



universität
wien

MASTER THESIS | MASTER'S THESIS

Titel | Title

“Understanding the Dynamics of Foreign Aid in
Rebuilding Developing Economies Following Natural Disasters:
A Case Study of the 2017 Kermanshah Earthquake”

verfasst von | submitted by

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angestrebter akademischer Grad | in partial fulfilment of the requirements for the degree of
Master of Advanced International Studies (M.A.I.S.)

Wien | Vienna, 2024

Studienkennzahl lt. Studienblatt |
Degree programme code as it appears on the
student record sheet:

UA 992 940

Universitätslehrgang lt. Studienblatt | Degree
programme as it appears on the student rec-
ord sheet:

Internationale Studien

Betreut von | Supervisor:

Dr. Katja Kalkschmied”



diplomatische
akademie **wien**

Vienna School of International Studies
École des Hautes Études Internationales de Vienne

Kurzfassung

Naturkatastrophen treten zunehmend häufiger und in schwerwiegenderer Form auf, was auf den Klimawandel als eine der Hauptursachen zurückzuführen ist. Immer mehr Menschen sind direkt oder indirekt von den Auswirkungen von Naturkatastrophen wie Erdbeben oder Tsunamis betroffen. Daher ist die Evaluierung der Wirksamkeit der internationalen Hilfe nach Naturkatastrophen insbesondere in Entwicklungsländern von großer Bedeutung. Zur Veranschaulichung wird das Erdbeben von Kermanshah im Jahr 2017, das sowohl den Iran als auch den Irak betraf, als Fallstudie herangezogen.

Obwohl die beiden Nachbarländer simultan betroffen waren, lassen sich signifikante Unterschiede in ihren internen Strukturen und Ansätzen im Katastrophenmanagement feststellen. Im Iran war die Intensität des Erdbebens deutlich stärker und die Schäden und Verluste dementsprechend höher. Während der Iran internationale Hilfe ablehnte und sich auf eigene Hilfsstrategien verließ, war der Irak in hohem Maße auf internationale humanitäre Hilfe, primär aus der Türkei, angewiesen. Es ist zu erkennen, dass interne Strukturen wie politische, wirtschaftliche und logistische Faktoren sowie Ansätze des Katastrophenmanagements einen starken Einfluss auf die Bereitstellung von Hilfsgütern und den anschließenden Wiederaufbau haben. Die Ergebnisse deuten darauf hin, dass eine optimierte Katastrophenprävention von entscheidender Bedeutung ist. Darüber hinaus besteht weiterer Forschungsbedarf hinsichtlich der langfristigen sozioökonomischen Auswirkungen der internationalen Hilfe, um die Effektivität des wirtschaftlichen Wiederaufbaus nach einer Katastrophe zu steigern.

Abstract

It can be observed that natural disasters are occurring more frequently and often more severely than before, due to the phenomenon of climate change, which has been identified as one of the main drivers. As a result, more and more people are directly or indirectly affected by the consequences of natural disasters such as earthquakes or tsunamis. Consequently, the assessment of the efficacy of international aid in the aftermath of natural disasters, with a specific focus on developing countries, is of great importance. To illustrate, the Kermanshah earthquake of 2017, which affected both Iran and Iraq, is used as a case study.

Although the two adjacent countries were affected simultaneously, substantial differences in their internal structures and disaster management approaches can be identified. Iran was notably more affected by the destructive force of the earthquake and thus recorded greater damage and losses. While Iran was declining international assistance and relying on its own relief strategies, Iraq was significantly dependent on international humanitarian aid, particularly from Türkiye. It is evident that internal structures, such as political, economic, and logistical factors, as well as approaches to disaster management, exert a profound influence on the supply of relief and subsequent reconstruction efforts. The findings of this study indicate the significance of optimised disaster preparedness and the necessity for further research into the long-term socio-economic impact of international aid to enhance the effectiveness of post-disaster economic reconstruction.

On my honour as a student of the Diplomatische Akademie Wien, I submit this work in good faith and pledge that I have neither given nor received unauthorized assistance on it.

Julia Tuksa

Vienna, 7th of June 2024

Acknowledgements

First, I would like to thank my advisor, Dr. Katja Kalkschmied, for helping me put my ideas on paper (and actually making sense of it). Her insights and support have been invaluable in helping me steer my research in the right direction.

I would also like to extend my heartfelt thanks to Emilia Castelao and Lauren Kook, my two most steadfast pillars throughout my journey at the DA. I'm so grateful to them for being there for me every step of the way. Their constant support, patience in listening to my rants, and advice on my academic research have been vital.

Table of Contents

1. Introduction	8
1.1. Research question.....	9
1.2. Structure	10
2. Theoretical Perspectives on Disaster Costs and Aid Effectiveness	11
2.1. Economic impact of natural disasters.....	11
2.2. Effectiveness of Foreign Aid.....	18
3. Methodological Approach	21
4. Socioeconomic analysis of the Kermanshah Earthquake's impact	22
4.1. The 2017 Kermanshah earthquake	22
4.2. Iran.....	24
4.2.1. Economic situation in Iran.....	25
4.2.2. Socio-economic consequences of the earthquake	28
4.2.3. Relief Efforts	29
4.3. Iraq.....	34
4.3.1. Economic situation in Iraq.....	35
4.3.2. Socio-economic consequences of the earthquake	38
4.3.3. Relief efforts.....	39
5. Comparative Analysis of Socio-Economic Impacts in Iran and Iraq	41
5.1. Economic Perspectives: Iran and Iraq in Contrast.....	41
5.2. Impact Assessment: Post-Kermanshah Earthquake Consequences.....	43
5.3. Relief Strategies: Contrasting responses to the Kermanshah Earthquake	45
6. Limitations.....	48
7. Conclusion	49
Table of Figures.....	51
Reference List.....	52

List of Abbreviations

AFAD *Turkish Disaster and Emergency Management Presidency*

GDP *Gross Domestic Product*

ICRC *International Committee of the Red Cross*

IFRC *Red Crescent Society of the Islamic Republic of Iran*

IMF *International Monetary Fund*

IRCS *Iraqi Red Crescent Society*

IRGC *Islamic Revolutionary Guard Corps*

ISIS *Islamic State*

JCPOA *Joint Comprehensive Plan of Action*

KRG *Kurdish Regional Government*

MNA *Middle East and North Africa*

NDMO *National Disaster Management Organisation of Iran*

NGO *Non-Governmental Organisation*

ODA *Official Development Assistance*

OPEC *Organisation of the Petroleum Exporting Countries*

UNDAC *United Nations Disaster Assessment and Coordination*

WHO *World Health Organization*

1. Introduction

In recent decades, the number of natural catastrophes has increased dramatically. Natural catastrophes, such as earthquakes, floods, or droughts, are well studied shocks, but they still cause substantial economic losses and have a tremendous influence on societies within the affected region. While population and economic growth remain the main drivers of increased losses from such events, climate change has undoubtedly contributed to the frequency and severity of natural disasters. Since the 1990s, the frequency of disasters has tripled, and the economic losses run into tens of billions of US-dollars. (Botzen, Deschenes, & Sanders, 2019, p. 167).

It is evident that natural disasters have a profound impact on the global economy, as well as on the population of affected countries. The 2005 hurricane Katrina in the United States and the 2011 tsunami in Japan are illustrative of this phenomenon. Both events resulted in significant economic losses and a considerable loss of life (Botzen et al., 2019, p. 167). Although they have an immense impact on social components of a country, such as poverty and inequality, the number of deaths each year from natural disasters fluctuates considerably. For example, in 2021, approximately 10,500 people died as a result of natural disasters, compared with over 75,000 in 2022. In relative terms, deaths from natural disasters account for only a small proportion of global deaths. However, they still can have a significant impact, particularly on vulnerable populations and the socioeconomic factors of a country (Ritchie & Rosado, 2020).

While natural catastrophes affect countries all over the world, some are socially and economically more affected than others. Countries in the Middle East and North Africa (MNA) have been disproportionately affected in recent decades by natural disasters, ranking second in terms of vulnerability to climate change. In addition to challenges posed by both natural disasters and climate change, the region is also grappling with water scarcity and rapid urbanisation, which are further exacerbating its already fragile and vulnerable natural resources. The rapid urbanisation of the region is increasing the exposure of people and industrial assets to disasters. Due to often geographical difficult living conditions, 92% of the total population is concentrated in approximately 3% of the region's surface area. Furthermore, the rapid growth of informal settlements in the early 2010s was concerning to international organizations, as these settlements are less equipped to withstand the impacts of climate change and natural disasters (The World Bank, 2014).

Low-and middle-income countries are often heavily dependent on international humanitarian and foreign aid post disaster. Due to a lack of institutional structure or funds they are often unable to cope with both the immediate humanitarian and long-term problems on their own. In many parts of the world, various organisations are involved in post-disaster reconstruction. Several Non-governmental organisations (NGO), such as the International Committee of the Red Cross (ICRC) or national Red Cross and Red Crescent foundations, provide medical assistance and often coordinate international relief efforts. Institutions such as the International Monetary Fund (IMF) or the World Bank arrange for financial

assistance. But even among low-and middle-income countries that have received aid, there seems to be inequality. Why, for example, did India recover economically after the 2001 earthquake, whereas Haiti still does not seem to have recovered from the 2010 earthquake? While some countries seem to have regained their economic footing rather quickly, others remain stuck in a vicious circle with no way out of the poverty trap. So how is it that in some cases foreign aid boosts a country's economy after a disaster, while in others there is no visible economic benefit or even a potentially negative outcome? To answer these questions, it is necessary to examine the socio-economic situation of these countries before and after the disaster. It is also vital to assess whether foreign aid had an impact in the post-disaster recovery and reconstruction process.

1.1. Research question

In attempt to address the above-mentioned questions and issues, this master thesis will examine the following research question:

How is it that foreign aid is not always effective in rebuilding a developing country's economy following a natural disaster?

In addition to the academic implications, this question has practical, immediate, and long-term implications. The lack of resources, both monetary and non-monetary, can be challenging even for high-income countries, but it is particularly stressful for many low- and middle-income countries that are often heavily under-resourced and sometimes indebted. As previously mentioned, developing countries often lack sufficient resources and infrastructure, which presents significant challenges in disaster recovery and economic revitalisation. Consequently, foreign aid is frequently regarded as a pivotal support mechanism in such circumstances.

However, the uneven success of post-disaster economic recovery raises questions about the effectiveness and use of such aid. By investigating why foreign aid does not always translate into effective economic recovery, this research aims to uncover potential inefficiencies, mismanagement, or structural problems within both the aid mechanisms and the recipient economies. This understanding is key to improving the design and implementation of aid programmes to ensure that they not only address immediate relief needs, but also support sustainable economic recovery and resilience building. In a time where natural disasters are becoming increasingly frequent and devastating, optimising aid effectiveness is not only a matter of economic recovery, but also an important step towards global sustainability and resilience.

Each disaster is unique in terms of the type and extent of damage it causes. A comparison between different events, even if they belong to the same group of natural disasters such as flooding, earthquakes, or tsunamis, is challenging. While there is a substantial body of literature on the impact of natural disasters on economies, these studies tend to focus on specific aspects. There is currently no literature that

compares the situation prior to and after the occurrence of transnational natural disasters. This thesis aims to address this gap in the literature.

