Assessing housing approaches for Iraq: Learning from the world experience

Omar Al-Hafith* Satish B. K. Pieter de Wilde

The University of Plymouth, School of Art, Design and Architecture, Plymouth, the UK.

Corresponding author email: omar.al-hafith@plymouth.ac.uk

Abstract

Iraq is facing a housing shortage of around 1.0 million housing units, which is equivalent to around 25% of its current housing stock. At the same time, it suffers from having a low housing production. As a first step towards managing this challenge, the country needs to identify a proper approach to drive developments. For this purpose, a new Iraqi National Housing Policy was issued in 2010. It proposed adopting private sector-led production to handle the housing problems. However, within a context dominated by instability, a negative investment environment, and weak private sector, the Policy's approach has not been applicable. The private sector has not been able to take this role. Accordingly, a comprehensive investigation is required to assess the possible housing approaches and to define a prospective way forward for the country, which has not been found in previous literature. This paper aims to address this challenge by exploring and investigating what has been done by other countries to successfully manage problems similar to those currently faced by Iraq. The research methodology underpinning this paper includes a mathematical extrapolation of data stemming from UN-Habitat housing statistics as well as a wide-ranging literature review. The results demonstrate that supporting the formal private sector-led housing production is a promising principal approach. It has enabled countries to have sustainable housing development. However, due to Iraq's current situation and the inability of its formal sector to satisfy large needs, an interim approach is needed. This should support the public sector intervention and, mainly, adopt informal housing related strategies, such as self-help housing. This is to be done alongside the efforts to support the formal private sector to take its principal role. This research's approach of using a mathematical extrapolation to guide investigating and examining previous literature is highlighted by the research as an innovative approach that has not been adopted by previous studies. It can be used to have a comprehensive investigation of various housing aspects in all countries.

Keywords: Iraqi housing sector, housing policies, housing approaches, housing shortage, housing production, global housing policy

1. Introduction

After achieving significant housing development during the 1970s and 1980s, Iraq has been witnessing a continued deterioration in its housing sector as a result of wars and instability (Figure 1) (Iraqi Ministry of Planning, 2010; Yousif, 2012). The production shortfall is evident from the growing gap between the annual housing production and households' formation since the 1990s (Figure 1-A). The housing gap has resulted in accumulated shortage and an increase in the informal housing construction (Figure1-B). Currently, there is a housing shortage of around 1.0 million housing units. This is a large number when compared to the country's total housing stock of around 4.5 million units (PADCO, 2006; Iraqi Ministry of Construction and Housing, 2010; Central statistics Organization, 2013). At the same time, the current annual housing production is low: around 30000 housing units, which hardly satisfies only around 10% of the current annual housing needs (Central Statistical Organization, 2014; Iraqi Ministry of Construction and Housing, 2010).

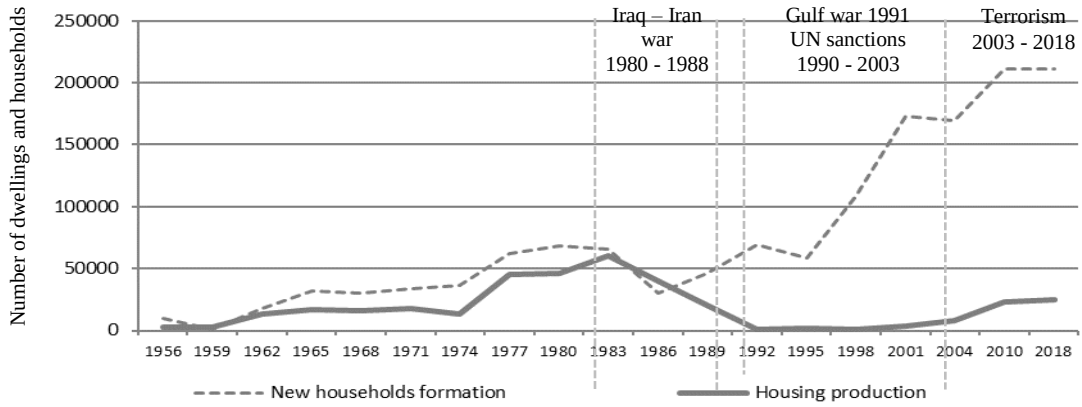


Figure 1 - A: Housing production and new households formation in Iraq (1956-2018)

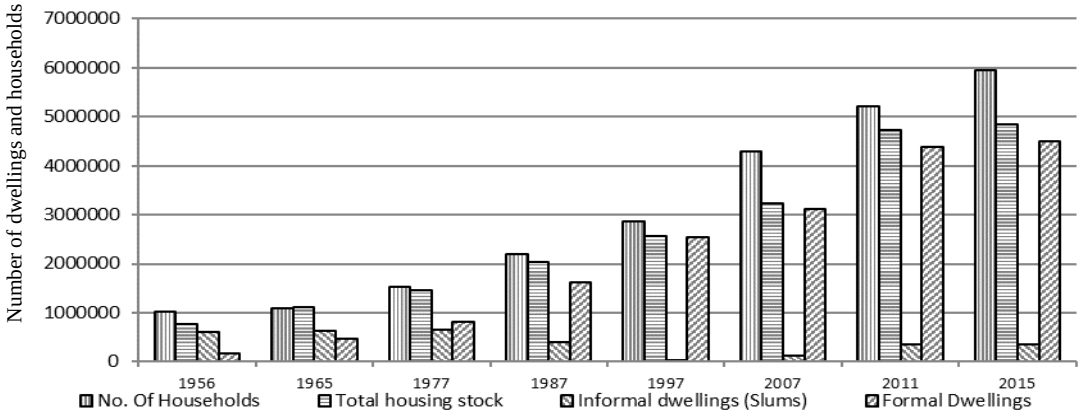


Figure 1 – B: The housing conditions in Iraq 1956 – 2015

Figure1: An analysis of the housing conditions in Iraq (1956-2015).
Source: the author depending on (Al-Adhami, 1975; Salem, 2011; Al-Rahmani, 1986)
(Please refer to Appendix A for further details)

Among the steps needed to manage this challenging situation is the development of appropriate housing policy to guide the development efforts (Malpass & Murie, 1999). Based on the public and private sectors' roles in the housing production, previous studies show that there are three housing policy approaches that have been adopted around the world to manage the housing sector (Esping-Andersen, 1990; Kemeny, 1995; Manoochehri, 2009). They include the

Marxist, the Social–Democratic and the Neo-Liberal approaches. The first approach includes intensive state intervention; the second one includes partial state intervention and third includes mostly non-state intervention (Manoochehri, 2009; Doling, 1997). In Iraq, the most recent National Housing Policy, which was issued in 2010, suggests adopting the second approach to manage the Iraqi housing challenges (Iraqi Ministry of Construction and Housing, 2010). It suggests that the private sector should be the main actor. The public sector's role should be limited to policy making and supervision and supporting low-income households. Regarding informal settlements, depending on their conditions, it recommends upgrading them in order to make a positive contribution to the housing stock (Iraqi Ministry of Construction and Housing, 2010). Unfortunately, after nine years of issuing this policy, the housing situation in Iraq has not changed (Iraqi Ministry of Planning, 2013; Khalaf, 2015), which raises questions regarding the new policy applicability and efficiency for the country. It seems that depending on the private sector is just not applicable in a context of continuous terrorism activities (Hatem & Al-Tmeemy 2015), a negative investment environment (Ali 2017; Nadhmy and Maala 2013), and a weak local private sector. The latter has just started to evolve after decades of public sector total domination in the country (Iraqi Prime Minister's Advisory Commission, 2014).

Exploring housing literature in Iraq shows that there are many researchers who have investigated the housing problems in Iraq. Some of them have focused on the whole housing issue, such as Al-Shock (2008), Hachim, et al (2011), Al-Masaudi & Al-Saadi (2012) and Al-Essawi (2017). Others have focused on specific aspects of the housing problems. Amongst these are Hewish & Jumaa (2008) and Al-Kenani, et al (2014) who investigated the prospects of construction related solutions, and Mutlak (2011), Majdi (2013), Ali & Fayadh (2014), Al-Jabouri & Al-Shukri (2015) and Abood (2016) who focused on the financial aspect. Their work defines the problem and recommends increasing the role of the private sector in housing production, which is in line with the Policy. However, their recommendations have not been supported by a comprehensive assessment of the three housing approaches' potential efficiency for Iraq or by an investigation of the Policy's proposed solution.

Internationally, there are researchers who have assessed housing approaches efficiency in managing the issues of housing production and shortage globally and locally for some countries. Exploring these studies can give useful indications of Iraq. Among these researchers are Okpala (1992), Keivani & Werna (2001), Barner (2001), Buckley & Kalarickal (2005), Bredenoord & Lindert (2010), Yap & Wandeler (2010), Sengupta (2010) and Soliman (2012). These studies, agreeing with the Iraqi policy and literature, recommend adopting the private sector-led approach to manage quantitative challenges. However, their conclusion differentiates between the formal and the informal private sector, with more emphasis on the latter's ability to satisfy such needs, especially in developing countries. According to these studies, in some cases, a less desirable solution might be adopted as a short-term approach within a long-term sustainable development plan to address urgent needs. Adopting such solutions have neither been explored by the Iraqi Policy nor previous studies.

2. Aim and Objectives

This research aims to explore possible alternatives to deliver an effective housing approach for Iraq by investigating what has been adopted by other countries to manage similar problems successfully. The study does not suggest to blindly copy other countries' housing approach to Iraq, as countries develop their housing approaches cumulatively through the interaction of different factors and influences (Kleniewski & Milligan, 2007; Kleniewski & Thomas, 2010). To achieve its aims, this research has the following objectives:

- Assess countries progress in addressing the issues of housing shortage and production.
- Explore the most successful countries' housing approaches.
- Discuss the Iraqi Policy's proposed solution in comparison to other approaches that may help the country to satisfy its quantitative needs.

3. Methodology

The research underpinning this paper employs a hybrid research methodology. To assess the success of countries in managing the issues of housing shortage and production, a mathematical model was developed by this study that correlates available relevant housing data. Depending on the assessment results, an intensive literature review explored what strategies the successful countries have used to manage their housing sector. The assessment and investigation focused on the period that followed WWII as this period has witnessed the implementation of various housing approaches to deal with various challenges, including the post-war reconstruction.

3.1. Countries' housing progress assessment

Aiming at having an inclusive worldwide assessment, housing reports by UN-Habitat and other international organizations were explored and analysed. These references provide inclusive worldwide reliable data, which have been prepared through comprehensive cooperation with countries' relevant authorities (Department of Economic and Social Affairs/UN, 2001). The housing progress of all of the included countries in these reports, which were 111 countries, was assessed. The assessment was based on a mathematical extrapolation, which focused on determining countries' progress in decreasing housing shortage and production shortfall. It involved four steps using a set of four formulas. First of all, for each country, the levels of housing shortage and production were determined (Formula 1). Then, the total decrease in housing shortage and production shortfall for each country over time was determined (formula 2). To have a fair assessment of countries' success and to target the objective of this study, the annual decrease of housing shortage and production shortfall for the countries' most progressive period were determined (formula 3). Finally, an assessment model was developed to compare countries and to rank them according to their best annual progress in solving their quantitative problems (formula 4). The assessment model compares the significance of the achieved housing progress and the population growth rate. Population growth was included in the assessment since housing shortage and production shortfall are determined by relating the housing stock and housing production to households number (Sheldon & Moore, 1968; Jensen, 1996; Sillince, 2014. If population growth rates not considered in the assessment, some countries may seem to have a high level of progress because of their low or negative population

growth, while, in fact, they do not have an increase in housing production. Followings are the assessment steps and the used formulas by the research to assess countries' housing progress.

