelters have suffered from neglect. Interviewee E17 declared that the Iraqi General Directorate of Civil Defence and all its branches depend on private shelters in the planning process.

It is widely acknowledged that an early warning system affects the success of disaster response operations. Therefore, disaster response planners, in Iraq, try to achieve such an important response function by disseminating early warnings covering all the areas of Iraqi cities. But in reality, despite the completion of the first stage of early warning systems in all Iraqi city centres, interviewees were agreed that there is a weakness in implementing it. The document analysis from Committee 101 [9] also concurs with this point. Accordingly, disaster response planners plan to disseminate warnings in rural areas using mosque speakers and ambulance sirens. This might hinder people that are further away – they may not hear the warning sound and thus become more vulnerable.

### 5.5. Poor provision of equipment, tools and infrastructure

In order to meet the disaster response demands, resources including personnel, materials, equipment and facilities should be identified. If equipment, tools and infrastructure are not considered in the response plan, then the response is likely to be weakened. Despite this, there is a shortage in a lot of heavy rescue equipment and infrastructure of the General Directorate of Civil Defence and its branches distributed in the country. According to interviewee E7, there is a "limited capacity and supply for the civil defence, such as a lack of boats, aircraft, and heavy rescue equipment and limited only on light rescue equipment". During the immediate response, "The lack of heavy rescue equipment (E6, E17, E19, E20, and E22-E28)" is considered an important weakness for this important stage. Such shortage might also be because of the late arrival of the supporting rescue machines from relevant organisations.

A quicker response is promoted by careful planning, particularly planning for civil defence infrastructures or centres, since there has been urban expansion and population growth in the past 15 years in Iraq. Despite building modern infrastructure, the problem of "scarcity of civil defence infrastructure" (E12, E18, and E20) is still a weakness in the Directorate of Civil Defence and its branches distributed in the country. This point was supported by document analysis, indicating that 63 civil defence centre buildings will be required in the future if we adopt a building for every 100,000 people, whereas Baghdad currently has only 27 centres of which 11 need to be rebuilt. This leads to a deficit total of 36 buildings.

Most of the interviewees stressed the shortages in the fire nozzle networks as a problem leading to inefficient response. Document analysis confirmed this point where the total number of fire nozzles in the province of Baghdad is about 1550 but only 947 are in working order and the rest are faulty.

### 5.6. Poor security situation

In disaster situations, delays of minutes can cost lives and property, and this is compounded in a poor security situation. Therefore, responders aim to deliver the response within a few minutes. According to disaster response plans, disaster responders cannot intervene before conducting security checks at the scene. In reality, since there is a lack of such devices, combined with their naturally altruistic nature, they respond without securing the scene, and this can potentially lead to more problems, which causes the response plan to be unenforceable. Based on experts' opinions, dual or sequential bombings increased significantly because of security breaches, due to the lack of effective checking devices. Such an increase led to a dramatic rise in casualties in the responders' teams, for instance more than 60 responders were killed during 2006 and 2007 [18]. Moreover, due to the absence of a sense of security and limited actions being taken to move the citizens away from the high risk sites by local police, there is a lack of awareness about the perpetrators as well as about the time and place of the explosion, which in turn lead to further chaos and ultimately losses. Interviewee E4 added, "Because of a security breach due to the lack of effective checking devices, dual or sequential bombings were increased significantly". In agreement, Planning Department [38] within document analysis, state that the weakness of security and political instability are major challenges facing the Iraqi General Directorate of Civil Defence. Similarly, the documentary review supported this view, arguing that large numbers of displaced people and refugees overwhelm the helping capacity of the government in general and the Iraqi General Directorate of Civil Defence in particular [9].

### 5.7. Road congestion

Globally, disaster response plans have the aim of reaching the scene and responding within a few minutes. But in Iraq, this aim is difficult to achieve because of traffic jams, particularly in Bagdad. According to experts' opinions, the defect in urban planning, road maintenance, and security blocks are undoubtedly considered the major causes of traffic jams in Iraq. Moreover, the multitude of concrete barriers and security checkpoints impede fire engines and responders' teams reaching the scene smoothly and quickly. The interviewees are also of the opinion that a lack of coordination between service departments and security agencies is a crucial factor causing this problem. Further, interviewees E3 and E17 gave an important reason for the delay in the arrival of the disaster responders' team at the scene: "weakness of public awareness which results in not making way for fire engines".