This research is based on theoretical perspectives concerning the role of foreign aid in post-disaster economic recovery and the overall economic impact of disasters. The primary motivation is the improvement of disaster management practices and for them to be more effective and contextually appropriate. By comparing the experiences of two countries affected by the same disaster, the aim is to uncover the influence of foreign aid, policies, governance structures, and socio-economic factors on disaster response and economic resilience.

1.2. Structure

The proposed research aims to investigate the economic consequences of natural disasters, with a particular focus on earthquakes, and to assess the effectiveness of foreign aid in mitigating their impact. To achieve this, Chapter 2 will provide a comprehensive review of the existing literature in order to gain a substantiated understanding of the scholarly opinions on the economic consequences of natural disasters and the efficacy of foreign aid.

Subsequently, in Chapter 3, a socioeconomic analysis of the Kermanshah earthquake and its impact will be conducted. To assess and evaluate the economic impact of an earthquake, several factors need to be considered, such as damage to infrastructure, disruption to key industries, humanitarian needs and government response. Therefore, a secondary data analysis will assess the data pertaining to the earthquake, as well as the economic performance of the two affected countries prior to and following the major earthquake. In order to ensure a meaningful comparison, similarities between the two countries, such as their propensity to earthquakes and similar institutional frameworks, will be identified. Subsequently, Chapter 4 will compare the findings of the preceding chapters and evaluate the economic prerequisites, the impacts of the earthquake and the relief strategies in the two countries. In Chapter 5, the limitations of the research will be discussed, and finally, in Chapter 6, a conclusion will be drawn.

2. Theoretical Perspectives on Disaster Costs and Aid Effectiveness

Natural disasters come in many different forms, such as earthquakes, tsunamis, floods, volcanic eruptions, landslides, or avalanches. Despite their diversity, they share certain similar characteristics. They are often triggered by unpredictable natural forces and phenomena and affect regions around the world based on their vulnerability to specific hazards. For example, earthquakes are typically observed along tectonic fault lines, while hurricanes, typhoons and cyclones are more prevalent in tropical and subtropical ocean regions.

Not only the economy and the infrastructure but also the environment and human communities can suffer significant damage from natural disasters. To develop effective disaster management and mitigation strategies, it is essential to understand the inter-linkages between the factors involved. Policymakers and stakeholders can develop more robust plans and allocate resources more efficiently by understanding how these factors interact. This, in turn, can increase resilience and minimise the negative impacts of such events, both locally and globally.

2.1. Economic impact of natural disasters

The economic impact of natural disasters has been extensively analysed in various papers and studies using a variety of modelling and empirical approaches. Even though there is a lot of literature out there, it is important to keep in mind that the findings of the economic impact of natural disasters often varies. This is due to fact that there is only a rather broad definition of what really constitutes as a natural disaster event (Cavallo & Noy, 2009, p. 10).

In general, the literature suggests distinguishing between direct and indirect effects of natural disasters. Botzen et al. (2019, 167-168) explain that direct impact can be measured through catastrophe models or through the use of empirical data. As shown in Figure 1, it covers damage to property, such as the destruction of dwellings, businesses, infrastructure, agricultural land, or livestock. These losses may occur at the time of the disaster or shortly thereafter.

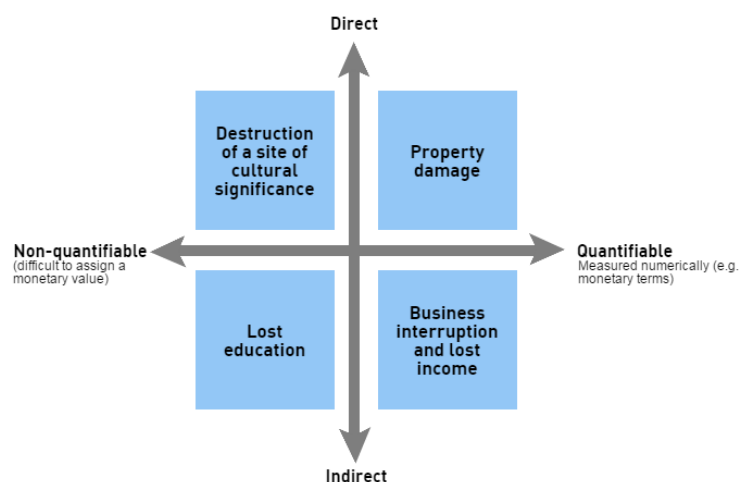


Figure 1: Direct/indirect and quantifiable/non-quantifiable losses (PreventionWeb, 2015)

While Indirect losses relate to the post-disaster economic activities. For example, the disruption of economic operations, positive spill-over effects due to production substitutions and the need for rebuilding. Indirect impacts encompass the short- and long-term economic losses in production and consumption as well as the associated economic recovery paths. The indirect effects are not as easy to measure as direct impact hence why there are only a few studies that measure the indirect economic effects of natural disasters over a long term such as multiple decades. However, the studies that do exist suggest that natural disasters reduce the economic growth for several years after the disaster (Botzen et al., 2019, pp. 179–180).

Overall, it is important to emphasise that geography plays a crucial role in the analysis of natural disasters. A nation's geography is a key determinant of its likelihood of experiencing a natural disaster. There are significant differences between continents in the propensity to experience disaster shocks and the resulting fatalities. To give an example, countries in Asia and the Americas are more likely to experience disaster shocks than countries in Africa. In addition, certain characteristics influence the probability and magnitude of natural disasters. For example, disaster shocks are more likely to affect larger countries, countries at higher altitudes and countries further from the equator. Geography also has an impact on the number of deaths because of natural disasters. Countries in Asia and the Americas have higher mortality rates than Africa. In addition, factors such as altitude and distance from the equator play a role in determining the number of deaths. For instance, altitude has a negative effect on the number of deaths, while distance from the equator increases the number of deaths from certain types of disaster, such as earthquakes (Kahn, 2005, p. 280).

Roth Tran and Wilson (2020) argue that the impact of natural disasters on local economies depends on a few key factors. First, the severity of the disaster, including the extent of physical damage and disruption caused, has a significant impact on the local economy. More severe disasters result in greater economic losses. Second, prior knowledge and the frequency of disasters in a region affect how well prepared the local economy is to cope with and recover from a disaster. However, it is crucial to acknowledge that regions that have experienced multiple disasters in a short period may have reduced resilience, which can lead to greater economic challenges. Third, natural disasters can have a ripple effect on neighbouring regions or even on a national scale. The economic impact of a disaster in one area can affect supply chains, trade networks and the overall economic activity in surrounding areas. Fourth, the impact of disasters depends on the quality of infrastructure and the effectiveness of resilience measures in mitigating the consequences. Fifth, socio-economic factors, like income levels or access to resources, can have a significant impact on the economic impact and leave vulnerable communities disproportionately affected. Lastly, how local governments and agencies respond to disasters and what policies they establish is essential in the aftermath. Effective government intervention and support can help mitigate the economic impact of disasters on local economies.

The existing literature presents some main points, as most researchers focus on common aspects and have even reached a consensus on some points concerning the consequences of natural disasters:

1) The increase of natural disaster losses has been fostered by economic and population growth.

Botzen et al. (2019, pp. 177–178) state that over time direct losses from natural disasters have increased due to economic and population growth, rapid urbanization, and urban expansion into high-risk zones. The potential for property damage and human casualties during disasters has been heightened as a result. Additionally, climate change is contributing to the escalation of direct losses by exacerbating the frequency and intensity of natural hazards. Disasters are amplified by changes in precipitation patterns, sea levels, and temperature regimes. The natural environment has been altered by urbanization and land-use changes, which have put more people and assets at risk.

Furthermore, Cavallo and Noy (2009, 10-11, 28) mention that vulnerability to disasters is further exacerbated by poorly planned urban development and inadequate infrastructure. In addition, aging and inadequate infrastructure make regions more susceptible to damage during disasters, resulting in increased direct losses. Inadequate building standards and poor infrastructure resilience increase the susceptibility of structures to damage during disasters. Critical infrastructure may not be designed to withstand extreme events, resulting in infrastructure failures. Limited disaster preparedness and response capacity hinder the timely and effective response to disasters. The impact of natural disasters on vulnerable populations is exacerbated by socio-economic disparities. Natural disasters have a significant economic impact, which is amplified by factors such as reliance on vulnerable sectors and limited insurance coverage. The increase in direct losses from natural disasters can be attributed to population growth, economic development, climate change, urbanization, and infrastructure vulnerabilities.

2) There are significant differences between developed and developing countries.

The consequences of natural disasters can vary greatly between developing and developed countries due to disparities in preparedness, resilience, infrastructure, and socio-economic conditions. Major disparities exist in key areas such as economic losses, human casualties, and infrastructure damage, but also in the post-disaster recovery process and the overall consequences for vulnerable communities.

Developing countries tend to suffer greater economic losses in proportion to their gross domestic product (GDP) when struck by a natural disaster. This reflects their weaker infrastructure and limited financial resources for recovery and reconstruction. In contrast, more developed nations, with more resilient economies and improved disaster preparedness, may have lower economic losses relative to their GDP along with more financial capacity to recuperate from disasters. However, developed countries suffer higher property losses in absolute terms (Botzen et al., 2019). The figure below illustrates that natural disasters in North America accounted for half of the total direct economic losses in 2020, despite the majority of natural disasters occurring in Africa and Asia.

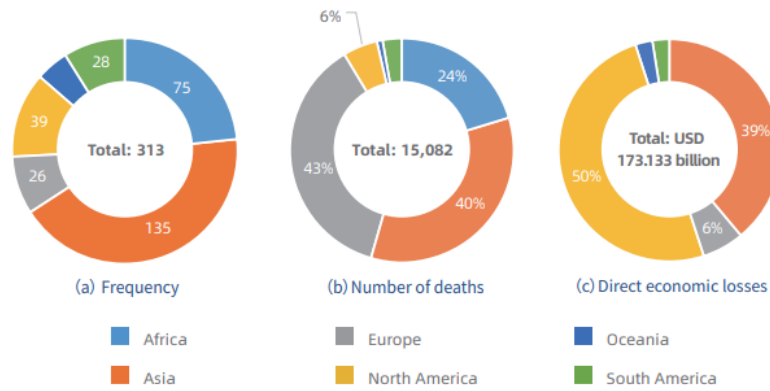


Figure 2: Statistics on the frequency of natural disasters, the number of deaths and direct economic losses by continent, 2020 (Academy of Disaster Reduction and Emergency Management, 2021, p. 13)

In developing countries, the human toll of natural disasters tends to be higher. These countries often do not have adequate early warning systems, emergency response capacity or health care infrastructure. Developed nations, on the other hand, tend to have better emergency response systems, health care and infrastructure (Botzen et al., 2019). Figure 2b shows that the majority of fatalities from natural catastrophes in 2020 occurred in Africa and Asia, where the number of developing countries remains high, supporting the argument by Kahn (2005) that geography plays an important role on the number of human casualties.