- **Step 1- Determining housing shortage /production rate (Appendix B)** **……Formula 1**

$$Housing\ Shortage\ (HS) = \frac{Total\ households\ No. - Total\ stock}{Total\ households\ No.} \qquad Production\ Rate\ (PR) = \frac{No.\ of\ newly\ constructed\ housing\ units}{No.\ of\ newly\ formed\ households}$$

- **Step 2- Determining the total housing shortage/production shortfall decrease over periods** **……Formula 2**

$$Total\ Shortage\ Decrease(TSD) = HS1 - HS2 \qquad Total\ Production\ Shortfall\ Decrease(TPSD) = PR2 - PR1$$

Where:

- HS 1 is an earlier shortage level and HS 2 is a later shortage level. The higher value is the higher success in decreasing the housing shortage.
- PR 1 is an earlier production rate and PR 2 is a later production rate. The higher value is the higher success in decreasing the production shortfall.

- **Step 3- Determining best countries' annual progress (housing shortage/production shortfall)** **……Formula 3**

$$Best\ annual\ shortage\ decrease = \frac{Best\ TSD}{No.\ of\ relevant\ years} \qquad Best\ annual\ production\ shortfall\ decrease = \frac{Best\ TPSD}{No.\ of\ relevant\ years}$$

- **Step 4 - The countries assessment model** **……Formula 4**

$$Country\ (A)\ rank = \frac{Housing\ progress\ (A)}{Housing\ progress(B)} \Big/ \frac{pupulation\ growth\ rate\ country\ (B)}{population\ growth\ rate\ country\ (A)}$$

Where:

- Country (A) rank: the relative progress in country (A) compared to country (B).
- Housing progress: the best annual decrease in housing shortage (or) production shortfall.

If the result of the assessment model >1, country (A) has more relative progress in solving the problem than country (B). In other words, country (B) might seem to have a higher decrease in its shortage/production shortfall because of its low population growth rate. Country (A), with its developing efforts, would have a higher decrease in its shortage/production shortfall if its population growth rate is the same as country (B)

3.2. Exploring successful housing approaches

To define an effective approach for Iraq, the following two research actions were taken:

- First, depending on the countries assessment's results, a detailed investigation of a set of the most successful countries in managing the quantitative housing challenges was carried out. The investigation of countries' approaches was done using the Saturation approach, in which the investigation continues until it is found that no new results are found.
- Then, the research explored the worldwide adoption of the possible housing approaches to solving quantitative problems. This step enabled examining the range of adopting the explored successful countries' approaches around the world to have a comprehensive understanding of their potential efficiency for Iraq.

4. Results

4. 1. Assessing countries' housing progress

The research determined housing shortage and production shortfall levels around the world for the period that followed WWII, which is demonstrated in Figure 2. From this graph, it can be seen that, for instance, Iraq's housing shortage decreased from more than 40% in the 1950s to less than 20% by the 1980s.

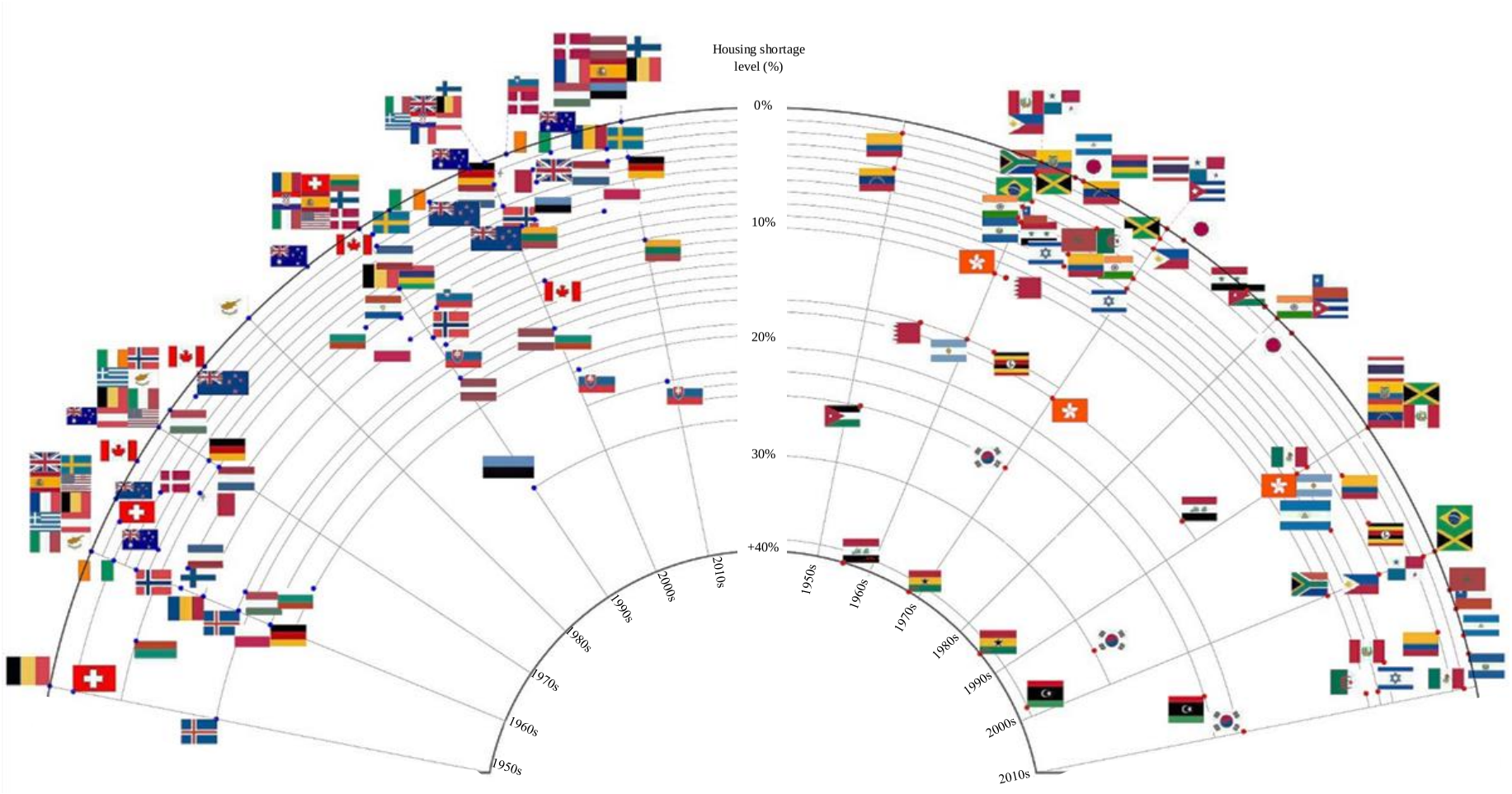


Figure 2: Countries' housing shortage levels during the previous 70 years

(See appendix (B) for further information)

Following that, Microsoft Excel software was used to rank countries according to their progress in decreasing their housing shortage (Figure 3) and production shortfall (Figure 4). In these two figures, it can be seen that Iraq, between 1956 and 1987, was in the second stage in decreasing the housing shortage after Jordan (1952-1979) and before Syria (1965-1971). The first three countries in decreasing housing production shortfall are Hong Kong (1961 - 1971), Israel (1966 - 1971) and Morocco (1967 – 1985). The next step includes investigating the most progressive countries to explore their housing approaches.

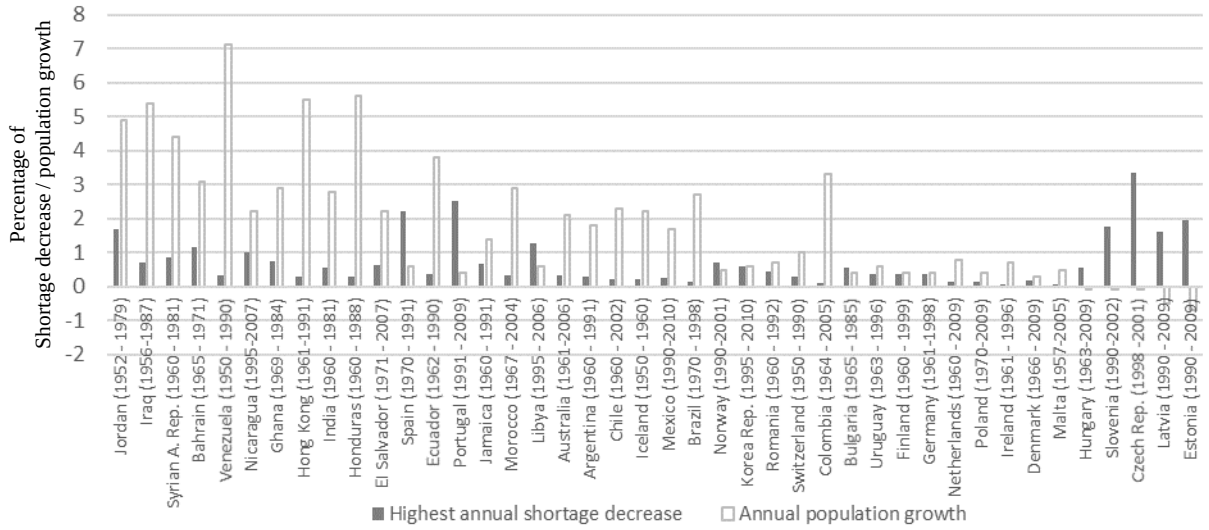


Figure 3: Countries ranking according to their progress in decreasing their housing shortage. (See appendix (B) for further information)

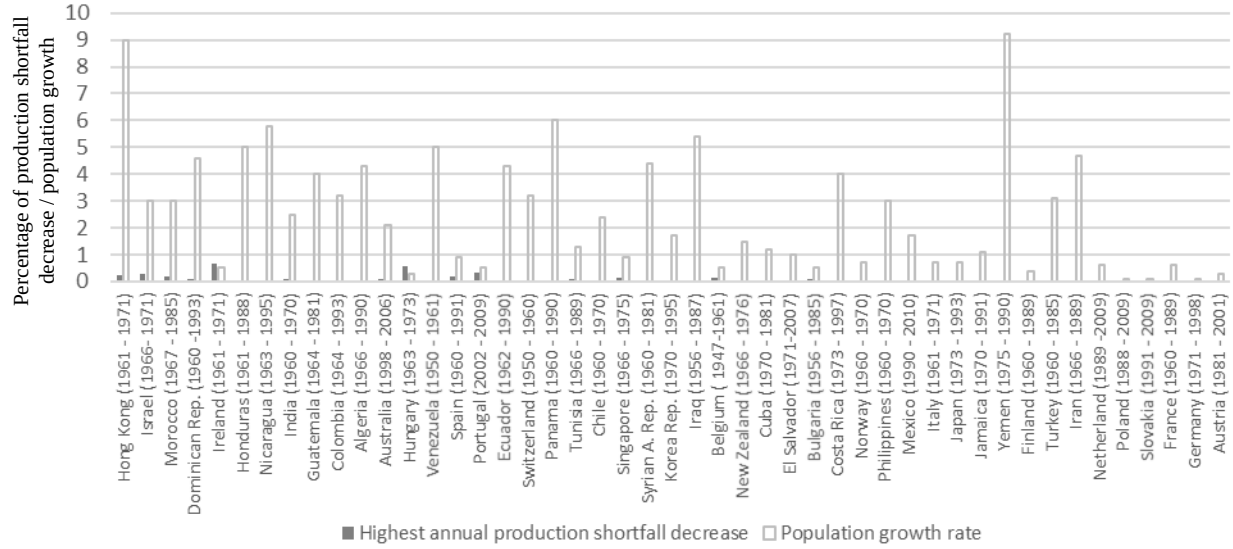


Figure 4: Countries ranking according to their progress in decreasing their housing production shortfall (See appendix (B) for further information)

4. 2. Exploring the most successful countries' housing approaches

Depending on the assessment results, a set of the countries that have shown the highest ability to address the problems of housing shortage and production were explored. Following the saturation approach, the explored countries included Iraq, Jordan, Syria, Bahrain, Venezuela, Nicaragua, Hong Kong, Israel, Morocco, the Dominican Republic, Ireland Republic, and

Honduras. To organize the investigation, the explored countries were divided into groups according to their used housing approaches. To stress the exploration of the Iraqi housing approach that led to its significant housing development, Iraq was explored individually. The investigation focused on showing these countries' housing conditions and needs and their adopted housing approaches.