### 5.8. Unplanned and random development

Urban and regional planning provisions should be taken into account by planners when planning for a disaster response, particularly concerning the dangerousness of the place and the location of critical facilities. One of the major problems that have hindered the responding process to meet the global standard time to respond to a disaster is unplanned and random development of buildings. Since 2003, Iraq has been suffering from different types of poor urban planning such as "random housing, factories, and shops" (E17). The Urban Planning Department [40] concluded that many roads and hard shoulders, which are only to be used in an emergency, are overrun by popular markets, which sometimes lead to the complete closure of the main streets and this affects the smooth flow of traffic and doesn't allow access for civil defence teams getting to the scene of the accident in good time. The Urban Planning Department [40] add that, the proliferation of street

vendors, most of whose stalls are flammable, causes expansion of any fire which then spreads to other places. Consequently, a new challenge of lack of passable roads to reach the scene has been generated as a result from the aforementioned problem. In addition, there is a programmed cut-off of national electricity, which sometimes means that electricity is only on for 2 h a day. To cope with this deficit, illegal access to the national electricity grid is in evidence. Random wiring for Semi-Generic Generators, which is defined as machines owned by citizens that locally produce electricity, cause further trouble during disaster response, as fire engines cannot access the scene safely, smoothly and quickly, therefore, the response team cannot implement the response plan strictly, particularly in terms of time and safety. The Urban Planning Department [40] confirm these challenges, stating that connecting electric wires randomly leads to increased loads on the national electricity grid in addition to the formation of spider grids of electric wires. This causes fires, which can spread rapidly in the popular markets.

### 5.9. Weak financial resources

Disaster response management comprises the allocation of resources, especially budget and personnel. Budget allocation should be commensurate with the role of every department within its jurisdiction. Expertise shows that it is very important to have adequate financial resources for responding properly to disasters. Interviewee E3 mentioned that the *"lack of financial resources and the power to allocate such resources effectively led to the failure to implement some of the tasks included in the plan, which had negative effects on the speed of completion of duties"*. Despite having an independent budget allocation for disaster, mobilisation of such financial resources is limited. Therefore, the Iraqi General Directorate of Civil Defence is suffering from limited financial resources. This view was also supported by document analysis. According to Planning Department [38], there is a need for material capacity building as well as a need to allocate the budgets for disaster management. This requirement is due to an increase in the financial resources necessary for the implementation of a risk reduction programme.

In terms of an emergency budget, some of the interviewees believe that the financial process is hampered by the ability to authorize payments and limited by the amount of money that can be allocated. According to Planning Department [38], within document analysis, the presence of red tape and the large number of committees is considered as a major challenge to the allocation process. In addition, a lot of financial problems regarding employees' allowances (overtime, transportation, and danger) might deter staff performance whilst responding to disasters. Consequently, staff might not fulfil their roles according to the plan.

### 5.10. Weak human resources

According to interviewees' opinions, lack of specialised staff is an important problem facing the response process. Interviewee E3 went on to assert that there is a *"lack of specialised staff in the field of civil engineering and statistics"* within the planning department. Most of the interviewees E3, E6, E14, and E17–E28, noted that the lack of specialist and ordinary staff is considered to be a huge problem when compared with the annual planned staff number. Staffing shortages are attributed by interviewee E18 to *"ill-considered decisions that adversely affect the implementation of the plan"*. In addition, the existence of permanent employees who are unfit to work, referred to as 'medically classified', causes a burden on the Iraqi General Directorate of Civil Defence, as often these staff are not effective in their roles. According to the statistics, there were just over 500 employees who are unfit to work, and therefore could not respond to any event. They could only do administrative and clerical work. Consequently, this leads to further challenges to the response process.