Infrastructure can be severely damaged by natural disasters in both developing and developed countries. However, the impact is often greater in developing countries due to weaker infrastructure resilience and poor maintenance. More robust infrastructure systems, designed to withstand natural hazards to a greater extent, are generally found in developed countries, resulting in less severe damage in the event of a disaster. In addition, post-disaster recovery and reconstruction activities in developing countries may be challenged by limited financial resources, limited technical expertise and slower reconstruction processes. Whereas developed economies offer enhanced capacity for rapid recovery and reconstruction, including access to modern technology, insurance mechanisms and support from international donors to assist in the recovery efforts following a disaster (Botzen et al., 2019).

It is important to note that overall growth in developing countries is more vulnerable to natural disasters because they tend to affect more sectors. Sectoral linkages are stronger and the role of agriculture in the country's economy is more prominent. There is however a variation in the effects depending on the type of natural disaster. Loayza et al. (2012, p. 1331) concluded in their study that, a median (typical) drought decreases the per capita annual growth rate of agriculture and industry in developing countries by about 1% point, thereby reducing total annual capital growth. By contrast, a typical earthquake and storm each increase industrial growth by about 1% age points. This corresponds to the predicted pattern of growth when the capital-labour ratio drops considerably and is additionally boosted by the necessity to rebuild and renew capital after earthquakes and storms.

Given that the elasticity of poverty to growth in agriculture and labour-intensive sectors (like construction and manufacturing) is significantly greater than the elasticity of poverty to growth in non-agricultural, and more capital intensive sectors, these findings again indicate that disproportionate impact will be felt by the poor (Loayza et al., 2012, p. 1331).

Finally, in developing countries, the level of social vulnerability is often higher. Vulnerable populations such as those in low-income communities, informal settlements and marginalised groups are often disproportionately affected by natural disasters due to limited access to resources and social protection. More developed nations are likely to have improved welfare safety nets and emergency response mechanisms to provide support to vulnerable populations during and after disasters, mitigating the social impact on marginalised groups (Botzen et al., 2019).

3) Democracy and stronger institutions reduce impacts of natural disasters.

Numerous studies point to the fact that robust institutions, such as more stable democracies, reduce the impact of natural disasters around the world. For Kahn (2005, 271, 283), robust institutions are central to the protection of populations, given that countries with high-quality institutions tend to have fewer deaths caused by disasters. He further notes that, democratic countries with better institutional quality¹ experience lower fatalities, which points to the significance of both leadership and the institutional framework in responding to catastrophes. Finally, a correlation between income inequality and deaths from natural disasters has been found, whereby increased inequality leads to a higher number of deaths.

Botzen et al. (2019, pp. 178–180) identified a parallel finding, namely that institutional factors, such as political systems, the level of income or the structure of governance, play a crucial role in defining the severity of the impact of natural disasters on national economies and societies. It is widely acknowledged that countries with stronger institutions tend to suffer fewer deaths and direct property losses from natural disasters. The authors emphasise the significance of institutional quality, such as disaster response mechanisms, in reducing the impact of natural disasters and aiding in post-disaster recovery and reconstruction.

This is supported by earlier research by Cavallo and Noy (2009, p. 13), which suggests that democracy and strong institutions are key to alleviating the impact of natural disasters. Countries with strong institutions as well as transparent and accountable governments are more likely to be able to react to disasters quickly and effectively, and to coordinate and allocate their resources appropriately. In addition, they contribute to the implementation of risk reduction policies and strategies, such as the establishment of early warning systems and programmes for community preparation. Having effective resource allocation processes in place ensures the rapid deployment of funds to

¹ Institutional quality refers to the effectiveness and reliability of a country's economic, political, and social institutions. It includes factors like governance, rule of law, control of corruption and political rights.

affected areas, thereby enhancing both the relief and reconstruction phases. Furthermore, democratic governance promotes greater accountability, transparency, and citizen participation in disaster management, which results in more comprehensive and community-owned approaches. Moreover, it encourages the development of new policies and cooperation between countries in disaster response and risk reduction initiatives.

Hideki Toya and Mark Skidmore (2007) released a paper which explores the relationship between the economic development and the effects of natural disasters, focusing on total deaths and economic damages caused by such events. They argue that in order to measure the development of reducing deaths, damages and a loss of GDP one has to look at other important factors. Therefore, they state that countries with higher income, higher educational attainment, greater openness, more complete financial systems, and smaller government experience fewer losses.

4) The disparity in economic effects is substantial, varying significantly between short and long-term perspectives and depending on the affected sectors.

It is largely agreed upon in the literature that natural disasters have significant direct negative economic consequences affecting the output and income of workers and companies. However, again there is a disparity between developed countries who mainly suffer from high property losses and developing countries who are more prone to having more casualties. While indirect losses are generally negative, highly developed economies are able to deal with negative production shocks more effectively than low-income countries and smaller, less diversified economies (Botzen et al., 2019).

Generally, natural disasters lead to a decrease in GDP. The way in which a country responds to the crisis, however, determines the subsequent course of events. For instance, following an earthquake or a tsunami, Japan's GDP typically declines by between 0.7 and 3.0 percent. This decline is to be expected, given the country's relatively robust economy. However, the rebound is expected to be rather swift. In contrast, Haiti, already economically fragile, struggled to recover post-hurricane despite all the international aid. Nevertheless, a country's GDP evolution does not fully capture the capital loss, and thus it is important to distinguish between the short-term and long-term economic consequences, as they vary greatly (Baily, 2011).

The immediate impact of natural disasters on a given area is typically felt in several different sectors, including physical infrastructure, agriculture, tourism, manufacturing, and employment. They not only cause damage to residential houses and important infrastructure like roads and electricity grids but also to communication systems such as telecommunication networks. In the agricultural sector, they may result in crop damage, losses of livestock, and the disruption of farming activities, which could lead to food shortages and fluctuations in prices. Those sectors that are dependent on tourism face challenges as the number of visitors declines. Furthermore, the industrial and manufacturing sectors may have to contend with disruptions in supply chains and production capacity. As a result of the ripple effect, job losses may occur in affected industries and related sectors (Cavallo & Noy, 2009, 14,17).

It is important to note that while the immediate economic effects of disasters can result in damage to property, disruption of economic activities, and increased government spending on recovery, these events can also in the short term stimulate the local economies. For instance, the reconstruction process can create jobs and foster economic activity. However, the consequences of disasters depend on the magnitude of the disaster, the preparedness and resilience of the affected area, and the effectiveness of the response (Botzen et al., 2019, p. 181).

While the GDP and employment can be boosted disaster ultimately have long lasting economic consequences, especially for the very poor and some individuals (Baily, 2011). They impact economic growth, productivity, total factor productivity over multiple decades and capital accumulation in various sectors. According to studies, disasters like cyclones can reduce the economic growth for years, particularly in countries with small economies and low-income countries. For the long-term recovery, it has been shown that disaster resilient building practices and effective risk management policies are vital, and they limit indirect economic impacts (Botzen et al., 2019, pp. 179–182).

Furthermore, it is evident that the resilience of sectors such as infrastructure, agriculture and tourism play a pivotal role in facilitating a more expedient recovery in the long term. In the context of fiscal constraints, it is essential for governments to implement effective policies pertaining to disaster preparedness as well as mitigation. While the sectors are subjected to severe testing, the rising costs of government spending have a direct impact on the social welfare of a country. Furthermore, disasters can exacerbate poverty, thereby increasing poverty rates. They can also impede human development and reduce the Human Development Index² (Cavallo & Noy, 2009, 17-19,30).

Loayza et al. (2012, p. 1331) concluded that the impact varies greatly depending on the type of disaster and industry. Specifically, droughts have a detrimental effect primarily seen on agricultural development and industry in developing nations. Storms have a negative impact on agricultural growth, while in developing countries, they contribute to an increase in industrial growth. In the same way, earthquakes are discovered to result in increased industrial development in developing nations. On the other hand, mild but not extreme floods generally have a beneficial impact on agricultural expansion and possibly other parts of the economy. This is likely since localized flooding indicates a larger availability of rainfall throughout the country, creating positive connections to the overall economy.

In conclusion, it can be stated that in the short term, the economy can be stimulated in the recovery and rebuilding process. However, in the long term, it is vital to have the right policies in place to prevent a country's economy from spiralling and resulting in a negative outcome for its population.

² The Human Development Index (HDI) is an aggregate index that measures a country's average performance in the core areas of human development: having a healthy and long life, being educated, and enjoying a decent standard of living (United Nations Development Programme, n.d.).

2.2. Effectiveness of Foreign Aid

It is crucial for the aid process to grasp how natural disasters intersect with economic development processes and how foreign aid can be the most effective. The success of foreign aid after natural catastrophes has been extensively studied in the literature. In general, the effectiveness of foreign support in the aftermath of natural disasters is a complex subject, influenced by various factors such as the type of aid, the way it is managed, the particular requirements of the region affected and the coordination between the aid givers.

Although foreign aid is often seen as an essential tool in post-disaster relief, some governments are opposed to it. This may be due to a number of factors identified and discussed in a study by Carnegie and Dolan (2021). First, governments with greater resources may reject aid simply to signal competence and self-sufficiency. Conversely, governments with limited resources may find it more difficult to reject aid convincingly. In addition, some governments reject aid in order to improve their international status and reputation, as well as to gain respect and avoid stigmatisation. Sometimes governments may reject aid because they fear foreign influence or intervention. Similarly, governments may reject foreign aid to demonstrate competence to their domestic population and to demonstrate effectiveness in governance and decision-making. However, they also observed that while lack of bureaucratic capacity may be a reason to refuse aid, it is not a significant factor. It is unlikely that countries with lower capacity are more likely to reject aid. Finally, some governments may reject aid in order to avoid scrutiny of their human rights violations and to focus the international spotlight on internal affairs.

If countries are open for trade especially instant humanitarian aid is a critical component in disaster response efforts, as it provides essential support to affected communities. Aid typically includes medical assistance, shelter, food, emergency relief supplies, or other forms of assistance to address immediate needs. The provision of humanitarian aid is crucial for saving lives, alleviating human suffering, and promoting resilience among disaster-affected communities. Nevertheless, the coordination of the stakeholders involved is crucial in the immediate aftermath. Furthermore, the immediate relief efforts may be adversely affected by logistical issues, budget constraints, political considerations, or access difficulties in the affected areas (Strömberg, 2007).

While evidence shows that foreign aid can be extremely successful in providing instant relief in the aftermath of a disaster, its effectiveness in long-term recovery is more variable. Moreover, the long-term impact of aid depends on how well it is aligned with the region's specific recovery needs and the overall reconstruction and development strategy. In addition, the efficiency of foreign aid depends to a large extent on the way it is coordinated and managed, as well as on the different aid agencies and local governments. Involving local communities in aid efforts ensures that the aid is appropriate to the local culture and meets the needs of those affected. Studies have also shown that involving local people in reconstruction efforts contributes to a more sustainable and longer-lasting outcome. On the negative side, despite its good intentions, foreign aid is often faced with problems such as political constraints,

corruption, or logistical issues. There is also a potential risk of creating aid dependency, which can hinder long-term self-sufficiency and progress. Aid is difficult to evaluate due to the variety of circumstances and the challenges of assessing long-term impact. Often success is measured in terms of the immediate relief that is delivered, but the wider impact on recovery and development is less quantifiable (Elayah, 2016, pp. 96–97).