4.2.1. Iraq

The Iraqi housing sector has passed through various stages during the last 70 years (Figure 1). During the 1950s, the housing conditions were of low qualities. More than 60% of Iraqis lived in informal and inadequate housing units (Al-Rahmani, 1986; Shaikley, 2007). Aiming at developing the housing sector and improving the housing conditions, the Iraqi government adopted a housing policy in which the public authorities took the main responsibility in the housing sector. The governmental development efforts included doing a number of national housing studies, having large multi-storey residential developments, subsidizing urban plots and construction materials and providing long term low-interest loans for housing construction purposes (PADCO, 2006; Abdel-Aziz & Almlahoiesh, 2008; Yousif, 2012). By virtue of these efforts, and pushed by the oil revenues, there was notable progress in the country, particularly in Baghdad. The annual housing production increased significantly and reached 50000 housing units in the early 1980s, which led to a reduction in informal settlements from 79.4% of the housing stock in 1956 to 56.9% in 1965, 44.0% in 1977 and to 10.0% in the eighties (Figure 1) (Iraqi Ministry of Planning, 2010; Yousif, 2012; Al-Rahmani, 1986). Unfortunately, as it is stated in this paper's introduction, the housing development did not last for a long time. A decline in the housing sector started in the mid-1980s because of the war with Iran. The situation became worse after the Gulf war in 1991 and the UN sanctions (1990-2003) (Alqatrani, 2014; Al-Shock, 2008; Nashoor, 2012). The housing production reached its lowest level by 1996, which was only around 400 housing units. After that, due to international ease of the sanctions against the country, the production increased gradually to around 24000 in 2002 (PADCO, 2006; Shaikley, 2007). In 2003, the US-led collation invaded Iraq and the housing production deteriorated once again, but it has gradually recovered from around 8000 dwellings in 2004 to around 32000 per year recently (Shaikley, 2007; Central Statistical Organization, 2014).

This summary of the housing production in Iraq shows that using the Marxist approach, the country has achieved significant housing developments in the last century, benefiting from stability and its oil revenues. However, the economic and political instability and wars have had a significant negative impact on the housing sector development.

4.2.2. Jordan and Bahrain

In Jordan and Bahrain, the public sector started an intensive intervention in the housing sector in the middle of the last century to handle challenging conditions and requirements. At that time, in Jordan, 42% of the housing stock in Amman (the capital), was of mud, wood or tents (Dakhgan, 1960). In Bahrain, there was quick urbanization and population growth which required having active housing development. The capital city's population increased by 313% between 1940 and 1970 (Al-Nabi, 2013). Intensive public sector intervention continued in

Jordan for the period between 1960s and 1980s (Housing and Urban Development Corporation, 2015; AlBetawi, 2013; Jerry Erbach / PADCO, 1997) and in Bahrain, benefiting from the high oil revenues, between the 1960s and the 2000s (Hamouche, 2004; The United Nations, 2002; Bahrain Ministry of Housing). As a result, the housing conditions had improved considerably in Jordan by the 1990s (Sims, 1990). In Bahrain, the public sector has constructed most of the housing developments in the country (Bucheery, 1999; Al-Hashimi, 1996). However, the problems have never been addressed totally and the public sector has lost its ability to provide sufficient housing production. In Jordan, due to budget limitations, the state adopted policy reforms in the 1980s, in which the main role in the housing production has been shifted gradually to the private sector (AlBetawi, 2013; Abu 'Anza & Naseer, 2007; Naseer, 2007). The same reforms took place in Bahrain in the 2000s for logistic and financial reasons (Bahrain Ministry of Housing; Mouzughi, Bryde, & Al-Shaer, 2014; Eskan Bank, 2013).

It can be concluded that, similar to Iraq, these two countries, initially, adopted the Marxist approach and achieved significant improvements. However, both of them have found that this is not a sustainable approach. As a result, they have adopted reform tending towards gradually using the Social Democratic approach. A critical point to be stressed here is that, especially with the Bahraini case, even with high financial resources and stability, the Marxist approach is found to be unsustainable.

4.2.3. Hong Kong, Israel and the Ireland Republic

This group of countries has also witnessed intensive public sector intervention, but within a policy framework that allows active private sector contribution. In Hong Kong, the public sector started its intervention from the 1950s to satisfy emerging housing needs resulting from population growth and migration from China. The aim was to help needy social groups and to increase home ownership in the country. In 2012, the total housing stock was around 2,599,000 housing units. Of these, 1,447,000 units (53%) were private while the rest was public sector production and used for social rent or sold as subsided housing units (Chan & Chan, 2002; Dwyer, 1971; Yan; Legislative Council Secretariat, 2013; Fu & Poon, 2002). Similarly, in Israel, the public sector intervened intensively in 1949 and 1989 to deal with large emergent housing needs resulting from waves of emigrants. In these two periods, its production represented around 80% of the total housing production in the country. But, during normal conditions, the public sector production has been limited to around 20% of the total housing production and the private sector has been the main actor (Dadon, 2000; Carmon, 2001; United Nations Statistics Division, 2015; Portnov & Pearlmutter, 1999). In the Republic of Ireland, the same approach has been adopted (Norris & Shiels, 2004; Somerville-Woodward, 2002), but it differs from Israel and Hong Kong in that the share of the state in the housing production has never exceeded 25% of the total housing production, which was to deal with the WWII's large housing needs (Oxley, 1983; Curry, 2003; O'Connell, 2007). After that, its share of production has ranged between 4% and 10% depending on the economic conditions and housing needs (Norris & Winston, 2003; Curry, 2003; Department of Environment,Heritage and Local Government,2003).

It can be seen that these three countries have used periods of intensive public sector intervention to handle quantitative housing problems, which is similar to developments in Iraq before the

wars. However, there is an essential difference, which is that the public sector interventions have never been to permanently lead the whole housing production.

4.2.4. Syria, Venezuela and Morocco

These three countries have a different narrative compare to the previous two groups of countries. Aiming at significantly developing the housing sector, in Syria, the public sector implemented notable efforts in the 1960s and 1970s (Al Khalaf, 2014; Goulden, 2011). In Venezuela, the public sector produced 61% of the total housing production and satisfied 33% of the housing shortage during the 1960s (Aray, 2002; Cook, 1988; Ramirez, 1984 (published 1990)). In Morocco, It produced 90,000 housing units and 16,000 units between 1956 and 1966, which satisfied the need for around 13% of the total households at that time (Okpala, 1992; Dean, Coleman, & Desflm, 1971). However, this was not enough and housing problems have been always increasing in the three countries. The production shortfall in Syria grew from 290,000 housing units in 2000 to 880,000 housing units by 2010 (Syrian economic center, 2007). In 2009, Venezuela had housing shortage of 1.5-1.8 million housing units and around 1 million inadequate units (Lara, Cervilla, & Castro, 2008; de Dikdan & Monroy, 2008). In Morocco, by the 2000s, there were around 1 million inadequate housing units due to structural or services defects (UN-Habitat, 2012; Khaloufi). Within this context, the informal housing sector has evolved and grown to play the main role. In Syria, it provided 65% of the total housing needs between 1981 and 1995 (Syrian economic center, 2007; Goulden, 2011). It produced around 2.5 million housing units between 1920 and 2000 in Venezuela while the formal sector produced around 1 million (Lara, Cervilla, & Castro, 20083). In Morocco, the informal settlements have been continuously growing as a result of a continuous shortfall in the housing production (Le Blanc, 2005). To deal with this failure, the public authorities in these three countries have acknowledged the informal sector's activities, and worked on upgrading the informal settlements (Goulden, 2011; Clerc, 2011; Cook, 1988; Ramirez, Fiori, Harms, & Mathey, 1991; UN- Habitat, 2010; Bouchanine, 2003). However, because of its negative consequences and poor living environment, informal housing is considered as a failure in the housing sector that needs to be mitigated by supporting and developing formal housing production. Both Syria and Morocco have adopted policy reforms that included a reversal of the roles of the public sector and the private sector. In Syria, the last housing plan increased the private sector's share in the housing production to 73% from 53% in the previous plan (Syrian economic center, 2007; Syrian housing institution, 2015). The same approach has gradually been adopted in Morocco since the end of the 1970s (Kandil, 2002; Oubala, 2011; Luthander & Gustavsson, 2014). Venezuela has been less stable in this field. It gave the private sector the responsibility of producing 75% of the public sector's project in the 1960s (Ramirez, 1984 (published 1990); Quinonez, 1991). However, this was a part of governmental projects. The private sector role decreased after that to less than 20% of the total production between 1997 and 2003 (McCue , 2003).

In summary, exploring these three countries suggest that the public sector's contribution would lead to achievements, however, it is not sustainable. They also stress the importance of having proper solutions to handle possible informal housing activities and considering them as a part of an interim solution, not a problem.