### 5.11. Weak supporting ordinances

Power allocation is considered one of the important components of responding process. To ensure an integrated response, every organisation within the jurisdiction needs to recognise its role when the disaster occurs to avoid conflicts. In Iraq, according to interviewee E21, the present legislative system is too complex. This probably leads to conflicting mandates and overlapping jurisdictions among multiple institutions when responding to the disaster. Although the Civil Defence Law No (44–2013) is considered a strength point, the deactivation of some important sections such as the law regarding teaching the civil defence curriculum is considered a weakness. Since this might cause lack of public awareness, which is considered one of the huge weaknesses facing the planner and the disaster responders alike. However, Civil Service Act No. 24 of 1960 ensures employees' rights to travel outside Iraq or to complete their study, yet staff face difficulties in obtaining approval from the Minister to travel outside Iraq, and the approval might take more than a year. Regarding organisations' awareness of the laws, interviewee E14 touched on this point as follows: *"There is a lack of awareness of the detail of the law by the various organisations preventing them from working up to their specialisations"*. This leads to a fragmented response capacity. Consequently, more difficulties are experienced during the responding process, and thus this reduces the quality and the speed of response to the disaster.

The document analysis from Committee 101 [9] strongly believes that there is a lack of a legal framework for disaster risk reduction, lack of clarity in the mechanisms of the declaration of emergency in the disaster areas, and state structural changes after 2003, are all reflected in the poor laws and regulations relating to disaster management.

## 6. Discussion

Having evaluated the weaknesses from the empirical investigation, Fig. 4 shows the current situation of disaster response management in Iraq, supported by key evidence from both primary and secondary data.

Iraq currently has a difficult environment and there are particular circumstances that are pertinent, such as the culture of the Iraqi society, in terms of being willing to attempt to help and save victims without knowing how to best to respond, which ultimately compounds the initial disaster. Conversely, in western societies, citizens often act rationally in disaster situations as they do in everyday life to save most of the victims by providing the initial aid or materials to help [24]. With some proper education on disaster response management, the intervention from Iraqi society in responding to disasters could be made more effective. Further, irresponsible interventions may be due to the failure in imposing a proper security cordon. In the UK, cordon access was also a problem on the actual day and the day after the blast in the Manchester city centre bombing in 1996, as people disregarded the cordon. However, the appropriate authority resolved this situation by imposing strict controls for those who wanted to enter [6]. However, in Iraq the attitude of citizens towards adhering to such controls is changing at a slower rate compared to countries like UK. Further, recent crises and disasters have shown that it is difficult for policy makers to respond to citizens' reactions to crises [35]. But in Iraq, rules must be established to make the citizens obey the cordon system in order to minimise the problems led by irresponsible interventions. As mentioned within the findings, this is closely related to the lack of knowledge and awareness about disasters among citizens. Not covering civil defence materials in the curriculum at all education stages further contributes to the lack of public awareness. Similarly in Turkey, despite offering education on disaster risk in primary and secondary schools, there is no systematic educational and training program developed for the general public [5]. The Emergency Management Australia [13] reports that to cope with the impact of emergencies, the community's ability depends mainly on whether it has prepared plans and programs for prevention, mitigation, preparedness, response, and recovery. The empirical
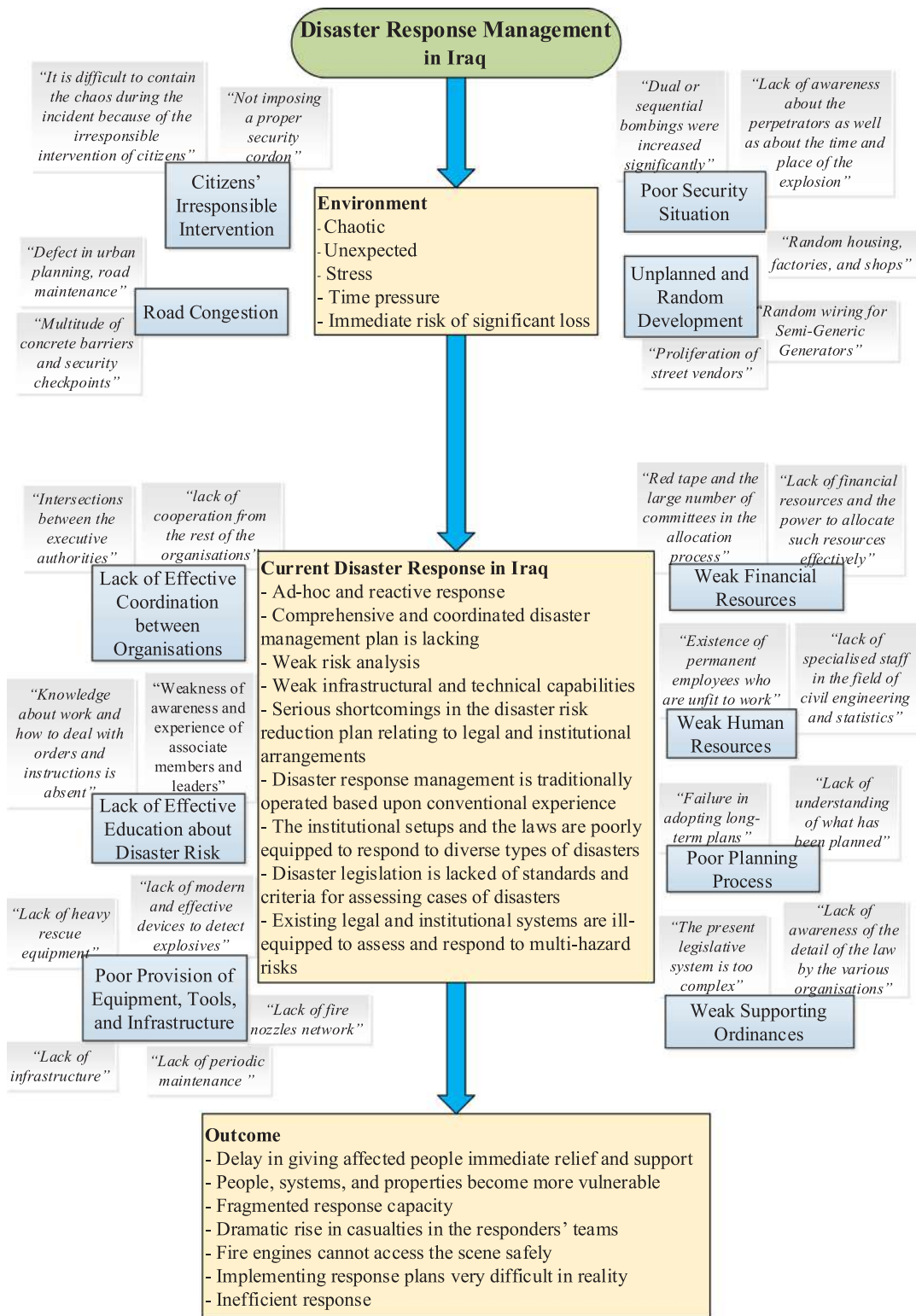
**Fig. 4.** Current disaster response management in Iraq.