In addition, aid levels vary mainly according to the extent of the disaster, media coverage and characteristics of the recipient country. A study by Becerra et al. (2012) examined official development assistance (ODA) following major natural disasters between 1970 and 2008. They found that aid tends to be small relative to the size of the affected economies. The median increase in ODA is only 18% compared to pre-disaster flows. Typically, aid surges covered only 3% of the total estimated economic damage caused by the disasters. The study found that the magnitude of the event and recipient country characteristics, such as development or country size, are the main determinants of post-disaster aid surges. Bigger countries and countries with larger foreign exchange reserves get less aid in general. They found no link between political considerations or donor strategic behaviour and aid levels, contrary to popular belief. But the authors point out that affected countries rely heavily on international aid. Media coverage was found to be correlated with initial humanitarian support and aid inflows. Yet aid pledged when media attention is high may not always be disbursed or may take a long time. The authors recommend that states move away from relying upon foreign aid flows to cover the cost of natural catastrophes and explore alternative sources of funding for post-disaster assistance (Becerra et al., 2012).

There are several humanitarian aid stakeholders in a disaster, which form a group with certain characteristics. Usually they come from different contexts, like countries, organizations, or cultures, but have to form rapidly a network and a shared space for conversation as well as coordination. In order to achieve a successful recovery mission, they need to coordinate with each other, but they are also in concurrence with each other. Not only do they compete for financial and material resources from donors but also for media attention. This competition in humanitarian aid can lead to overlapping duties or even worse to a failed mission of delivering aid to affected people. For instance, this happened in 2019 when the south-west of Iran was flooded (Seddighi, 2020, 3).

However, foreign aid can also have the opposite effect on disaster preparedness in recipient countries. Aid can not only have a preventive effect and improve preparedness through measures such as awareness raising and infrastructure development. But it can also have a crowding-out effect, reducing incentives for recipient countries to invest in their own protection, which can ultimately lead to a higher death toll. Foreign aid received in the past can influence the recipient government's process of allocating resources to disaster preparedness. This describes the Samaritan's Dilemma, as foreign donors need to be aware that while their aid may have good intentions, it can also have negative impacts on the recipient country. By recognising the potential unintended consequences of aid provision on recipient behaviour and

disaster preparedness, policymakers can design more effective strategies to address the challenges posed by the Samaritan's Dilemma in the context of natural disasters (Raschky & Schwindt, 2009).

All in all the most crucial aspects about foreign aid and its effectiveness that have been highlighted by several scholars, like Riddell (2014, p. 42), Manuelli and Vizcaino (2022) and Raschky and Schwindt (2009), are the following:

- **Targeting Assistance:** The provision of tailored foreign aid can enhance the effectiveness of humanitarian assistance by addressing the specific needs of disaster-affected populations, thereby maximizing the impact on recovery and resilience. This may include resources for infrastructure, livelihoods, and vulnerable groups.
- **Timely Response:** Quick delivery of foreign aid post-disaster is crucial for addressing urgent needs like emergency relief, medical care, and shelter. Timely response saves lives and eases suffering, helping with recovery and preventing economic decline.
- **Coordination and Collaboration:** Effective coordination among donors, governments, NGOs, and stakeholders is crucial for maximizing the impact of foreign aid in disaster management. It prevents duplication of resources, ensures efficient aid use, and promotes a comprehensive disaster response.
- **Monitoring and Evaluation:** Robust monitoring and evaluation of foreign aid in disaster management are vital for accountability, learning, and improving aid delivery. Regular assessments help identify successful strategies and areas for improvement, enhancing aid effectiveness.
- **Capacity Building and long-term planning:** Investing in capacity building for local communities, governments, and humanitarian organizations can enhance the effectiveness of foreign aid in disaster response. Such initiatives improve resilience and sustainability in disaster management, emphasizing long-term planning and sustainable development. Foreign aid focusing on risk reduction, preparedness, and mitigation measures contributes to long-term disaster management efficacy. Supporting projects promoting sustainable development and community resilience leads to lasting positive impacts beyond immediate relief efforts.

By considering these factors and tailoring foreign aid strategies to the specific needs and challenges faced by recipient countries, aid can be more effective in supporting disaster recovery, promoting economic growth, and enhancing resilience to future shocks.

3. Methodological Approach

This thesis employs a comparative analysis to examine the effects of the same disaster on two adjacent countries. This method was chosen due to its potential to provide deeper insights into the disaster's impact by directly comparing the responses and outcomes in two similar yet distinct settings. By focusing on two neighbouring countries, we can significantly reduce the heterogeneity in disaster events and the affected regions, as discussed in the preceding chapters.

Analysing adjacent countries offers several benefits. These nations often share similar geographical features, cultural backgrounds, and socio-economic conditions, which naturally limit the variability in external factors. This proximity allows for a more controlled comparison, isolating the variables that differ between the two countries and assessing their respective influences on the disaster response and recovery processes. The primary objective of this comparative study is to identify and evaluate the key differentiating and non-differentiating factors that influence disaster management and recovery in the two countries. By explaining these factors, one can contribute to the broader field of disaster studies and provide actionable insights that can inform future disaster response strategies.

Comparing the distribution of relief products by key players in disaster response is crucial for gaining insights into the relief efforts undertaken by each respective country. This analysis allows for a direct comparison of the essentials provided to beneficiaries, shedding light on the fundamental priorities of relief strategies. Moreover, the consistent distribution of these items by key players underscores their universal importance in addressing immediate humanitarian needs during crises. Evaluating the per capita distribution of these standardized relief products provides a nuanced understanding of resource allocation and effectiveness in meeting the diverse needs of affected populations. Disparities in distribution may indicate variations in needs assessment, logistical capacities, or strategic approaches to relief operations. By examining the distribution patterns of relief products, stakeholders can glean valuable insights into the operational strategies, coordination mechanisms, and humanitarian principles upheld by key players in each context, thereby facilitating the identification of best practices and areas for improvement in disaster response and preparedness initiatives.

4. Socioeconomic analysis of the Kermanshah Earthquake's impact

4.1. The 2017 Kermanshah earthquake

The world's deadliest earthquake in 2017 occurred in the Kermanshah region, near the Iran-Iraq border. A magnitude 7.3 earthquake struck on 12 November 2017, causing the deaths of more than 500 people and injuring over 8,000, according to the United States Geological Survey. The epicentre of the quake was located 32km south of the town of Halabja in Iraq (Reynolds, 2017). Approximately 1,840,000 people lived within 100km of the epicentre in both Iraq in Iran, according to the Global Disaster Alert and Coordination System (OCHA, 2017).

The western provinces of Iran, particularly Kermanshah province, and the province of Sulaymaniyah in the Kurdistan region of Iraq were the most affected areas, as depicted in figure 3 below. The tremors occurred at a relatively shallow depth and were felt as far away as Türkiye, Israel, Kuwait, and the Gulf. The seismic motion caused widespread devastation, with significant loss of life, extensive damage to buildings and infrastructure, and the displacement of thousands of people. Rural and mountainous areas, where housing structures were more susceptible to collapse, were particularly hard hit by the earthquake. Rescue efforts in the mountainous region were hampered by several landslides triggered by the earthquake and several less intense afterquakes (International Federation of Red Cross and Red Crescent Societies, 2018a).

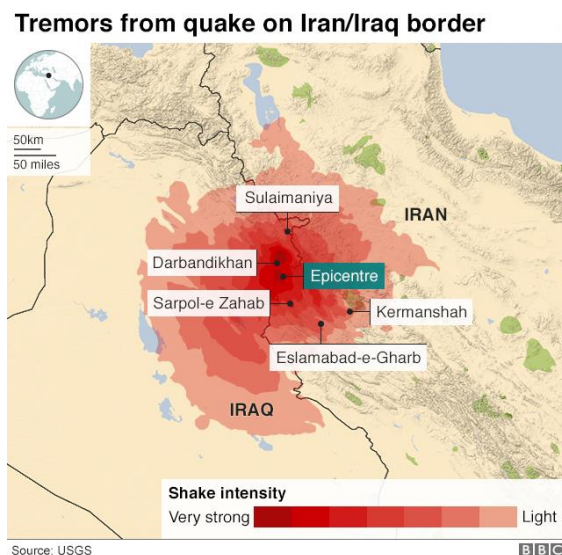


Figure 3: Kermanshah earthquake
(BBC Editorial Team, 2017)

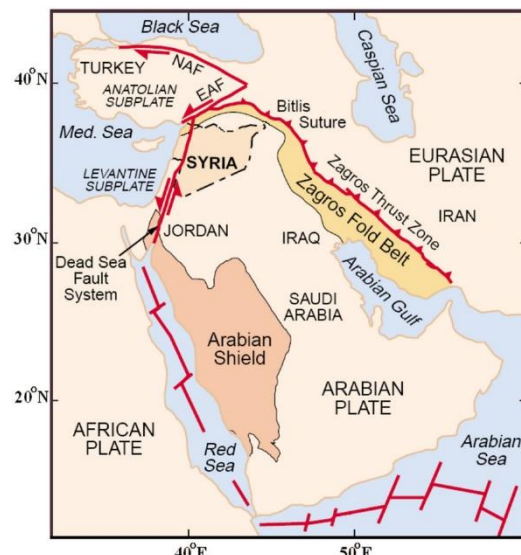


Figure 4: Tectonic movement of the Arabian Plate
(Abdul-Wahed, 2018)

The effects of the earthquake in Iraq and Iran were quite different. In Iraq, there have been around 600 aftershocks, further exacerbating the situation. The last reported aftershock occurred on 22 November 2017 with a magnitude of 4.2. As a result of the earthquake, 10 people died and 469 were injured in Iraq. (International Federation of Red Cross and Red Crescent Societies, 2018a). In Iran, more than 800 aftershocks were recorded in Kermanshah, with the largest measuring 5.1 on the Richter scale, according to the Iranian Seismological Centre. The earthquake killed 444 people and injured more than 9,000. It

is estimated that 50,000 households were affected in 8 cities of Kermanshah province (International Federation of Red Cross and Red Crescent Societies, 2018b).

As shown in figure 4, the Zagros Mountains, which mark the boundary between the Arabia and Eurasia plates, extend from south-eastern Türkiye through the Iran-Iraq border regions. The region is known for its seismic activity and the active deformation of the crust. Due to the mountainous terrain, the region is sparsely populated. Otherwise, the death toll could have reached into the tens of thousands, similar to the 2003 earthquake that struck the city of Bam in southeastern Iran, where over 30,000 people were killed (Reynolds, 2017).

Following the earthquake's impact, the region encountered numerous obstacles. Iran's primary local hospital suffered severe destruction, hindering the treatment of the injured. The collapse of numerous buildings left many without shelter. Rescue operations were further impeded by mudslides, often obstructing access to rural areas. Health clinics and residences were also damaged, compelling individuals to seek refuge outdoors or in compromised structures, amidst freezing temperatures (International Federation of Red Cross and Red Crescent Societies, 2018a). Moreover, the earthquake compounded pre-existing socio-economic issues in the area, including elevated unemployment rates, insufficient infrastructure, and developmental inequalities across regions.