4.2. 5. Nicaragua, the Dominican Republic and Honduras

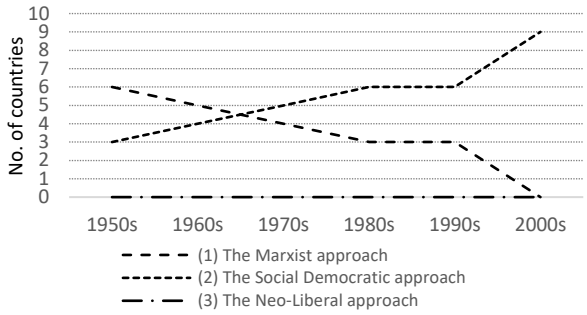
These three Latin American countries have suffered from continuous housing production shortfall even during their highest production rate periods. The maximum housing production in Nicaragua and the Dominican Republic was in the 2000s; they produced around 10,000 and 12,000 housing units respectively (Bredenoord & der Meulen, 2014; Inter-American Development Bank). Honduras reached its maximum production of 17,000 housing units during the 1970s (Mejia, 1984). However, at the same time, the annual housing needs in Nicaragua was around 40,000 housing units (Bredenoord & der Meulen, 2014), in the Dominican Republic was around 53.000 housing units (Inter-American Development Bank) and in Honduras was around 76,000 (Mejia, 1984). This indicates that housing production has been mostly insufficient. Similar to the previous group of countries, the informal housing sector has evolved and grown. In the Dominican Republic, by the 2000s, 75% of urban areas were informal settlements (Inter-American Development Bank). In 1998, 225 out of 340 neighborhoods in Tegucigalpa, the capital of Honduras, were informal settlements (Pearce-Oroz, 2007) and in Nicaragua in 2001, 80.9% of the urban population was living in slums (UN-Habitat, 2003). Exploring these three countries' housing approaches shows that they have suffered from the absence of comprehensive housing policies to manage the housing sector (Peterson, et al., 1989; COHRE, WCCN, CENIDH, 2003; Pusch C. A., 2010). The response by the formal authorities has been to acknowledge the informal housing sector's activities. In the Dominican Republic, the public authorities have adopted an approach that includes tolerating squatters' activities and upgrading informal settlements (Pusch C. A., 2010; Inter-American Development Bank). Nicaragua and Honduras have been more advanced than the Dominican Republic. In addition to the upgrading and toleration, they have adopted another strategy, which is self-help housing. This approach includes delivering serviced lands or core houses to people who construct their buildings by themselves, without paid labours, incrementally, and with a range of technical help by governmental or non-governmental organizations (Mathtiy, 1989; Bredenoord & der Meulen, 2014; Stein, 2001; Mejia, 1984; Stein & Vance, 2008).

In conclusion, these three Latin-American countries have had public sector and private sector production, but the main actor has been the informal housing sector. For Iraq, this group of countries gives useful strategies to deal with the possible informal housing construction, such as self-help housing.

4.2.6. Summary

The explored countries have adopted two approaches to managing the quantitative challenges: the intensive public sector intervention, or tolerating and regulating informal private sector's activities (Table 1). The Social Democratic approach, which has involved having temporary intensive public sector intervention, has been increasingly the mostly adopted approach by the explored countries.

Table 1: Housing approaches in the investigated countries to manage their quantitative challenges

Countries' most progressive period				Countries adoption of the three housing approaches through time
	Countries ranking	The Housing approach		
Housing shortage decrease	Jordan (1952 - 1979)	Permanent intensive public sector intervention	The Marxist approach	
	Iraq (1956-1987)			
	Bahrain (1965 - 1971)			
	Syria (1960 - 1981)	Permanent intensive public sector intervention & Acknowledged informal sector		
	Venezuela (1950 - 1990)			
	Nicaragua (1995-2007)	Acknowledged informal sector	No coherent policy	
Housing production increase	Dominican (1960 -1993)			
	Honduras (1961 - 1988)			
	Hong Kong (1961 - 1971)	Temporary intensive public sector intervention	The Social Democratic approach.	
	Israel (1966- 1971)			
	Ireland (1961 - 1971)			
	Morocco (1967 - 1985)	Permanent intensive public sector intervention & Acknowledged informal sector	The Marxist approach.	

	1950s	1960s	1970s	1980s	1990s	2000s
Marxist approach	Iraq, Syria, Venezuela Morocco, Bahrain, Jordan	Iraq, Syria, Morocco, Bahrain, Jordan	Iraq, Syria, Bahrain, Jordan	Iraq, Syria, Bahrain,	Iraq, Syria, Bahrain,	None
Social Democratic approach	Ireland, Israel, Hong Kong	Ireland, Israel, HongKong, Venezuela	Ireland, Israel, HongKong, Venezuela, Morocco	Ireland, Israel, HongKong, Venezuela, Morocco	Ireland, Israel, HongKong , Venezuela, Morocco	Ireland, Israel, HongKong, Venezuela, Morocco, Iraq, Syria, Bahrain,
Neo-Liberal approach	None					

4.3. Exploring housing approaches around the world

Exploring the global housing experience shows that the two adopted approaches by the explored most successful countries are the same that have been adopted globally to solve quantitative problems. On the first hand, adopting intensive public sector interventions can be seen, for instance, in Western European countries after WWII (UN-Habitat, 2009; Malpass, 2008), in the former Soviet Union and Eastern European countries (Šutavičius, 2014; McCutcheon, 1989), Egypt (El Kafrawy, 2012; El Batran & Arandel, 1997) and India (Urban, 2012). As in the explored successful counties, this approach has been either adopted as an interim strategy within the Social Democratic approach, as in Western Europe (Malpass, 2008), or as a principal approach within the Marxist approach, as in the former Soviet Union and many other countries. However, in the latter case, a policy reform tendency has been adopted in most countries as it has been found that the Marxist approach is not sustainable (Šutavičius M., 2014; Okpala D. C., 1992). Interestingly, even in the USA where the Neo-Liberal approach is adopted, although it was limited and temporary, the public sector has involved at some points in the housing production to have economic and effective solutions for slum clearance programs (Schwartz, 2010; Olsen & Zabel, 2014). On the other hand, in countries where the public sector has taken this role but failed to satisfy the housing needs, the second approach has been adopted, which is to acknowledge and manage informal housing activities. The extent of acknowledging and accepting this approach has depended on the formal sector's failure extent. The share that cannot be satisfied by the formal sector has been

satisfied by the informal private sector. As examples of this case, apart from the explore countries, are Haiti (Caribbean Country Management Unit, 2006), India (Sabnani, Latkar, & Sharma, 2014; Nakamura, 2014) and Egypt (Abdelhalim, 2010; Khalifa M., 2015).

5. Discussion

This research assessed countries' progress in managing quantitative housing challenges and explored the most successful countries' housing approaches. The results suggest that the best way forward for Iraq is to adopt the Social Democratic housing approach in its policy. However, due to the weak private and public sectors, this research recommends having an interim solution which is to acknowledge and manage informal construction activities as the main solution. In addition, the public sector production needs to be maintained and extended alongside supporting the private sector to take its principal role as the main producer. Having the public and informal sectors leaving their roles depends on the private sector's ability to take the responsibility of being the main producer. This recommendation is underpinned by the following considerations:

- In Iraq, it is evident that the formal sector is incapable of satisfying the large housing needs at the current stage. This suggests that, similar to what happened in other countries, informal construction activities might increase significantly in the near future. Accordingly, although it might not be the preferred solution, Iraq needs to consider strategies, such as the self-help housing, to have positive and organized construction activities instead of random and spontaneous ones.
- All of the countries that successfully managed quantitative housing challenges have depended on either intensive public sector interventions or informal private construction to augment the housing production and to satisfy large housing needs. The formal private sector has never been used to handle large emergent or accumulative housing needs.
- Positioning the intensive public sector intervention within the framework of the Social Democratic approach has enabled counties to satisfy large housing needs while at the same time having an active private sector to lead sustainable developments.
- The Marxist approach has achieved significant increases in housing production, but, it has been shown that this approach cannot be adopted to achieve sustainable developments.
- The Neo-Liberal housing approach has not been adopted by any of the investigated countries to handle large quantitative needs.

These considerations show a degree of agreement and disagreement with the literature and the current Iraqi Housing Policy's proposed solution. Findings do support adopting the proposed approach of giving the private sector the main role in housing production. However, they do not support the idea of considering this approach to be a proper solution at the current stage. Within the dominant unstable situation in the country, the private sector is not able to take this responsibility (Mutlak, 2011; Al-Saigh, 2015). Therefore, at the current stage, Iraq has to consider having interim intensive public sector intervention and regulated informal production within the framework of the Social-Democratic approach. This conclusion for Iraq highly agrees with studies such as Okpala (1992); Keivani & Werna (2001) and Bredenoord & Lindert (2010). Proposing giving the informal construction high role in solving the problem is

suggested because of the large formal production shortfall in the country. The formal sector hardly produces 10% of the annual housing needs. A challenge that needs to be stated here regarding the suggested solution is that Iraq's experience of dealing with the informal settlements has never included using them as a planned and acknowledged solution, such as the self-help housing. Instead, the formal approach, even in the most recent policy, has been either to prohibit and remove them or to accept and upgrade them in case they satisfy specific conditions (Abd Alhasan, 2013, p. 128); (Hamza, 2015, p. 9).

6. Conclusions and Recommendations

This paper presents an assessment of the prospects of possible housing approaches in addressing the housing challenges in Iraq. The findings show that the New- Liberal approach has not been adopted to address quantitative housing problems, and that the Marxist approach has failed to offer sustainable development. In line with the current Iraq National Housing Policy, this work concludes that the Social Democratic approach is the most promising approach for Iraq to achieve sustainable development. However, this approach cannot work for the country in the current stage. Instead, there should be a temporary solution that depends on two strategies. The first one is to maintain and extend the public sector intervention in the housing sector. The second one, which can be the main one, is to adopt the informal construction related strategies, such as self-help housing. As the formal sector is far from satisfying the large housing needs, this paper suggests that the latter solution might be the most promising solution for the country. Accordingly, this research recommends adopting the following approach for Iraq:

- Acknowledge and adopt the informal construction related strategies, such as the self-help housing, as a main solution in the country. This might require having housing policy reforms in addition to establishing the legal and physical required infrastructure for this housing approach, as it has never been adopted in the country.
- Maintain and increase public sector intervention in the housing sector.
- Support the growth of the private sector to take the main role in the housing sector in the future.
- Gradually decrease the public and informal sectors' roles in correspondence with the future growth of the private sector's housing production capabilities.

This research suggests a novel solution for the country that has never been properly adopted, which is to consider informal housing related strategies. It also offers a systematic criticism for the most recent Iraqi National Housing Policy, which can be used to review the policy to have a more comprehensive solution for the county. Furthermore, in its general perspective, this research contributes to housing literature in two fields. First, the research quantitatively confirmed and validated what has been concluded by previous literature regarding housing approaches' efficiency in addressing the issues of housing shortage and production. Second, it proposed a new approach that can be used to conduct similar studies on housing issues, such as the challenges of slums, housing affordability, and home ownership, in Iraq or other countries. This recommended research methodology includes conducting a mathematical extrapolation to define the most successful experiences in addressing the targeted housing challenges, then exploring them to conclude reliable solutions.

Acknowledgment

This research is sponsored by the (HCED) in Iraq.

References

Abu 'Anza , N. M., & Naseer, A. A. (2007, 7 31). Retrieved 11 28, 2015, from King Saud University: http://faculty.ksu.edu.sa.

Abdelhalim, K. (2010, 5). Participatory Upgrading of Informal Areas : A Decision-makers' Guide for Action. Retrieved 1 18, 2016, from Cities Alliance : Cities without slums: https://www.citiesalliance.org.

Al-Adhami, M. B. (1975). A comprehensive approach to the study of the housing sector in Iraq with special reference to needs, standards, inputs, density and costs as factors in the analysis of housing problems in Baghdad - PhD Thesis. Nottingham: University of Nottingham.

Al-Essawi, . K. F., 2017. The Role of Partnership Approach in Facilitating Housing in Iraq. Journal of Engineering, 23(8), pp. 20-44.