findings revealed that community preparedness training and community capability audits are weaknesses in the current disaster response system in Iraq. This point was supported by Desforges and Waeckerle [12] who stated that, unfortunately, community drills may occur rarely, may not check the plan and the participants effectively, and may create a misplaced sense of security. Further, Desforges and Waeckerle [12] put stress on experience, because it is a key element in the success of a response.

The empirical evidence also showed that lack of effective coordination between organisations as a major challenge facing the disaster response process in Iraq, due to intersections and overlaps that occur in responsibilities of such organisations. Similar to the findings of the primary data, many scholars see the lack of coordination between organisations as a significant problem which hampers the response process. According to Humayun and Al-Abyadh [26], conflicting mandates and overlapping jurisdictions due to multiple institutions might

lead to a fragmented response capacity. Similarly in Taiwan and the US, Chen et al. [7], Lindell et al. [32], and Lindell and Perry [30] have a similar findings, stating that although communities were only allowed to participate in the planning process, other agencies were not involved in it. As a result, the Disaster Prevention and Response Operational Plans (DPROPs) have become reports on bookshelves. Further, many supporting agencies did not know their roles in the disaster management mechanism.

One of the weaknesses in the General Directorate of Civil Defence in Iraq is the shortage of heavy rescue equipment and infrastructure which is vital to respond quickly and smoothly to disaster. Due to the nature of sequential bombing in Iraq, allocating appropriate resources to effective response has become a difficulty. Goodyear [19], confirms this point, indicating that to plan for the mitigation and adequate response to future crises in Iraq, the need for stronger technical and infrastructural capabilities by the Iraqi Government and other disaster risk reduction stakeholders is imperative. Perry and Lindell [36], agree with the aforementioned view, stating that in order to meet the emergency demands, resources (personnel, facilities, equipment and materials) are needed by emergency response organisations. Therefore, the planning process needs to identify the demands that a disaster would impose upon those organisations. However, in the USA, one of the least understood problems in public management is the effective mobilisation of a response to extreme events on a large scale [8]. Further et al. [29] upheld this point, stating that local first-responder resources are often overwhelmed by large-scale emergency incidents, such as acts of terrorism, human-caused accidents, and acts of nature.