4.2. Iran

Iran is a large country in the Middle East with an Islamic republic system and a population of more than 80 million. There has been a significant increase in the urban population from 27% in 1950 to 74% in 2020. The country is regarded as disaster-prone and highly susceptible to natural catastrophes, which have claimed more than 80,000 lives in the past three decades. Iran faces a variety of natural disasters, including flooding, extreme temperatures, periods of droughts as well as earthquakes, all of which have a significant impact on the country in terms of financial, social, and physical losses. Additionally, Climate change is a major factor in the increasing frequency of disasters in Iran. Studies suggest that Iran will experience higher temperatures and more frequent droughts in the future. Such developments will undoubtedly pose a significant challenge to rural and vulnerable communities (Seddighi & Seddighi, 2020, p. 3).

Furthermore, the study by Seddighi and Seddighi (2020, p. 3) shows that most provinces are affected by natural disasters in one way or another, as can be seen in figure 5 below. In general, Iran is prone to seismic activity; for example, due to its geographical location, the province of Kermanshah is rather susceptible to earthquakes. Several provinces are affected by severe flooding, which is one of the most prevalent natural disasters in Iran, causing not only mass destruction but also considerable economic, physical, and social losses. As a result of land use changes and inadequate policies for water management, the severity and extent of floods and droughts in Iran has intensified. Drought has resulted in water-related disasters including the drying up of lakes and rivers, dust storms and haze.

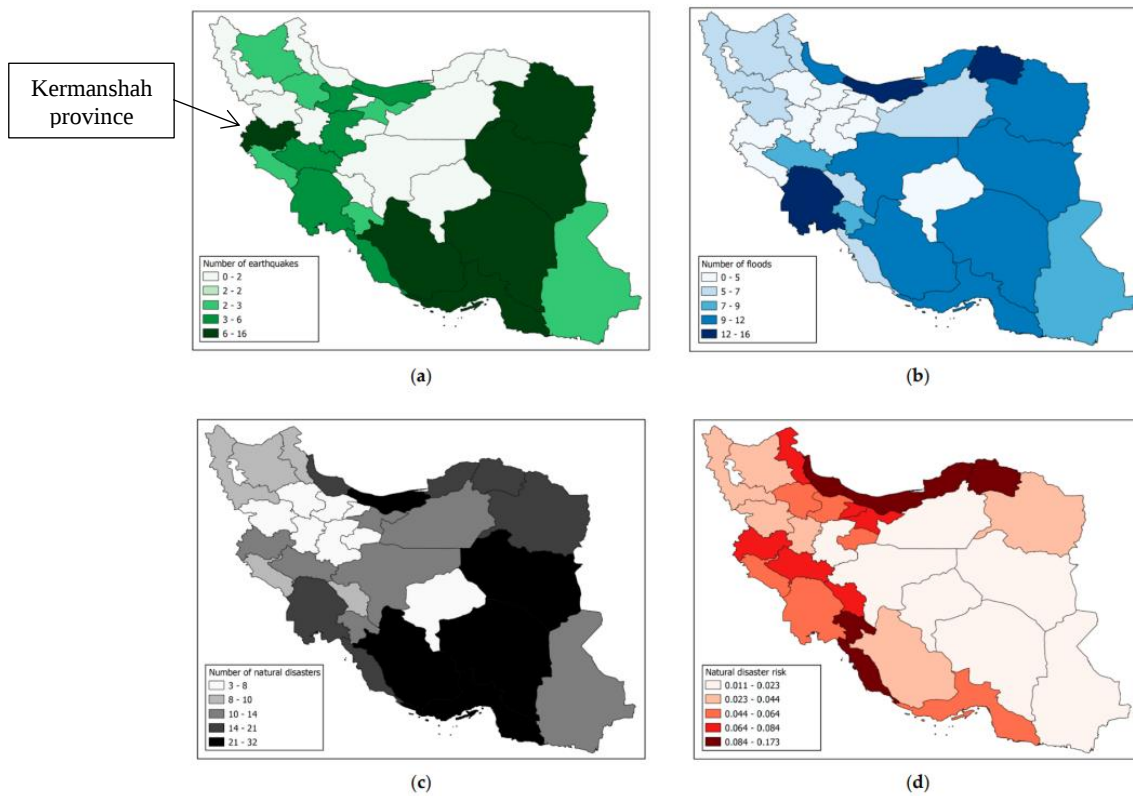


Figure 5: Occurrences of natural disasters in Iran between 1950 and 2019 (Fischer, 2021)

4.2.1. Economic situation in Iran

Iran's economy relies heavily on the hydrocarbon³, agricultural and service sectors. However, the state plays a vital role in the manufacturing and financial services sectors. It ranks second globally in terms of natural gas reserves and fourth in terms of proven crude oil reserves. Even though Iran's economy is rather diverse, government revenues and economic activities remain heavily reliant on oil revenues, which has resulted in considerable volatility (OEC, 2022a).

In 2017, Iran maintained trade relations with numerous major global economic players, particularly in Asia, despite the limitations due to the international sanctions. Iran's total trade volume reached approximately \$111.8 billion, with \$53.3 billion in exports and \$58.5 billion in imports. Their export portfolio was led by crude oil and natural gas products, which accounted for about 80% of total exports, reflecting the importance of the country's hydrocarbon resources. Other notable export goods included chemicals, plastics, agricultural products like fruits and nuts, and traditional Persian carpets. The primary destinations for Iranian exports were China, India, as well as South Korea. China constituted the largest single market, with imports valued at approximately \$18.9 billion. Subsequently, India imported approximately \$13 billion, while South Korea received approximately \$4.3 billion in Iranian exports (OEC, 2022a).

Further analyses by the OEC (2022a) shows that the import profile of Iran was similarly diverse, comprising machinery, cereals, iron and steel, chemicals, and motor vehicles, all crucial for the country's industrial and consumer sectors. The primary sources of these imports were China, the United Arab Emirates, and South Korea. With China being Iran's largest trading partner, it supplied goods worth \$18.4 billion, thereby highlighting the deep economic ties between the two nations. The United Arab Emirates, functioning as a major re-export hub, provided \$8.9 billion worth of goods, while South Korea's exports to Iran totalled \$3.7 billion. This significant trade activity with Asian countries underscores Iran's strategic pivot towards the East, especially in light of the ongoing Western sanctions that limited its trade with Europe and North America.

Despite the challenges posed by these sanctions, which complicated banking transactions and access to global markets, Iran managed to maintain a relatively robust trade balance. The country's efforts to diversify its trade partners and enhance bilateral economic ties with neighbouring and regional countries were evident. For instance, trade with Türkiye included significant exports of chemicals and plastics, further broadening Iran's economic engagements. Moreover, the lifting of some sanctions following the Joint Comprehensive Plan of Action (JCPOA)⁴ in 2016 temporarily eased trade restrictions, allowing

³ Hydrocarbons are employed as a primary raw material for the production of a diverse range of products, including plastics, fibres, rubbers, solvents, explosives, and industrial chemicals. Additionally, they are a major component of petroleum and natural gas (Carey, n.D.).

⁴ The purpose of the JCPOA was to guarantee that Iran's nuclear activities are for peaceful purposes only and allows for the full removal of sanctions, by the UN, EU and US (European Union External Action, 2021).

Iran to reintegrate partially into the global economy. However, the re-imposition of US sanctions in later years continued to pose significant hurdles (OEC, 2022a).

In the past decade Iran's economy was marked by a mixture of fluctuations and stagnation, which was mainly influenced by domestic factors as well as external pressures like sanctions and the Covid-19 pandemic. Furthermore, Iran faced environmental and climate challenges, with droughts and water rationing in cities due to mismanagement of water resources. Air pollution and haze are widespread across the Iranian plateau, exacerbated by the closure of rivers from neighbouring countries. To tackle these problems, Iran needed regional cooperation, global support, and technological assistance. The country was also experiencing power shortages due to declining dam productivity, which was affecting industry. Poverty and unemployment, especially among the youth, had led to protests, making poverty reduction a major challenge despite previous efforts. Iran's income inequality has fluctuated due to inflation, and the goals of income equality through oil revenues have not been achieved. Demographic changes, a young population and a struggling pension system further complicate the situation. Fighting poverty requires investment, job creation and a better fiscal framework, as well as constructive relations with the West for economic improvement and support (Ghodsi, Astrov, Grieveson, & Stehrer, 2018).

Domestic political constraints and geopolitical tensions have shaped Iran's economy for much of the last decade. Figure 6 illustrates the fluctuations in Iran's Gross Domestic Product between 2015 and 2022.

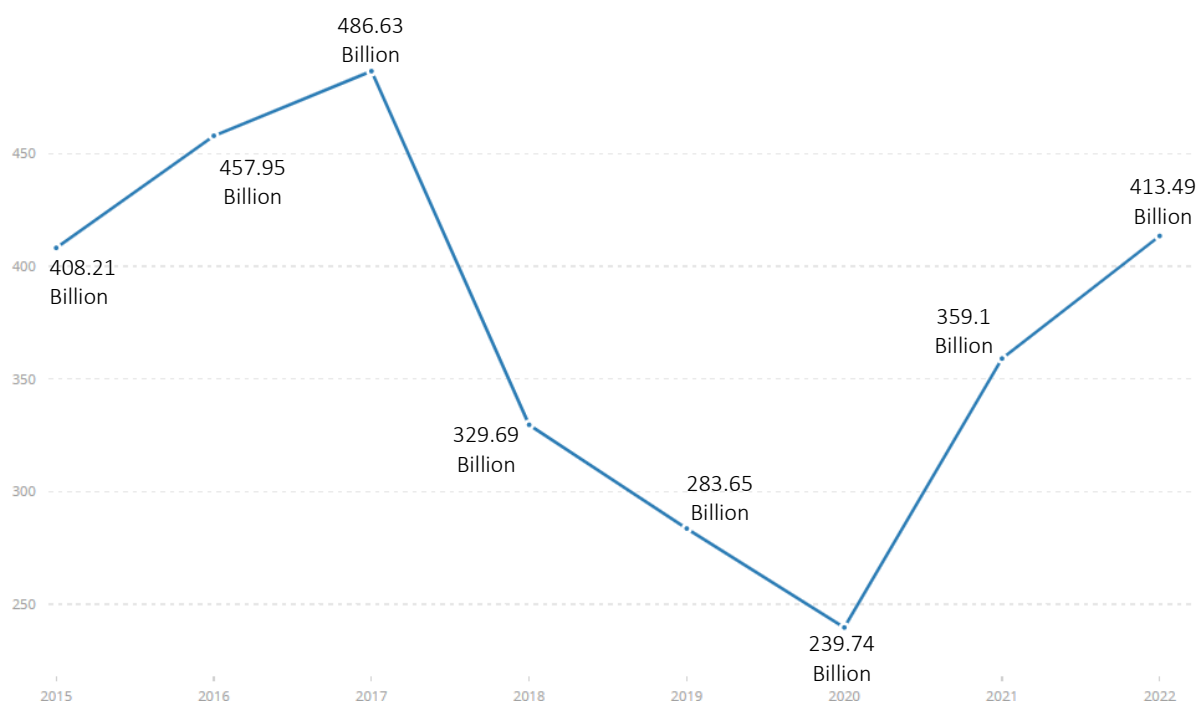


Figure 6: GDP (current US\$) - Iran, Islamic Rep. between 2015 and 2022 (The World Bank, 2022a)

After the lift of sanctions in 2016 the Islamic Republic of Iran experienced a significant rise in its gross domestic product. The removal of international sanctions opened the possibilities for increased oil

exports and foreign investments. President Hassan Rouhani led the country with a moderate agenda in 2017, focusing on economic development and international involvement. While some international sanctions were lifted after the JCPOA the Iranian economy still struggled with both unemployment and inflation. Rouhani's efforts to attract external investment were hindered by potential sanctions and reluctance from international financial institutions. Still the GDP peaked at \$486.63 billion in 2017. However, despite initial optimism Iran's GDP slowed down in 2017, due to the already mentioned internal economic problems like structural economic issues and high unemployment rates but also due to the conservative religious nature of the country. The dominance of conservatives and the religious leader Ayatollah Khamenei complicated reform efforts within the country (International Monetary Fund, 2017).