Al-Jabouri, H. A. S. & Al-Shukri, A. A. A., 2015. The role of housing finance in addressing the housing problem in Al-Qadisyah province. AL-Qadisiyah Journal For Administrative and Economic sciences, 17(4), pp. 89-106.

Al-Kenani, K. K., Mutlak, J. B. & Ibrahim, D. F., 2014. Sustainable Development of Housing in light of The National Housing Policy in Iraq - Selected Models. Journal of the planner and development, Issue 30, pp. 14-35.

Al-Nabi, M. N. (2013, 3 19). *The History of Land Use and Development in Bahrain.* Retrieved 12 6, 2015, from Ministry of Housing - Kingdom of Bahrain: http://www.housing.gov.bh

Al Khalaf, A. (2014). *The Production of New Affordable Housing in the Syrian Cities: The Possible Role of Procurement Processes in Improving Construction Efficiency.* UK: Heriot-Watt University.

AlBetawi, Y. N. (2013). *Housing & Quality of Life Implications of the Three Qualities of Housing in Amman, Jordan (thesis).* UK: Cardiff University.

Al-Hamawandi, R. A.-l., & Al-Qaisi, T. F. (2010). The period of change and institutions establishing and its impacts on housing policy structure in Iraq. *Journal of planner and development*, pp. 52 - 76.

Al-Hashimi, K. A. (1996). *A Bioclimatic Study on Housing Patterns in Bahrain (Thesis-Reproduction).* Arizona: The University of Arizona.

Ali, A. H. (2017). "Analysis the Impact of Corruption on Investment in Iraq " journal of Economics And Administrative Sciences/ University of Baghdad 23(101): 390-411..

Al-Masaudi, R. M. & Al-Saadi , . A. H., 2012. Housing Shortage in Iraq (Its indications and Confrontation Strategies). Al-Ameed Journal, 1(3), pp. 367-415.

Al-Rahmani, S. F. (1986). Principles for urban renewal in Iraq - PhD thesis. Manchester: University of Manchester.

Al-Saigh, N. D., 2015. Determinants facing private banks to invest in the construction of residential complexes. Baghdad College of Economic sciences University, Issue 46, pp. 293-314.

Abdel-Aziz, E., & Almlahoiesh, L. (2008). Housing finance and housing need in Iraq with reference to some Arab experiments. Journal of Planning and Development, 1, pp. 20-41.

Abood, S. M., 2016. Assess the feasibility of the housing fund loans in the resolution of the housing crisis in Iraq. Kut Journal For Economics Administrative Sciences, Issue 23, pp. 122-138.

Alqatrani, F. S. (2014). The housing deficit in the city of Al-Zubair and the future need. Basra studies journal, pp. 82-111.

Ali, R. H. & Fayadh, I. K., 2014. The role of bank lending in solving the housing crisis in Iraq (Wasit Case Study). Kut Journal For Economics Administrative Sciences, Issue 16, pp. 4-25.

Aray, L. A. (2002). *Expanding Affordable Housing in Caracas, Venezuela: A Mixed-Income Housing Policy for the Caracas' Urban Core (M.Sc. dissertation).* USA: University of Rhode Island.

Bahrain Ministry of Housing. (n.d.). *Urban Revitalization Of Mass Housing - International Competition.* Retrieved 12 8, 2015, from Mass Housing Competition: http://www.masshousingcompetition.org

Berner, E. (2001). Learning from informal markets: Innovative approaches to land and housing provision. Development in Practice, 11(2,3), 292-307.

Bouchanine, F. N. (2003). *The case for Rabat - Salé, Morocco.* Retrieved 1 13, 2016, from University College London: http://www.ucl.ac.uk

Bredenoord, J., & der Meulen, B. v. (2014). Self-help housing and upcoming policies for affordable housing in Nicaragua. In J. Bredenoord, B. der Meulen, P. Lindert , & P. Smets (Eds.), *Affordable housing in the urban global south : seeking sustainable solutions* (1 ed., pp. 301-316). USA: Routledge. Retrieved 21 12, 2015, from http://www.habitat-future.com

Bredenoord, Jan & Lindert, Paul. (2010). *Pro-poor housing policies: Rethinking the potential of assisted self-help housing, Habitat International*, 34, pp. 278 – 287.

Bucheery, A. (1999). Contemporary architecture in Bahrain. In J. Abed , *Architecture de-introduced: New projects in societies in change* (pp. 62-69). Beirut: The Aga Khan Award for Architecture.

Buckley, R. M., & Kalarickal, J. (2005). Housing Policy in Developing Countries: Conjectures and Refutations. The World Bank Observer, 233-257.

Caribbean Country Management Unit. (2006, 4 27). Haiti : Social Resilience and State Fragility in Haiti. Retrieved 1 22, 2016, from The World Bank: http://siteresources.worldbank.org.

Chan, D. W., & Chan, A. P. (2002). Public Housing Construction in Hong Kong: A Review of its Design and Construction Innovations. *Architectural Science Review*, *45*(4), 349-359.

Carmon, N. (2001). Housing Policy in Israel: Review, Evaluation and Lessons. *Israel Affairs*, *7*(4), 181-208.

Central statistical organization (2012). Statistics of some social and economic indicators in Iraq. Retrieved 9 11, 2015, from Central statistcalorganization: http://www.cosit.gov.iq/.

Central statistcal organization (a). (2013). Private Sector Buildings Statistics. Retrieved 9 7, 2015, from Central statistcs organization: http://www.cosit.gov.iq/.

Central Statistical Organization . (2014). Social and Economic statistical indicators in Iraq 2009-2013. Retrieved 10 6, 2015, from Central Statistical Organization: http://www.cosit.gov.iq/.

Central Statistical Organization. (2011). General Census of buildings, facilities, housing and households - Report 1 -. Retrieved 10 6, 2015, from Central Statistical Organization: http://www.cosit.gov.iq/.

Central Statistical Organization. (2005). Central Statistical Organization. Retrieved 7 6, 2015, from Iraqi Ministry of Planning - Central Statistical Organization: http://www.cosit.gov.iq.

Central Statistical Organization (b). (2013). Report of slums surveying in 2013. Retrieved 10 7, 2015, from Central Statistics Organization: http://www.cosit.gov.iq/

Clerc, V. (2011). Mixity" in Urban Policies directed towards Informal Settlement Areas in Damascus, a Concept for Public Decision? *23ENHR Conference 2011.* Toulouse- France: 23rd ENHR Conference papers. Retrieved from http://www.enhr2011.com

COHRE, WCCN, CENIDH. (2003). *Housing rights in Nicaragua : Historical complexities and current challenges.* Retrieved 12 22, 2015, from WCCN : Investing for social change: https://www.wccn.org

Cook, C. C. (1988). Human settlement patterns in Venezuela: the contribution of formal and informal housing sectors. *Housing and Society*, *15*(2), 126-144.

Curry, J. (2003). *Irish social services* (Vol. 4). Dublin: Colourbooks.

Dadon, B. (2000, 4). *Public Housing in Israel: A proposal of reform.* Retrieved 12 27, 2015, from Site courses at the Technion: http://moodle.technion.ac.il

Dakhgan, A. M. (1960). *Residential planning standards for the urban neighborhood in Jordan (MSc. thesis).* Massachusetts Institute of Technology.

Dikdan, L. P., & Monroy, C. R. (2008). Construction competitiveness. Some opportunities for the Venezuelan case. *Engineering for a Smart Planet, Innovation, Information Technology and Computational Tools for Sustainable Development* (pp. 1-10). Medellín, Colombia.: Ninth LACCEI Latin American and Caribbean Conference (LACCEI'2011).

Dean, C., Coleman, D., & Desflm, D. (1971). *Pre-investment survey report: AID housing investment guaranty program, Morocco.* Retrieved 1 13, 2016, from USAID: http://pdf.usaid.gov

Department for Economic and Social Information and Policy Analysis/UN. (1995). *compendium of human settlements statistics 1995.* Retrieved 11 19, 2015, from United Nation: http://unstats.un.org

Department of Economic and Social Affairs / UN. (1976). *compendium of housing statistics 1972-1974.* Retrieved 11 19, 205, from United Nation: http://unstats.un.org

Department of Economic and Social Affairs / UN. (2014). *World Urbanization Prospects.* Retrieved 2 14, 2016, from United Nations: http://esa.un.org

Department of Economic and Social Affairs/UN. (1970). *Demographic yearbook 1969.* Retrieved 11 19, 2015, from United Nation: http://unstats.un.org

Department of Economic and Social Affairs/UN. (1974). *Compendium of housing statistics 1971.* Retrieved 11 19, 2015, from United Nation: http://unstats.un.org

Department of Economic and Social Affairs/UN. (2001). *demographic yearbook 1999.* Retrieved 11 19, 2015, from United Nations: http://unstats.un.org

Department of Economic and Social Affairs/UN. (2013). *demographic yearbook 2012.* Retrieved 11 19, 2015, from United Nations: http://unstats.un.org

Department of Environment, Heritage and Local Government. (2003, 12). *Market Analysis.* Retrieved 1 4, 2016, from Environment, Community and Local Government: http://www.environ.ie

Department of International Economic and Social Affairs/UN. (1980). *compendium of housing statistics 1975-1977.* Retrieved 11 19, 2015, from United Nation: http://unstats.un.org

Department of International Economic and Social Affairs/UN. (1985). *compendium of human settlements statistics 1983.* Retrieved 11 19, 2015, from United Nation: http://unstats.un.org

Department of International Economic and Social Affairs/UN. (1990). *demographic yearbook 1988.* Retrieved 11 19, 2015, from United Nations: http://unstats.un.org

Department of international economics and social affairs/UN. (1980). *demographic yearbook 1979.* Retrieved 11 19, 2015, from United Nations: http://unstats.un.org

Doling, J. (1997). *Comparative housing policies - Governments and housing in advanced industrialized countries.* New York: St. Marin's press.

Dwyer, D. J. (1971). Housing provision in Hong Kong. In D. J. Dwyer, & D. J. Dwyer (Ed.), *Asian Urbanization: A Hong Kong casebook* (pp. 33-48). Hong Kong: Kathay Press Limited.

El Batran, M., & Arandel, C. (1997). The informal housing - development process in Egypt. Retrieved 1 17, 2016, from Queen-square center for neuromuscular diseases: http://www.cnmd.ac.uk.

El Kafrawy, A. H. (2012). Housing policy and finance in Egypt: Housing policy and finance in Egypt (Phd Thesis). Glasgow: University of Glasgow. Retrieved 1 17, 2016, from http://theses.gla.ac.uk.

Eskan Bank. (2013). *Towards suitable housing solutions.* Retrieved 12 9, 2015, from Eskan Bank: http://www.eskanbank.com

Esping-Andersen, G. (1990). The Three Worlds of Welfare Capitalism. Cambridge: Polity Press

Fayyad, H. N. (2012). Fertility in Iraq: Trends, Evolution and Influential Factors. Qatar: Arab center of research and policy studies.

Fu, S. W., & Poon, S. W. (2002). The supply of precast concrete facade for housing construction in Hong Kong. *Our world in concrete & structures* (pp. 297 - 302). Singapore: CI-Premier Pte.

Goulden, R. (2011). Housing, Inequality, and Economic Change in Syria. *British Journal of Middle Eastern Studie, 38*(2), 187 - 202.