In Taiwan, the local government did not have enough budget to perform all four phases of disaster management, according to Chen et al. [7]. Meanwhile, in Turkey, strong financial resources are needed by agencies responsible for disaster risk reduction activities. Such resources become inadequate when distributed between several units [5]. Whilst in the USA, a major obstacle that has hampered emergency responders was their funding. Such funding was stalled and side-tracked due to three reasons: the slow distribution of funds by federal agencies, a politicised appropriations process, and bureaucratic red tape at all levels of government. Compared to all of these, Iraq has a better budget allocation as evident from the empirical findings, however mobilisation of such financial resources is a challenging and time consuming process. Therefore, despite the budget allocation, Iraq is still suffering with financial resources.

The lack of understanding of what has been planned and lack of feedback are deemed to be weaknesses not only in Iraq but also in other countries. For instance, in the US, much of the terrorism plan creation directors such as policy actors, law-enforcement officials, and elected officials lacked a general awareness of the literature on planning for natural and technological disasters ([36], p. 336). Further, Desforges and Waeckerle [12] show that poor understanding of the response plan and lack of accurate information from previous experiences is a recurring problem that plagues response to disasters. In addition, Humayun and Al-Abyadh [26] confirmed the weakness in implementing the early warning systems by arguing that the provisions for adequate early warning systems are lacking in Iraq's existing disaster risk reduction (DRR) framework. In terms of overlapping duties and new emerging duties, Saeed [39], pp. 3–4, supported this weakness by explaining that due to the dynamic situation in a disaster, new activities (which have not occurred before) may be required apart from those already planned. So new plans have to be made and incorporated with old plans and those of other organisations. In the context of Iraq, according to the primary data, only the General Directorate of Civil Defence has the authority to make changes to the plans and adequate opportunities are not given for junior managers in planning. In agreement, Desforges and Waeckerle [12] stressed that junior members might make errors in judgment that will be magnified rapidly as the response proceeds.

Based on the empirical evidence, a fragmented response capacity

can result from the complexity of the legislative system, the deactivation of some important sections, not applying employees' rights in different aspects, and the lack of organisational awareness of the laws. The literature supported these views in that although there is a lack of a legal framework for disaster risk reduction, the existing laws do not take account of disaster contingency planning. Further, the laws enacted prior to 2003 failed to adequately address all of the vagaries of disaster risk reduction, because the issue of disaster was not addressed in a holistic manner when these laws were designed [26].

Accordingly, the current disaster response in Iraq is fragmented and inefficient because implementing response plans is very difficult in reality. As the disaster response environment is recognised as chaos and stressful but with the nature of Iraqi people, the security situation, road congestion, and unplanned and random development the situation is doubled and become worse. Therefore, people, systems, and properties become more vulnerable which lead to dramatic rise in casualties in the responders' teams as well as people.

## 7. Categorisation of weakness in Iraqi disaster response

Based on the empirical evidence, the aforementioned weaknesses in Iraq can be categorised into four main categories. Eleven points of weakness in disaster response management in Iraq were revealed from the interviewees' responses. Nine of these weaknesses are linked to policy and administrative decisions (see Fig. 5), namely, lack of effective coordination between organisations, lack of effective education about disaster risk, poor provision of equipment, tools and infrastructure, weak financial resources, weak human resources, poor planning process, road congestion, weak supporting ordinances, and unplanned random development. Seven weaknesses are linked to the actors, such as citizens' irresponsible intervention, lack of effective education about disaster risk, poor provision of equipment, tools, and infrastructure, weak human resources, poor planning process, road congestion, and the poor security situation. Operational activities and technologies have fewer weaknesses linked to them, having four each. The four weaknesses linked to the operational activities are citizens' irresponsible intervention, lack of effective coordination between organisations, weak financial resources, and poor security situation; whereas the four weaknesses linked to technologies are lack of effective coordination between organisations, lack of effective education about disaster risk, poor provision of equipment, tools and infrastructure, and poor security situation. This indicates that the majority of weaknesses in disaster response are linked with policy and administrative decisions, followed by actors. The secondary data also upheld these findings [26].