While the Kermanshah earthquake was a significant event in 2017, causing major damage and loss of life in the affected areas, it is not depicted in the country's overall GDP. The quake mainly affected a rural and economically less significant region of Iran. The impact on the local infrastructure and economy was severe but not extensive enough to result in a noticeable decline in the country's GDP.

In 2018 the gross domestic product contracted sharply after the United States reimposed sanctions on the Iranian economy which had a severe impact on especially the oil exports and the financial sector. In 2018, a range of challenges, including US-Iranian hostility, mismanagement, and global competitiveness issues, have prevented the Iranian economy from reaching its 1976 peak, despite benefiting from the lifting of sanctions in 2016. The Rouhani administration has stabilised the economy, but new sanctions from the United States following the withdrawal of the JCPOA posed significant challenges to the country. The Iranian government faced several key economic challenges, including the need to reduce inflation to below 10% despite currency devaluation and controls. They have restructured banks for stability, sought to connect with international markets, and created more jobs each year since 2013. Efforts to increase transparency and reduce the role of state-owned enterprises have shown positive economic growth, but reliance on oil exports limits job creation and sanctions from the United States discouraged investment. Furthermore, European efforts to maintain economic ties with Iran face challenges following the US withdrawal from the JCPOA. Iran sought guarantees from European countries to counter sanctions by the United States and focused on maintaining oil sales rather than increasing foreign direct investment (Ghodsi et al., 2018).

In 2019 the economic conditions remained challenging, since Iran was grappling with high inflation, currency depreciation, and a stagnant growth. In 2020 the Iranian economy continued its struggle due to the outbreak of the Covid-19 pandemic and further escalations of tensions with the United States. The pandemic led to severe disruptions in economic activity, particularly in sectors such as tourism, transportation, and retail. The GDP in this year was the lowest in a long time, at just \$239.74 billion (Focus Economics, 2024).

Iran's GDP growth exhibited a partial recovery in 2021, influenced by two key factors: sanctions imposed by the Trump administration and the global pandemic. This reflected a rise in global economic growth following the first year of the pandemic. The growth in exports of oil, as the world began to ease the restrictions imposed by the Covid-19 pandemic in 2021, was a significant contributing factor. As a consequence of the increase in demand for crude oil and higher prices, Iran's oil revenue from exports rose (Farzanegan, 2023).

4.2.2. Socio-economic consequences of the earthquake

The earthquake in Kermanshah had a huge impact on the Islamic Republic of Iran in absolute terms. It left more than 9,000 people injured and over 400 dead. Over 50,000 households in eight towns in Kermanshah Province were directly affected (International Federation of Red Cross and Red Crescent Societies, 2018b).

According to Iran's National Disaster Management Organisation (NDMO) around 123 settlements were damaged, 11,000 rural dwellings were destroyed and thousands of taller multi-family buildings in cities were flattened. The total number of buildings destroyed was around 30,000, leaving tens of thousands of people without a shelter. In the western province Kermanshah, a large number of towns and cities have been affected by the aftermath of the quake. In the town of Sarpol-e Zahab⁵, for example, around 90% of the buildings were destroyed. The town was home to the province's main hospital, which was badly damaged and therefore had great difficulties treating casualties. More than 140 casualties were reported in Sarpol-e Zahab alone. Furthermore, mudslides in the region hampered rescue efforts by blocking access to rural areas. Other damages throughout the province were reported in the capital city, Kermanshah⁶ but also in smaller towns like Eslamabad-e-Gharb⁷ in the south of the province and Paveh⁸ in the north. Damage was particularly severe to government-subsidised buildings built under the "Mehr housing programme". Launched by President Ahmadinejad in 2007, the programme aimed to build around two million affordable homes over a five-year period. As of 2014, around 1.18 million homes had been built, with contractors offering state-owned land for free to develop affordable homes for first-time owners. According to reports, 90 % of the "Mehr" housing units in Kermanshah Province have suffered damage. Whether building codes were followed is unclear, with many of the collapsed or partially destroyed apartment blocks appearing to be constructed with unreinforced masonry infill walls that have collapsed (Reynolds, 2017).

According to the Iranian government the earthquake caused at least five billion euros in damage (Maghsoudi & Moshtari, 2021, p. 115). The economic pillars of the affected Kermanshah province are mainly the petrochemical industry, agriculture, mining and minerals and manufacturing such as textiles,

⁵ Approx. 45,000 inhabitants

⁶ Approx. 850,000 inhabitants

⁷ Approx. 90,000 inhabitants

⁸ Approx. 26,000 inhabitants

food processing and the production of construction materials. Economic activities, including agriculture, industry and commerce, were disrupted in the affected regions. Companies suffered physical damage to infrastructure and reduced consumer demand, leading to economic losses and financial strain on the local economy.

Beside the tremendous loss of life, the earthquake had serious consequences on families and communities, leading to emotional distress and trauma. Furthermore, due to the destruction and damage of houses people were left homeless or without adequate shelter (Maghsoudi & Moshtari, 2021, p. 113). According to the Internal Displacement Monitoring Centre around 170,000 Iranians were internally displaced due to the earthquake (Internal Displacement Monitoring Center, n.d.).

Maghsoudi and Moshtari (2021, 120,124) pointed out that despite all the challenges, the earthquake had shown not only the resilience but also the solidarity of the communities as they came together and provided support to each other. This was further aided through social media, which allowed people to exchange useful information with their friends and family, which in turn facilitated the immediate aid response. However, the unequal allocation of aid caused friction and created problems among the communities affected.

4.2.3. Relief Efforts

Over the past few decades, the Iranian government has spent around \$29 billion on disasters, with a strong emphasis on dealing with the immediate effects rather than on prevention and mitigation. The majority of government spending on disasters has been on droughts, earthquakes and floods, with costs exceeding \$14 billion, \$6.9 billion and \$6.1 billion respectively. The response and recovery phases have accounted for most of the Iranian government's spending on disasters, with an emphasis on the involuntary costs. Whereas mitigation and preparedness, which are key phases of disaster management, have only received a minimal share of the national budget over the past century (Seddighi & Seddighi, 2020). Due to the lack of mitigation and preparedness strategies by the NDMO the relief efforts were hampered. The Iranian government stated that it does not need/ want international aid. This is why the main actors in the aftermath of the earthquake were the Red Crescent Society of the Islamic Republic of Iran (IFRC) and several Iranian government bodies (CBC, 2017).

Iran was very reluctant to accept international aid following the 2017 Kermanshah earthquake. This could have stemmed from various political and strategic considerations. The government, wary of foreign influence, sought to project an image of self-reliance and competence, avoiding perceptions of weakness. Extensive international sanctions and strained diplomatic relations further complicated the logistics of foreign assistance. Additionally, concerns over managing and securing foreign aid, combined with Iran's significant domestic disaster response capabilities, influenced the decision. Past experiences with international aid, often viewed as inefficient or politically motivated, also contributed to scepticism about its benefits. Consequently, Iran opted to handle the crisis independently (Maghsoudi & Moshtari, 2021, pp. 110–111).

The first key player was the IFRC, as it led the primary relief efforts, and it was the key humanitarian organisation providing emergency relief, medical assistance, and temporary shelter to affected individuals and communities. In its immediate response, the IFRC deployed 38 rapid response teams, 52 search and rescue teams, 31 sniffer dog teams, 87 emergency shelter teams, 27 emergency health and treatment teams, 1,859 relief and rescue workers, as well as 81 ambulances, 101 all-terrain vehicles, 23 rescue vehicles, 297 trucks and 90 trailers. According to the International Federation of Red Cross and Red Crescent Societies (2018b), the IFRC also supplied 130 tonnes of relief supplies to approximately 100,000 beneficiaries, which included:

- | | |
|------------------------------|-----------------------------------|
| - 84,000 tents, | - 8,236 hygiene kits |
| - 240,000 blankets, | - 40,500 heaters |
| - 665,000 tins of food | - 5,500 electronic heaters |
| - 72 tonnes of rice, | - 32,237 kitchen sets, |
| - 1,200,000 bottles of water | - 180,000 kg of nylon stockings |
| - 4,000,000 loaves of bread, | - 58,000 jerry cans |
| - 146,000 kg of dates, | - 56,000 pieces of sleeping mats, |
| - 10,400 kg of sugar, | - 2,600 boxes of powdered milk |
| - 24,000 bottles of oil | - 86,600 items of clothing |

Based on an initial quick assessment carried out by the IFRC, and given the evolving character of the crisis, the overall operation aimed to provide transitional relief and recovery interventions to the most affected communities. The ICRC therefore provided financial and operational support to the IFRC in order to support 200,000 affected people over a 12-month period, from December 2017 to December 2018. The operational plan, published on 28 November 2017, prioritised the provision of shelter, financial support for livelihoods and basic needs, the restoration of family links, the health and care sector, the promotion of hygiene and sanitation, and community engagement and accountability. It also highlighted the need to strengthen the IFRC preparedness and rapid response capacity. The aim of the strategy was to assist the Iranian Red Crescent society in its activities, in accordance with its emergency plan for such events and its humanitarian mandate in Iran (International Federation of Red Cross and Red Crescent Societies, 2018b).

Secondly, a number of different Iranian government bodies, including the Health and Medical Education Ministry, the Islamic Revolutionary Guard Corps (IRGC) as well as the Iranian Armed Forces, participated in the search and rescue operations and provided both logistical support and aid distribution. However, concerns were raised that the IRGC, which operates parallel to the regular army, failed to deliver aid and help the survivors. (Samimi, 2017).

Khezri (2017) states that Iran's response has been seen as politically influenced. Despite Supreme Leader Ali Khamenei's condolences and declaration of a National Day of Mourning, the relief effort has faced difficulties, including logistical challenges in reaching remote and mountainous areas. Coordination

issues between the IFRC and military forces have also hampered rescue efforts. Foreign Minister Javad Zarif has declined international assistance, stating that Iran can manage with its own resources. The government's history of repression against Kurds has led to criticism of its response to the earthquake, with many feeling abandoned. The tragedy was further complicated by the fact that many casualties lived in government-built housing, leading President Hassan Rouhani to promise accountability for building collapses.