Hachim, M. Y., Jazee, J. S. & Munshed, A. N., 2011. Estimate the actual need for housing and functional government in the city of Baquba and the proposed alternatives. Journal of Research Diyala humanity, Issue 53, pp. 502-545.

Hamouche, M. B. (2004). The changing morphology of the gulf cities in the age of globalisation: the case of Bahrain. *Habitat International, 28*, 521-540.

Hatem, W. A. and S. M. H. Al-Tmeemy (2015). "The Impact of Terrorism on Construction Industry in Iraq " Wasit Journal of Engineering Science 3(2).

Housing Association. (2013). Housing project construction. Retrieved 9 5, 2015, from Housing Association - Ministry of housing and construction: http://www.alaskan.imariskan.gov.iq

Inter-American Development Bank. (n.d.). *Dominican Republic: Multi-phase low/moderate income Habitat program.* Retrieved 12 31, 2015, from Inter-American Development Bank: http://idbdocs.iadb.org

Iraqi Ministry of Construction and Housing. (2010). *Iraq national housing policy.* Baghdad: Iraqi Ministry of Housing and Construction.

Iraqi Ministry of Planning. (2013). *National Development Plan 2013-217.* Retrieved 26 01, 2018, from Iraqi Ministry of Planning: http://mopdemo.alkafeel.iq.

Iraqi Ministry of Planning. (2010). *National development plan 2010 - 2014.* Retrieved 9 4, 2015, from United Nations country team Iraq: http://iq.one.un.org.

Iraqi Prime Minister's Advisory Commission, 2014. Private Sector Development Strategy 2014 - 2030, Baghdad: Council of Ministers - Iraq.

Jan Lahmeye. (2006). historical demographical data of the whole country. Retrieved 9 11, 2015, from Population Statistics: http://www.populstat.info.

Jensen, I. (1996). The Human Settlements Conditions of the World's Urban Poor. UN-HABITAT.

Jerry Erbach / PADCO. (1997, July). *Interim Evaluation report: Jordan 278-HG-004.* Retrieved 11 29, 2015, from USAID: http://pdf.usaid.gov

Kandil, M. (2002). *Housing Delivery System in Morocco: Problems and Opportunities.* Retrieved 1 15, 2016, from Lunds university: http://www.lth.se.

Kemeny, J. (1995). From Public Housing to the Social Market: Rental Policy Strategies in Comparative Perspective. London: Routledge

Khalifa, M. (2015). Evolution of informal settlements upgrading strategies in Egypt: From negligence to participatory development. Ain Shams Engineering Journal, 1151–1159.

Keivani, Ramin & Werna, Edmundo (2001). *Modes of housing provision in developing countries*, Progress in Planning, 55, pp 65-118.

Khalaf , A. H. (2015). Study the housing sector in Iraq, the analysis of the facts and find solutions. Iraqi Journal For Economic Sciences, 58-80.

Khaloufi, B. (n.d.). *The Use of Natural Resources for Housing in Rural Areas of Morocco.* Retrieved 1 14, 2016, from Lunds University: http://www.lth.se

Kleniewski, N., & Thomas, A. R. (2010). Cities, Change, and Conflict. USA: Cengage Learning

Lara, H. S., Cervilla, T., & Castro, R. (2008). *Challenges the construction sector in Venezuela faces with the housing and infrastructure deficit (book article; online resource).* Retrieved 12 16, 2015, from ICONDA®CIBlibrary: http://www.irbnet.de/

Lawson , J., & Milligan , V. (2007). International trends in housing and policy responses. Sydney: Australian Housing and Urban Research Institute - Sydney Research Centre

Legislative Council Secretariat. (2013). *Information note : Housing supply in Hong Kong.* Retrieved 12 25, 2015, from Legislative Council / Hong Kong-China: http://www.legco.gov.hk

Le Blanc, D. (2005). *Economic Evaluation of Housing Subsidy Systems: A Methodology with Application to Morocco.* The World Bank, Transport and urban development. The World Bank.

Luthander , J., & Gustavsson, K. (2014). *Sidi Moumen: from terror slum to open city :A parpcipatory urban renewal for Sidi Moumen, Casablanca.* Retrieved 1 15, 2016, from Belkinge Institute of Technology (BIT): http://bth.diva-portal.org.

Majdi, M. H., 2013. The role of housing finance policies in reducing the housing crisis in Iraq. Accounting and Financial Studies Journal, 8(24), pp. 394-423.

Mathtiy, K. (1989). The Sandinista Approach to Housing. *Habitat International., 13*(3), 139-155.

Malpass, P., & Murie, A. (1999). *Housing policy and practice* (Vol. Fifth edition). UK: MACMILLAN PRESS LTD.
Malpass, P. (2008). Histories of social housing: a comparative approach. In K. Scanlon, & C. Whitehead (Eds.), Social housing in Europe II , A review of policies and outcomes (pp. 15-29). London: LSE London. Retrieved 2 3, 2016, from http://www.lse.ac.uk.
Manoochehri, J. (2009). *Social policy and housing: reflection of social values (PhD thesis).* London: University College London.
Mejia, C. R. (1984). *Housing and the state : The case of Honduras (M.Sc. dissertation).* USA: Massachusetts Institute of Technology.
McCue , D. T. (2003, 5 17). *Risks and Opportunities: an Assessment of Housing Finance in Venezuela.* Retrieved from International Union for Housing Finance: http://www.housingfinance.org.
McCutcheon, R. (1989). The role of industrialised building in Soviet Union housing. Habitat International, 13(4), 43-61.
Mouzughi, Y., Bryde, D., & Al-Shaer, M. (2014). The Role of Real Estate in Sustainable Development in Developing Countries: The Case of the Kingdom of Bahrain. *Sustainability, 6*, 1709-1728.
Mula-Hewish, L. T. & Jumaa, I. Q., 2008. Some of the preferred residential alternatives for Baghdad. Journal of Engineering, 14(3), pp. 379-398.
Mutlak, J. B., 2011. Activating the role of the private sector in Housing finance. Journal of the planner and development, Issue 24, pp. 109-124.
Nagy, G. (2006). *Strengthening the Capacity of the housing sector in Iraq.* Retrieved 8 10, 2015, from International Union for Housing Finance: http://www.housingfinance.org.
Nakamura, S. (2014). Impact of slum formalization on self-help housing construction: A case of slum notification in India. Urban Study, 51, 3420–3444.
Naseer, A. (2007, 11 27). *Housing policy Housing policy.* Retrieved 11 28, 2015, from King Saud University: http://faculty.ksu.edu.sa.
Nashoor, E. K. (2012). Analysis of trends in the housing crisis in the province of Basrah. Basra studies journal, 14, 239-263.
Norris, M., & Shiels, P. (2004, 11). *Regular National Report on Housing Developments in European Countries : Synthesis Report.* Retrieved 1 2, 2016, from International Union of Tenants: http://www.iut.nu
Norris, M., & Winston, N. (2003, 5 28). *Housing Policy Review 1990-2002.* Retrieved 1 3, 2016, from Envrionmern, Community and Local Government: http://www.environ.ie.
Nadhmy, D. O. and H. K. Maala (2013). "Suitable Investment environment For business sector in Iraq " journal of Economics And Administrative Sciences/ University of Baghdad 19(74): 252-272.
O'Connell, C. (2007). *The State and Housing in Ireland: Ideology, Policy and Practice.* New York: Nova Science Publishers.
Okpala, D. C. (1992). Housing production systems and technologies in developing countries: a review of the experiences and possible future trends/prospects. *Habitat International, 16*(3), 9-32.
Olsen, E. O., & Zabel, J. E. (2014, 9). United States Housing Policy. Retrieved 2 8, 2016, from Wharton University of Pennsylvania / Real Estate Department: http://real.wharton.upenn.edu.
Oubala, K. (2011). *Is Morocco an attractive destination for foreign investors looking to invest in the residential real estate segment? (M.Sc. thesis).* USA: Massachusetts Institute of Technology.
Oxley, M. J. (1983). *Housing Policy in Western Europe: An Economic Analysis of the Aims and Instruments of Housing Policy in the United Kingdom, West_Germany, France, the Netherlands, Denmark and Ireland (PhD thesis).* UK: Leicester University.
PADCO. (2006). Iraq Housing Market Study. UN
Pearce-Oroz, G. (2007). Limits to Large-Scale Reconstruction in Honduras: Land development for low-income housing in inadequately functioning land markets. *Global Urban Development, 3*(1), 1-20. Retrieved 1 7, 2016, from http://www.globalurban.org
Peterson, G., Gardner, D., Smith, T., Banks, D., Jickling, D., & Telgarsky, J. (1989, 5). *Honduras shelter and urban development - USAID.* Retrieved 1 7, 2016, from USAID: http://pdf.usaid.gov
Portnov, B. A., & Pearlmutter, D. (1999). Private construction as a general indicator of urban development: The case of Israel. *International Planning Studies, 4*(1), 131-160.
Pusch, C. A. (2010). *An Analysis of Informal Housing: The Case of Los Platanitos, Santo Domingo Norte, Dominican Republic (M.Sc. dissertation).* Austin: the University of Texas at Austin.
Quinonez, G. E. (1991). *Housing the poor in Venezuela: from general policy to specific targets (M.Sc. dissertation).* Caracas, Venezuela: USA.
Ramirez, R. (1984 (published 1990), 7 3). *Urbanization, Housing and the (Withdrawing) State: The Production-Reproduction Nexus.* Retrieved 12 16, 2015, from The Bartlett Development Planning Unit: https://www.bartlett.ucl.ac.uk
Ramirez, R., Fiori, J., Harms, H., & Mathey, K. (1991, 4). *The commodification of self-help housing and state intervention. Household experience in the 'Barrios' of Caracas.* Retrieved 12 17, 2015, from The Bartlett Development Planning Unit: https://www.bartlett.ucl.ac.uk.
Sabnani, C., Latkar, M., & Sharma, U. (2014, 5). The urban informal sector and housing. International Journal of Scientific and Research Publications, 4(5). Retrieved 1 11, 2016, from http://www.ijsrp.org.