Based on Humayun and Al-Abyadh [26], disaster response management in Iraq is traditionally operated based upon conventional experience which results in poor planning process, weak human resources, and lack of effective education. Moreover, Humayun and Al-Abyadh [26] view that the institutional setups as well as the laws are poorly equipped to respond to diverse types of disasters, as shown in the empirical evidence.

## 8. Conclusions

This paper has presented the findings of an evaluation conducted on disaster response management in Iraq. The key points of disaster response management, from the secondary literature, were highlighted and summarised. The primary data were collected through intensive semi-structured interviews with experts and document review, in Iraq. Four key components, extracted from the disaster response management literature, lead to eleven weaknesses being identified. Nine of these weaknesses were linked to policy and administrative decisions (lack of effective coordination between organisations, lack of effective education about disaster risk, poor provision of equipment, tools and infrastructure, weak financial resources, weak human resources, poor planning process, road congestion, weak supporting ordinances, and
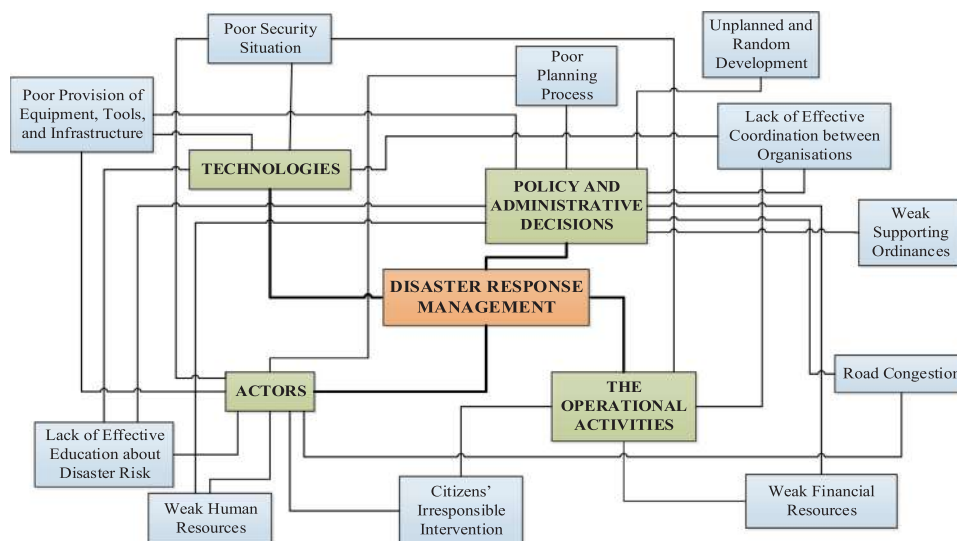
**Fig. 5.** Main disaster response weaknesses in Iraq, linked to the key components of disaster response management.

unplanned random development). Seven weaknesses were linked to the actors (citizens' irresponsible intervention, lack of effective education about disaster risk, poor provision of equipment, tools, and infrastructure, weak human resources, poor planning process, road congestion, and the poor security situation). The category of operational activities has four weaknesses (citizens' irresponsible intervention, lack of effective coordination between organisations, weak financial resources, and poor security situation). The four weaknesses linked to technologies are lack of effective coordination between organisations, lack of effective education about disaster risk, poor provision of equipment, tools and infrastructure, and the poor security situation.

These findings lead to considerable difficulties in terms of outcomes. The delays caused in the immediate aftermath of the disaster, such as road congestion, mean that people are subjected to a delay in receiving relief and support, making them more vulnerable. Emergency services, such as fire engines, may not be able to access the scene in an efficient and timely manner, causing the response to become fragmented, inefficient and ineffective. There are ultimately more injuries and deaths in the responders' teams and so in reality, implementing response plans becomes very difficult. There is an increased vulnerability, not only in peoples' day to day lives, but also property and systems become highly vulnerable to disaster.

## Acknowledgements

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