As government aid proves insufficient, individuals and nonprofits are stepping in to assist earthquake victims in Iran (Khezri, 2017). Therefore, many non-governmental organisations in Iran were also involved in the relief effort, working with government agencies and international organisations to help the affected population. Studies have shown that some 150 NGOs and 33 government agencies have provided financial and non-financial assistance to the Kermanshah region (Farahi-Ashtiani, Ghomian, Pirani, & Nejati-Zarnaqi, 2020, p. 254).

However, many studies and reports highlight the fact that, although there was so much aid in the aftermath, it was often unsuccessful. The parties involved competed for financial and material resources as well as for media attention. The competition for humanitarian aid led to overlapping tasks or even the failure to deliver aid to affected communities (Seddighi, 2020, 3). In addition, the involvement of new stakeholders in relief operations, coupled with poor logistics and the inefficient allocation of resources, led to an uneven distribution of aid. The unequal distribution of aid may have had negative social repercussions, potentially creating friction and difficulties among affected communities (Maghsoudi & Moshtari, 2021, p. 124).

In a recent study, Khosravi et al. (2021) examined the social impact of foreign aid efforts in the aftermath of an earthquake in Kermanshah province, Iran. The study revealed not only a high level of dissatisfaction by the earthquake victims but also mentions the social difficulties experienced by those affected. For instance, this included challenges in accessing credit, inadequate financial assistance, and the importance of equitable distribution of aid. The participants were deeply unsatisfied about the lack of support and the exacerbation of financial difficulties due to inadequate aid. Furthermore, they faced difficulties in obtaining loans as well as repaying them, which suggests deficiencies in the credit system.

The study further highlighted the necessity for a just and equitable allocation of aid to prevent the emergence of disparities among affected individuals. Vulnerable groups, including women, the elderly, and individuals with medical conditions, perceived a lack of support and attention in the post-earthquake response efforts. In particular, women encountered social obstacles in seeking assistance, while pregnant women were unable to access the necessary resources and care, resulting in adverse outcomes. The economic impact of the earthquake was also significant, with survivors facing financial hardships, property and income loss, and challenges in managing resources. The study demonstrated the complexity and shortcomings of the foreign aid response in addressing the diverse needs of earthquake survivors and supporting their recovery and well-being (Khosravi et al., 2021).

Despite the new law on crisis management in Iran, which emphasised the need for cash allocations and donations to the Red Crescent, the problems were not solved. It seemed that different strategies were needed to overcome interpersonal and inter-organisational mistrust in times of emergency. Mistrust can be caused by a variety of reasons, such as lack of knowledge about the capabilities and efficiency of humanitarian organisations, poor public relations or a lack of unity in emergency response among different actors (Seddighi, 2020, 3).

The distrust of the government and humanitarian organizations was clearly visible on social media platforms such as 'Kirmashan', which became a voice for the affected people and where citizens criticised the government's lack of support (Khezri, 2017). For example, more individuals chose to support disaster victims by donating through celebrities and influencers rather than through established organisations. One possible explanation is the decrease in donors' trust in the government and official organisations (Seddighi, 2020, 1). Examples include the Kurdish Olympic weightlifter Kianoush Rostami, who auctioned off his medals to raise money for earthquake victims in Iran. Or Tehran University professor Sadegh Zibakalam, who successfully crowdfunded more than \$300,000 in just 48 hours after the quake. Recognising the widespread lack of trust in the government, he travelled to the area to oversee the distribution of aid himself (Khezri, 2017).

Following the earthquake, Iran needed to undertake a major reconstruction effort to rebuild damaged infrastructure, restore livelihoods and promote socioeconomic recovery. This required significant funding and coordination between government agencies, NGOs, and international partners. By placing additional strain on government resources and infrastructure, the earthquake exacerbated Iran's economic challenges. At a time when the economy was already facing difficulties due to domestic and external factors, the cost of reconstruction and rehabilitation was substantial, further straining the government's budget (Maghsoudi & Moshtari, 2021, p. 123).

The 2017 Kermanshah earthquake highlighted significant disparities in aid distribution due to multiple intertwined factors. Geographical and logistical challenges impeded access to remote areas, with infrastructure damage exacerbating transportation and communication issues. Accusations of political and ethnic bias arose, suggesting preferential treatment for regions aligned with those in power, while the predominantly Kurdish Kermanshah region allegedly received less attention. Additionally, coordination and management issues among governmental bodies, NGOs, and international aid organizations led to uneven aid distribution. Resource limitations further strained efforts, necessitating prioritization and resulting in perceived inequalities, ultimately underscoring the need for more equitable and efficient disaster response strategies.

In 2019, two years after the earthquake, approximately 500,000 individuals who had been displaced were still residing in a provisional shelter, such as shipping containers or tents, due to the unavailability of their original residences. An official from the IFRC posited that the most significant challenge in the aftermath of such an emergency is not the provision of immediate relief, but rather the protracted

construction of these communities. Despite the Iranian government providing stipends to rebuild houses for many families, the subsequent devaluation of the currency and extreme inflation meant that the costs far exceeded previous estimates. Furthermore, the destruction of agricultural land and infrastructure has resulted in a significant number of individuals losing their livelihoods (Relief International, 2019).

4.3. Iraq

Located in the heart of the Middle East, the Republic of Iraq is a parliamentary republic with a population of around 40 million in 2020. More than 40% of its territory is covered by desert and is therefore very sparsely inhabited due to the harsh weather characteristics. Its geographical features create a number of challenges for the country. There is a shortage of good quality water in many parts of the country due to high salinity. Its location along the tectonic fault lines of the Arabian and Eurasian plates makes it susceptible to seismic activity. It also faces the threat of desertification and severe water scarcity due to erratic river flows. As a result, the country is, alike Iran, particularly vulnerable to floods, droughts, dust storms, climate-related epidemics and seismic activity, as shown in the figure below (Climate Change Knowledge Portal, n.d.).

Figure 7 shows the average annual occurrence of hazards between 1980 and 2020. Over a period of four decades, the most frequent annual catastrophes were floods with 43%. This is followed by droughts with 25% and epidemics with 21%. Earthquakes were comparatively rare, accounting for only 7% of events. The last 4% are miscellaneous accidents that have not been broken down further.

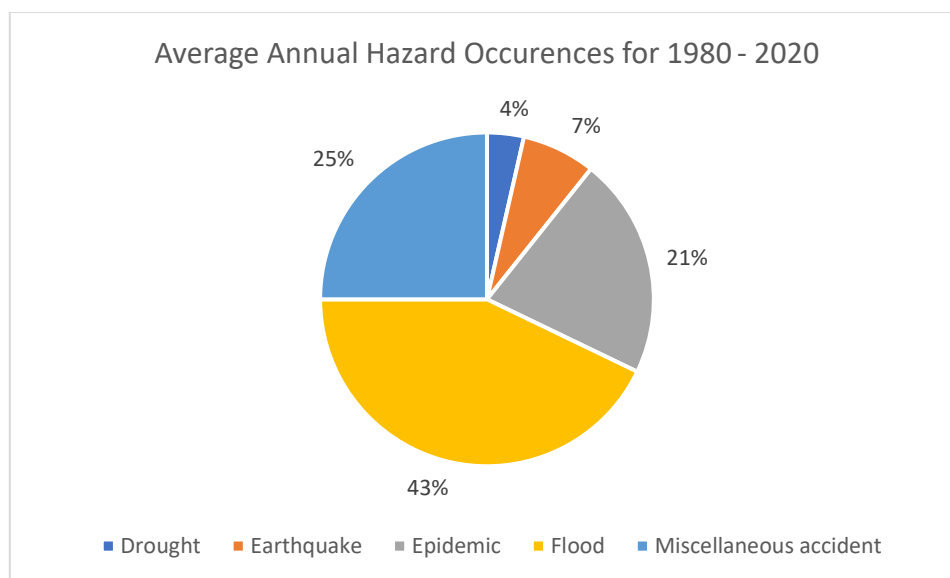


Figure 7: Average Annual Hazard Occurrence for 1980-2020 (Data from: (Climate Change Knowledge Portal, n.d.))

Despite Iraq's exposure to multiple hazards, before 2003 there was limited focus on mitigation. Legislative measures were mainly reactive and lacking in both prevention and reduction. However, there have been efforts by the international community and the national government to establish disaster risk reduction strategies, like Iran. For example, a specific disaster law was drafted to assess the opportunities and challenges in Iraq. Yet traditional emergency response continues due to inadequate governance and a lack of awareness. The laws are not implemented effectively, and there is a shortage of communication as well as early warning systems (Al-Shamsi, 2019).

4.3.1. Economic situation in Iraq

The economy of Iraq is mainly driven by the oil and gas industries, followed by the agricultural sector (Climate Change Knowledge Portal, n.d.). The country is amongst the most oil-dependent in the world. The revenues from oil amounted to more than 99% of its exports and 42% of its gross domestic product over the past decade. This overdependence on the oil sector means that Iraq is considerably prone to macroeconomic instability. Rigidities in the budget limit room for fiscal manoeuvre and the possibility of counter-cyclical policies (The World Bank, 2022c).

Overall, the economy is dominated by several industries, which are listed in descending order of their importance. These include foremost the petroleum sector, chemicals, textiles, leather, construction materials, food processing, fertilisers, and metal fabrication and processing (CIA, n.d.).

The total value of Iraq's exports in 2017 was approximately \$65.3 billion, with crude oil accounting for more than 95% of them. As aforementioned, this overwhelming reliance on oil underscored Iraq's position as one of the world's leading oil producers and exporters. The main export markets for Iraqi crude oil were India, China, and the United States. India was the largest importer, purchasing \$19.7 billion worth of oil, followed by China with \$14.5 billion and the United States with \$9 billion. These figures highlight the vital role of Iraq in meeting the energy demands of the world's major economies and its incorporation into the international oil market. Imports from Iraq equalled around \$40 billion and consisted mostly of refined petroleum, broadcasting equipment, cars, and jewellery. The country's main import partners were the United Arab Emirates, China, and Türkiye. The United Arab Emirates was the largest merchant, providing \$21.2 billion worth of goods. Consequently, reflecting its role as a major re-export and trade hub for Iraq. China followed with \$14 billion of imports and then Türkiye with \$13.7 billion, indicating the deep economic and historical ties between the two neighbouring countries. These imports were essential to Iraq's post-conflict reconstruction efforts and to meet the consumption needs of its growing population (OEC, 2022b).

The Iraqi government wanted to diversify its economy and therefore reduce its dependence on oil revenues, but this transition faced substantial challenges. These included ongoing security problems, political instability, and infrastructure deficits. Efforts to rebuild and modernise infrastructure, particularly in the transport and energy sectors, were vital to not only improve trade efficiency but also economic resilience. For example, initiatives to improve road connectivity and develop new trade routes, such as the proposed highway linking Baghdad to Cairo via Amman, were part of broader efforts to promote regional trade integration. Additionally, Iraq's trade policy in 2017 focused on attracting foreign investment and integrating the country's economy into regional as well as international markets. Measures included strengthening the regulatory framework and reducing trade barriers, although high levels of corruption and weak institutions continued to pose risks to economic stability and growth. The reliance on a single commodity for export earnings emphasized the urgent need for economic diversification and sustainable development to ensure a long-term stable economy (OEC, 2022b).