Salem, H. D. (2011). Spatial variation of the rates of population growth in Iraq for the period (1977 - 2007). Journal of the Faculty of Literature, pp. 317-345.
Salman, T. (2007). Social statistics in Iraq. Retrieved 9 11, 2015, from ESCWA: http://www.escwa.un.org.
Schwartz, A. F. (2010). Housing Policy in the United States (Vol. 2). New York: Routledge. Retrieved 2 7, 2016, from http://samples.sainsburysebooks.co.uk.
Sengupta, U. (2010). The hindered self-help: Housing policies, politics and poverty in Kolkata, India. Habitat International, 34, 323-331.
Shaikley, L. K. (2007). Iraq's Housing crisis: upgrading settlements for IDPS (Internally Displaced Persons) - MSc. thesis. California: University of California Irvine.
Sheldon, E. B., & Moore, W. E. (1968). Indicators of Social Change: Concepts and Measurements. USA: Russell Sage Foundation
Sims, D. (1990). Owner-Builder Housing in Jordan. *Habitat International., 14*(1), 123-135.
Sillince, J. A. (2014). Housing Policies in Eastern Europe and the Soviet Union. UK: Routledge.
Soliman, A. M. (2012). The Egyptian episode of self-build housing. Habitat International, 36, 226-236.
Somerville-Woodward, R. (2002). *Ballymun A History Volumes I&2 c.1600 - 1997 Synopsis* (Vol. 1). Dublin, Rep of Ireland: BRL (Ballymun Regeneration Limited). Retrieved 1 2, 2016, from Ballymun Regeneration Ltd.: http://www.brl.ie
Stein, A., & Vance, I. (2008). The role of housing finance in addressing the needs of the urban poor: lessons from Central America. *Environment & Urbanization, 20*(1), 13-30. Retrieved 1 6, 2016, from SAGE journals: http://eau.sagepub.com
Stein, A. (2001). Participation and sustainability in social projects: the experience of the Local Development Programme (PRODEL) in Nicaragua. *Environment&Urbanization, 13*(1), 11-36. Retrieved 12 22, 2015, from http://www.ucl.ac.uk/
Syrian economic center. (2007, 8). *The housing problem in Syria and the continuous crisis.* Retrieved 12 1, 2015, from Islamic business researches center: http://www.kantakji.com
Syrian housing institution. (2015). *The eleventh five years plan of the housing sector (2011-2015)*. Retrieved 12 2, 2015, from Syrian housing institution: http://www.escan.gov.sy.
Šutavičius, M. (2014). Mass-Housing: Tendencies and Modernization - MSc dissertation. Retrieved 11 6, 2015, from Delft University of technology: http://repository.tudelft.nl.
The Hague: Ministry of the Interior and Kingdom Relations/Netherlands. (2010, 9). *Housing Statistics in the European Union 2010.* Retrieved 11 19, 2015, from Federal Ministry of Science, Research and Economy: http://www.bmwfw.gv.at/
The United Nations. (2002). *Bahrain country profile.* Retrieved 12 8, 2015, from The United Nation: http://www.un.org.
Urban, F. (2012, 2). Mumbai's suburban mass housing. Urban History, 39(1), 128 - 148.
UN Economic Commission for Europe. (2000). *Bulletin of Housing and Building Statistics for Europe and North America 2000*. Retrieved 11 19, 2015, from UNECE: http://www.unece.org/
UN Economic Commission for Europe. (2002). *Bulletin of Housing and Building Statistics for Europe and North America 2002*. Retrieved 11 19, 2015, from UNECE: http://www.unece.org
UN-Habitat. (2003). *Slums of the World: The face of urban poverty in the new millennium?* Retrieved 11 19, 2015, from UNHABITAT: http://mirror.unhabitat.org/
UN-Habitat. (2009). Financing affordable social housing in Europe. Nairobe: United Nation. Retrieved 2 3, 2016, from http://www.iut.nu.
UN-Habitat. (2010, 7). *Kingdom of Morocco: Al Omrane Leading actor for Settlements Upgrading.* Retrieved 1 14, 2016, from UN-Habitat: http://mirror.unhabitat.org
United Nations Department of Economic and Social Affairs. (2011). *Compendium of Human Settlements Statistics 2011*. Retrieved 11 19, 2015, from United Nation: http://unstats.un.org/
United Nations Statistics Division. (2015). *Israel*. Retrieved 12 28, 2015, from UN data: http://data.un.org/
Housing and Urban Development Corporation. (2015). *Housing Policies in Jordan*. Retrieved 11 28, 2015, from Housing and Urban Development Corporation: http://www.hudc.gov.jo
Yap, K. S., & De Wandeler, K. (2010). Self-help housing in Bangkok. Habitat International, 34, 332-341.
Yan, F. P. (n.d.). *Public Housing in Hong Kong: Past, Present and Future.* Retrieved 12 24, 2015, from Chartered Institute of Housing Asian Pacific Branch: http://www.cih.org.hk
Yousif, B. (2012). *Human development in Iraq 1950 - 1990* (Vol. First). USA: Routledge

Appendices

Appendix (A): Housing conditions in Iraq

Year	Housing Production			Population				Housing stock						
	Private sector's Production [1]	Public sector's Production [2]	Total [3] Production	Formation of new households [4]	No. Of Households [5]	Household size[6]	Population (000) [7]	Total housing stock (including slums) [8]	Formal housing stock [9]	Overcrowding [10] Households/housing	Slums [11] percentage	Housing Shortage: Quantity Shortage[12]	Housing Shortage: Quality Shortage[13]	Estimated [14] Housing Need (historical estimates and future estimates)
56	----	2626[a]	2626	10178	1014049	6.05[a]	6135[k]	1956 Housing stock						Estimated according to households formation: 10000
57	----	2896[a]	2896	5614	1024227	6.15[2]	6299[n]							10000
58	----	1490[a]	1490	14221	1029841	6.3[2]	6488[n]	766185[p]	157988[p]	1.1[p]	63.3%[o]	247864	856061	10000
59	----	3028[a]	3028	1276	1044062	6.4[2]	6682[n]							20000
60	12280[a]	1376[a]	13656	14064	1045338	6.65[a]	6885[n]	1965 Housing stock						20000
61	13170[a]	1773[a]	14943	1612	1059402	6.7[2]	7098[n]							20000
62	12140[a]	894[a]	13034	18128	1061014	6.9[2]	7321[n]							30000
63	12830[a]	250[a]	13080	3913	1079142	7[2]	7554[n]							30000
64	14430[a]	250[a]	14680	4377	1083055	7.2[2]	7798[n]							30000
65	16370[a]	86[a]	16456	32112	1087432	7.4[a]	8047[k]	1104452[p]	475250[p]	1.2[p]	56.9%[o]	None	612182	30000
66	18270[a]	105[a]	18375	28833	1115167	7.45[2]	8308[n]							30000
67	14810[a]	150[a]	14960	29509	1144000	7.5[2]	8580[n]							56600[a]
68	15735[p]	248[p]	15983	30306	1173509	7.55[2]	8860[n]							56600[a]
69	17140[p]	466[p]	17388	30171	1203815	7.6[2]	9149[n]							56600[a]
70	15730[p]	607[p]	16337	32247	1233986	7.65[a]	9440[k]	1977 Housing stock						138700[a]
71	15930[p]	2055[p]	17985	33637	1266233	7.7[2]	9750[k]							138700[a]
72	14363[p]	2900[p]	17263	35130	1299870	7.75[2]	10074[k]							138700[a]
73	14841[p]	1230[p]	16071	36337	1335000	7.8[2]	10413[k]							138700[a]
74	12123[p]	1605[p]	13728	36764	1371337	7.85[2]	10765[k]							138700[a]
75	14816[p]	1231[p]	16047	57504	1408101	7.9[a]	11124[k]	1461888[p]	815395[p]	1.3[p]	44.2%[o]	76573	723066	138700[a]
76	17173[p]	1230[p]	18403	72856	1465605	7.85[2]	11505[k]							138700[a]
77			46150[p]	62184	1538461	7. 8[2]	12000[k]							138700[a]
78			46150[p]	64419	1600645	7.75[2]	12405[k]							138700[a]
79	90183[p]	94417[p]	46150[p]	65393	1665064	7.7[2]	12821[k]							138700[a]
80			46150[p]	68095	1730457	7.65[a]	13238[k]	1987 Housing stock						138700[a]
81			46150[p]	70322	1798552	7.6[2]	13669[k]							138700[a]
82	---	---	60000[e]	75926	1868874	7.55[2]	14110[k]							138700[a]
83	---	---	60000[e]	65535	1944800	7.5[2]	14586[k]							138700[a]
84	---	---	50000[e]	95746	2010335	7.45[2]	14977[k]							138700[a]
85	---	---	50000[e]	56335	2106081	7.4[i]	15585[k]							138700[a]
86	---	---	40000[1]	30201	2162416	7.45[2]	16110[k]	2031888[4]	1625510	1.2[m]	10.8%[o]	160729	567107	138700[a]
87	---	---	10324[w]	58316	2192617	7.45[2]	16335[k]							138700[a]
88	---	---	11977[w]	72800	2250933	7.5[2]	16882[k]							138700[a]
89	---	---	20571[w]	45803	2323733	7.5[2]	17428[k]							138700[a]
90	---	---	15354[w]	70066	2369536	7.55[2]	17890[k]	1997 housing stock						138700[a]
91	---	---	6043[w]	53687	2439602	7.55[2]	18419[k]							169000[g]
92	---	---	1250[g]	69605	2493289	7.6[2]	18949[k]							169000[g]
93	---	---	1250[g]	52400	2562894	7.6[2]	19478[k]							169000[g]
94	---	---	1250[g]	69150	2615294	7.65[2]	20007[k]							169000[g]
95	---	---	2000[f]	58932	2684444	7.65[2]	20536[k]	2568592[6]	2542906	1.3[m]	1%[5]	294524	320210	169000[g]
96	---	---	400[f]	119740	2743376	7.7[2]	21124[k]							169000[g]
97	---	---	1000[f]	85195	2863116	7.7[i]	22046[k]							169000[g]
98	---	---	1000[f]	108159	2948311	7.7[2]	22702[k]							169000[g]
99	---	---	2000[f]	112740	3056470	7.65[2]	23382[k]							169000[g]
00	---	---	4000[f]	112523	3169210	7.6[2]	24086[k]	2007 Housing stock						169000[g]
01	---	---	15000[q]	172996	3281733	7.5[2]	24813[k]							169000[g]
02	24000[d]	---	24000[q]	153483	3454729	7.4[2]	25565[3]							169000[g]
03	53000[d]	---	53000	161093	3608212	7.3[2]	26340[l]							169000[g]
04	8000[d]	---	8000[q]	169145	3769305	7.2[2]	27140[l]	3242220[m]	3125500	1.3	3.6%[5]	1059519	1176239	169000[g]
05	8000[d]	---	8000	177264	3938450	7.1[2]	27963[3]							169000[g]
06	13000[d]	---	13000	186025	4115714	7.0[2]	28810[3]							200000[v]
07	9000[d]	10283	19283[c]	320724	4301739	6.9[g]	29682[l]							200000[v]
08	10000[d]	12126	22126[c]	103507	4622463	6.9[2]	30572[3]	2011 Housing stock						200000[v]
09	11000[d]	10918	21918[c]	271106	4725970	6.7[c]	31664[l]							200000[v]
10	13000[d]	9805	22805[c]	210736	4997076	6.5[2]	32481[l]							200000[v]
11	14000[d]	9656	23656[c]	233457	5207812	6.4[c]	33330[l]	4717622[u]	4373236	1.3[e]	7.3%[r]	490190	834576	200000[v]
12	16000[d]	12096	32196[t]	224995	5429682	6.3[2]	34207[l]							200000[v]
13	11000[d]	13526	22122[t]	141290	5654677	6.2[t]	35059[l]							200000[v]
14	---	---	25000[1]	144839	5795967	6.2[2]	35935[3]							200000[v]
15	---	---	25000[1]	148520	5940806	6.2[2]	36833[3]	4845596[4]	4491867	1.2	7.3%[5]	1095210	1448939	200000[v]
30	---	---	---	---	8440833	6.0[2]	50645[3]	Housing need (2015 – 2030) = 8440833- 4845596- 57270 (Deterioration per year is considered as constant number 3818[S])						3537967 (Annually 235864)

Appendix A Key Notes

Referenced data

(Al-Adhami, 1975)[a]; (Housing Association, 2013)[b]; (Central statistcal organization , 2012)[c] ; (Central statistcal organization (a), 2013)[d]; (Iraqi Ministry of Planning, 2010)[e]; (PADCO, 2006)[f]; (Al-Hamawandi & Al-Qaisi, 2010)[g] ; (Salman, 2007)[i] ; (Salem, 2011)[k] ; (Fayyad, 2012)[l]; (Al-shock, 2008)[m]; (Jan Lahmeye, 2006)[n]; (Yousif, 2012)[o]; (Al-Rahmani, 1986)[p] ; (Shaikley, 2007)[q] ; (Central Statistical Organization (b), 2013)[r]; (Central Statistical Organization, 2005)[s]; (Central Statistical Organization, 2014)[t]; (Central Statistical Organization, 2011)[u] ; (Iraqi Ministry of Construction and Housing, 2010)[v]; (United Nation, 1995)[W]

Data is not available and cannot be estimated

Values were estimated depending on calculations based on the available referenced values 1. Estimating through formulas :

- Total production = private sector's production + public sector's production.
- New households formation = households number in a specific year – households number in the previous year.
- Household size = Total population / No. of households.
- Number of households = total population / household size.
- Formal housing stock = Total stock – slums housing units
- Future deterioration = the estimated number of the annually deteriorated housing units × number of years

2. Estimating by assumptions depending on the available data (only in the following cases);

(1) The total housing production data for the year 1986 and the period 2014 -2015 is not available. The relevant values estimated according to previous and following years.

(2) Household average size. The available data are for 1956, 1965, 1977, 1987, 1997, 2007 and 2011. The other values were estimated with values that represent a bridge between the two identified limitations.

(3) Total population in Iraq: The unavailable values were estimated according to the growth rate of the previous year.

(4) The total housing stock for 1987 was calculated from the summation of 1977 stock with the production of the period 1977-1987. The stock of 2015 was estimated depending on the summation of 2011 stock with the production of the period 2011-2015.

(5) Due to the lack of the available data regarding the slums percentage for the years 1997, 2007 and 2015 the estimation was done according to the following:

- The slums for the year 1997 was estimated building on that slums grown in Baghdad from 25 to 200 between 2003 and 2012 which represented an eight times increase. Accordingly, the percentage of slums of 2011 divided over eight to make an estimate of 1% for the year 1997.
- 3.6% was given to the year 2007, which is a value between 1997 estimated value and 2011 referenced value.
- The same value of 2011 referenced value was given to the year 2015.

(6) The formal census of the year 1997 included only 15 governances and excluded the Kurdistan region. Because of data unavailability, 20% of the census's value was added to estimate the total housing stock as the share of the Kurdistan region's housing stock has been always around that percentage.

Appendix (B): Calculating housing shortage and housing production

Country	Year	Housing indicators: Annual Production rate (per new household formation)	Housing indicators: Housing shortage
Bahrain	65	2	0.17
	71	2	0.1
Cyprus	60	---	-0.09
	82	1.8	-0.17
	92	---	-0.25
Hong Kong	61	0.13	0.1
	71	2.5	0.17
	91	2.2	0.08
India	60	0.94	0.06
	70	1.88	0.06
	81	1.67	-0.06
Japan	63	1.7	-0.01
	73	1.7	-0.07
	93	2.4	-0.11
Jordan	52	2.9	0.24
	79	1.25	-0.22
Korea Republic	70	0.3	0.25
	95	1.5	0.29
	01	1.2	---
	10	0.99	0.2
Philippines	60	0.86	-0.02
	70	1.94	0.02
	90	0.65	---
	00	0.7	0.05
Syrian Arab Republic	60	0.58	0.05
	81	0.98	-0.13
	94	0.73	---
Sri Lanka	63	0.97	0
	81	0.97	-0.05
Thailand	70	1.05	-0.07
	00	0.81	0
Iraq	56	0.19	0.39
	87	0.66	0.17
Israel	66	1.36	0.07
	71	2.8	0.06
	83	1.58	---
	90	1.06	---
	08	---	0.09
Yemen	75	0.01	---
	90	0.04	---
Canada	66	1.24	-0.04
	76	1.19	-0.07
	91	1.07	0.01
	01	0.52	0.11
Nicaragua	63	0.9	0
	95	2.24	0.07
	05	1.32	-0.03
Ghana	69	0.76	0.63
	84	0.76	0.52
Mauritius	62	1.05	-0.02
	90	0.82	0.06
Mexico	90	0.87	0.06
	10	1.21	0.01
Cuba	70	0.42	-0.01
	81	0.97	0
El Salvador	71	0.95	0.05
	07	2.95	-0.18
Chile	60	0.98	0.04
	70	1.48	---
	82	0.83	-0.01
	05	1.11	-0.05
Mongolia	69	0.27	---
	00	0.25	0.52
Singapore	66	1.06	---
	75	2.26	---
	95	1.14	---
Turkey	60	0.6	---
	85	0.69	---
	94	0.5	---
Austria	69	1.61	-0.05
	81	1.26	-0.09
	01	2.11	-0.18
	09	---	---
Belgium	47	1.56	-0.01
	61	3.53	-0.04
	70	3.21	-0.06
	91	1.23	0.06
	01	1.1	0
	09	1.07	-0.09
Bulgaria	56	0.47	0.07
	65	0.85	0.18
	85	3.55	0.07
	92, 91	0.09	0.1
	01	0.68	0.15
Denmark	66	1.86	0.03
	91	1.03	-0.04
	02	0.98	-0.03
	09	1.18	-0.05
Finland	60	1.49	0.08
	89	2.73	-0.07
	99, 98	2.11	-0.07
	02	1.12	---
	09	1.07	-0.05
France	62	1.77	-0.1
	99	1.22	-0.2
	09	1.49	-0.15
Hungary	63	16.5	0.13
	73	22.3	0
	96	2.08	-0.03
	01	NA	-0.05
	09	NA	-0.12
Costa Rica	63	---	0
	73	0.37	---
	97	2.93	-0.87
The Dominican Republic	60	0.07	---
	93	2.81	0.01
	02	1.48	-0.1
Peru	60	1.1	-0.05
	90	1.1	-0.08
	00	0.75	---
	07	0.6	0.08
New Zealand	66	1	-0.05
	76	1.43	0.01
	91	1.27	0.01
	06	0.82	0.06
Guatemala	64	0.26	0.01
	73	0.84	---
	81	1.14	---
	93	0.66	---
Tunisia	66	0.24	-0.04
	89	2.44	-0.03
	04	1.36	-0.14
Greece	61	2.79	-0.05
	71	2.67	-0.2
	01	2.19	-0.4
	04	---	
Germany (Dem.+Fed.)	61	1.42	0.15
	71	1.43	0.04
	98	2.1	0.02
	09	0.36	0.03
Iceland	50	1.87	0.14
	60	1	0.12
Ireland	61	5.95	0.02
	71	11.6	0
	96	2	-0.01
	06	0.93	0.01
Italy	61	1.26	-0.08
	71	1.64	-0.09
	91	0.75	-0.25
	00	0.9	-0.25
Malta	57	3.11	0.06
	05	1.77	0.02
Netherlands	60	1.26	0.09
	71	1.3	0.06
	89	0.86	0.02
	99	0.95	0.02
	09	1.04	0.03
Norway	60	2.11	0.04
	70	2.57	0
	90	1.14	0.11
	01	1.51	0.03
Poland	70	1.15	0.13
	88	0.58	0.1
	95	0.66	0.1
	09	1.68	0.07
Portugal	60	2.38	0
	70	3.11	-0.16
	91	1.66	0.06
	02	0.2	-0.34
	09	2.57	-0.39
Croatia	91	1.43	-0.02
	01	3.01	-0.13
Honduras	61	0.07	0
	74	0.64	---
	88	1.67	-0.01
Jamaica	60	---	0.02
	70	0.97	0.01
	91	1.34	-0.19
	01	0.81	-0.16
Paraguay	62	0.86	0.03
	90	0.86	0.08
South Africa	60	0.9	0.01
	01	0.9	0.09
United States	60	1.41	-0.09
	70	1.84	-0.08
	90	0.97	-0.1
Brazil	70	1.03	0.02
	98	1.03	-0.02
Ecuador	62	0.11	0.01
	90	1.16	-0.09
Venezuela	50	0.95	0.04
	61	1.33	-0.08
	90	1.09	-0.09
Romania	66	2.77	0.09
	92	0.71	-0.05
	09	0.95	0.02
Spain	60	0.88	-0.01
	70	1.12	0.01
	91	6.93	-0.46
	09	1.98	-0.45
Sweden	60	2.55	-0.02
	90	0.46	0.01
	02	0.33	---
	09	1.04	0.02
Switzerland	50	1.05	0.02
	60	1.53	0.01
	90	0.84	-0.1
United Kingdom	61	3.9	0
	99	1.6	-0.2
	04	---	0.03
Slovenia	90	1.17	0.09
	02	1.34	-0.12
Slovakia	91	0.27	0.12
	02	0.49	0.19
	09	1.01	0.22
Latvia	90	NA	0.15
	00	NA	0.15
	09	NA	-0.17
Lithuania	90	0.45	-0.02
	01	0.52	0.06
	09	0.35	0.1
Czech Republic	98	NA	0.11
	01	NA	0.01
Estonia	90	0.14	0.26
	02	0.05	0.06
	09	NA	-0.11
Moldova	95	1.12	0
	02	1.24	-0.02
Algeria	66	0.18	0.03
	90	1.23	---
	08	0.63	0.09
Iran	56	0.37	0.3
	87	0.41	---
Panama	60	0.35	-0.14
	70	0.58	0
	90	0.99	0.01
Australia	61	1.24	0.05
	71	1.52	-0.09
	86	1.32	-0.08
	98	0.9	-0.04
	06	1.58	-0.1
Libya	95	1.1	0.36
	06	1.1	0.22
Morocco	67	0.5	0.03
	85	3.6	---
	04	0.78	-0.09
Argentina	60	1.07	0.16
	91	1.07	0.07
Colombia	51	0.35	0.01
	64	1.05	0.06
	93	2.78	0.04
	05	1.47	0.02
Uruguay	63	1.31	0.16
	96	1.31	0.04

Note:

Housing shortage = (Total households No.-Total available housing units) / Total households No
Production rate = No. of new housing units / No. of newly formed households

These data are calculations depended on raw data available in the following references:

(Department of Economic and Social Affairs/UN, 1974); (Department of Economic and Social Affairs / UN, 1976); (Department of International Economic and Social Affairs/UN, 1980); (Department of International Economic and Social Affairs/UN, 1985); (Department for Economic and Social Information and Policy Analysis/UN, 1995); (United Nations Department of Economic and Social Affairs, 2011); (UN Economic Commission for Europe, 2000); (UN Economic Commission for Europe, 2002); (The Hague: Ministry of the Interior and Kingdom Relations/Netherlands, 2010); (Department of Economic and Social Affairs/UN, 1970); (Department of international economics and social affairs/UN, 1980); (Department of International Economic and Social Affairs/UN, 1990); (Department of Economic and Social Affairs/UN, 2001); (Department of Economic and Social Affairs/UN, 2001); (Department of Economic and Social Affairs/UN, 2013).