Iraq's institutions and socio-economic situation resemble those of a low-income, fragile country, even though oil wealth has enabled it to achieve upper-middle-income status (Celiku & Mansour, 2020). Furthermore, over the past decade, Iraq's socio-economic situation has been marked by political instability, corruption, and the lasting effects of war. These factors have not only hindered development but also widened inequality within the country. Other challenges, such as high youth unemployment, poor infrastructure, and sectarian tensions, further complicate the country's difficulties in achieving stability and progress.

In 2015, Iraq was confronted with multiple security threats, such as the rise of the Islamic State (ISIS) and persistent sectarian conflicts. These instabilities disrupted the economic activity, caused damage to infrastructure, and eventually led to a severe humanitarian crisis and population displacement. In addition, the drop in global oil prices in 2015 and the following years had a profound impact on the Iraqi economy. The decline in oil prices led to lower government revenues, which limited public spending and investment in both infrastructure and social programmes. Efforts to rebuild damaged infrastructure such as roads, bridges, power plants and water treatment facilities were hampered by security concerns, inefficient bureaucracy, and widespread corruption. A general lack of political consensus and effective governance has made economic reform more difficult and hindered investment and development initiatives. Iraq has acknowledged the risks of over-reliance on the oil sector and has undertaken initiatives to diversify its economy. However, the diversification process has remained slow due to several constraints, including limited infrastructure, institutional weaknesses, and dominance of the oil sector. Iraq's economy is affected not just by the global oil market, but also by regional and international dynamics, including relations with the surrounding countries and wider geopolitical tensions (International Monetary Fund, 2016).

As can be seen in Figure 9 below, Iraq's GDP showed significant fluctuations between 2015 and 2022. In 2015 and 2016, GDP remained relatively low at \$166.77 billion and \$166.6 billion respectively. From 2017, there was an increase in GDP, mainly due to an improved security situation and higher oil prices. In 2017, under Prime Minister Haider al-Abadi, Iraq struggled with reconstruction efforts following the defeat of ISIS in Mosul. Religious tensions continued between Baghdad and the Kurdistan Regional Government. Corruption, bureaucratic inefficiency, and infrastructure deficits hampered progress. Iraq's economy was heavily dependent on oil exports, making it vulnerable to global price fluctuations. Reconstruction efforts required significant resources amid budget constraints and security risks. Investor confidence remained low due to political instability. Iraq faced a challenging path to post-conflict recovery amid socio-economic disparities (Moody's Analytics, 2017).

In 2018, the non-oil economy grew while oil production declined in line with the OPEC agreement⁹. In 2019, GDP reached \$233.64 billion, reflecting improved security, a fully formed government and improved relations between Baghdad and the Kurdish capital, Erbil. However, challenges at the time included low foreign investment, slow reconstruction efforts and tensions between the United States and Iran (Schmiedbauer, 2019).

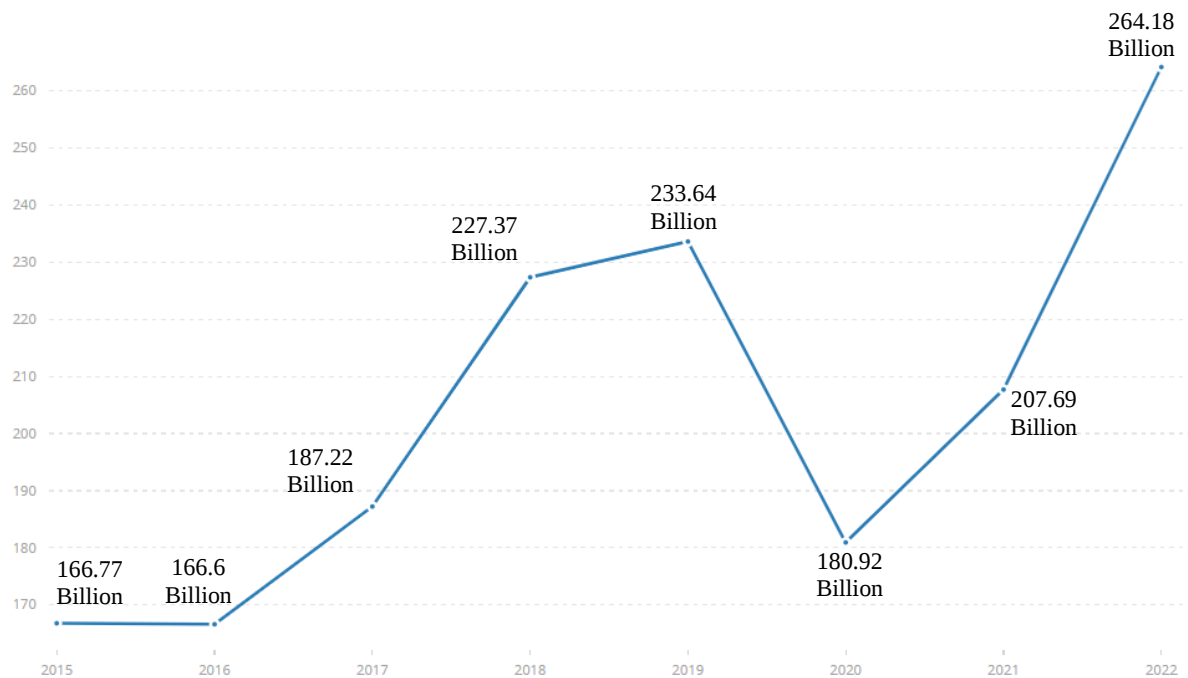


Figure 8: GDP (current US\$) - Iraq between 2015 and 2022 (The World Bank, 2022b)

In 2020, Iraq had one of the lowest female labour force participation rates worldwide, one of the highest poverty rates among upper-middle income economies and deteriorating infrastructure and business conditions. The prior conflicts had a huge impact on the economy leaving Iraq in a fragility trap, with increased political instability, growing social unrest and a deepening state-citizen divide. This was only heightened by the Covid-19 pandemic, an oil price shock and following poor economic policies and the inability to tackle corruption. Therefore, the GDP decreased significantly to merely \$180.92 billion (Celiku & Mansour, 2020).

In 2021 and 2022, the economy gradually recovered from the oil and Covid-19 shocks of 2020, peaking at \$264.18 billion in 2022. However, unemployment rates remained high, especially among displaced pre-pandemic self-employed and informal workers and women. While the economy has improved, there are still major shortcomings such as structural bottlenecks, fragile political conditions and corruption, which is causing unrest in the country (The World Bank, 2022c).

⁹ OPEC and major non-OPEC oil producers reached an agreement to prolong production cutbacks, which have led to a recovery in oil prices, until the end of 2018 (Putz, 2017).

4.3.2. Socio-economic consequences of the earthquake

In Iraq, the Kermanshah earthquake resulted in at least nine deaths and 535 injuries. The strongest tremors were felt only in a smaller, less-populated area of the province of Sulaymaniyah in the Kurdistan region of Iraq. (Reynolds, 2017). Nevertheless, it led to a humanitarian crisis and created an urgent need of assistance for the affected communities.

Most injuries were recorded in the districts of Darbandikhan¹⁰ and Halabja¹¹, according to the Kurdish Regional Government (KRG). Many buildings in the Darbandikhan, Maidan, Qura-to and Bamo areas were destroyed or damaged. Following extensive damage, the main hospital in Darbandikhan was closed, however other clinics and health centres were still operating. Damage to infrastructure was also most severe in the Darbandikhan district, where landslides blocked a tunnel, leading to road closures. In addition, there was significant damage to the water and electricity networks in the area. The Halabja water treatment plant was partly destroyed and could only produce half of its normal output. Furthermore, in the province of Sulaymaniyah, at least seven schools were severely damaged and unusable for some time (OCHA, 2017).

Overall, the province of Sulaymaniyah has a well-developed industrial sector thanks to its favourable climate conditions. Furthermore, it is a relatively safe province which is beneficial for the economic development. Its industries are related to the manufacturing of textiles, food products as well as materials for the construction industry. A number of regions in Iraq, including Sulaymaniyah, have a strong focus on the agricultural sector and produce crops such as grains, fruits and vegetables, making the governorate is an essential trade hub between Iran and Iraq (EASO, 2021, 23,27).

Despite the more favourable conditions compared to other provinces, the earthquake still had an impact on the economy, as infrastructure was damaged, economic activity was affected and businesses were disrupted. Furthermore, many of the economic consequences were linked to the inflow of refugees and the provision of humanitarian aid. The surge in population caused by the arrival of refugees put a strain on the local resources available in the Kurdistan Region, such as housing, health facilities and infrastructure. This strain could have resulted in additional expenditure to meet the needs of the displaced population. According to the Internal Displacement Monitoring Centre around 3,900 Iraqis have been displaced due to the earthquake (Internal Displacement Monitoring Center, n.d.).

Depending on the extent of the earthquake's impact on the region's infrastructure and transport networks, trade routes and economic activities between Iran and Iraq may have been disrupted. However, the Kurdistan Region's economy is quite diversified and the direct impact of the earthquake on trade may have been relatively limited compared to other sectors. All in all, the economic impact on the Kurdistan

¹⁰ Approx. 50,000 inhabitants

¹¹ Approx. 109,000 inhabitants

Region of Iraq, while secondary to the direct impact felt in Kermanshah Province, was significant in its allocation of resources, humanitarian efforts and potential disruption to both trade and infrastructure.

4.3.3. Relief efforts

In the aftermath of the earthquake national agencies as well as international organization were involved in the rebuilding and rescue tasks. The Iraqi government has allowed aid in, particularly from Türkiye (CBC, 2017). Especially the KRG, coordinated the relief efforts. They provided humanitarian assistance to affected areas, including medical aid, shelter, and also supported displaced individuals (OCHA, 2017).

In the beginning political tension caused worries among earthquake victims that government aid would be delayed or inadequate. In Iraq, Prime Minister Haider al-Abadi announced on Twitter that he had dispatched health and aid organizations to Kurdistan, despite recently deploying troops to regain authority in the disputed area and taking over the oil-rich city of Kirkuk right before the earthquake occurred (Khezri, 2017).

The Iraqi Red Crescent Society (IRCS) was the first humanitarian organisation to provide aid for the affected communities. They carried out search and rescue, provided first aid and psychosocial support in earthquake affected communities. According to a report by the International Federation of Red Cross and Red Crescent Societies (2018a), the IRCS distributed the following items:

- | | |
|----------------------|--------------------------|
| - 5,100 hot meals | - 200 towels |
| - 1,100 food parcels | - 100 water kettles |
| - 1,100 hygiene kits | - 100 bags of 35kg rice |
| - 160 first aid kits | - 100 kitchen sets |
| - 100 tarpaulins | - 200 jerry cans, |
| - 100 lanterns | - 100 volunteer per diem |
| - 100 thermos flasks | - Logistics costs |

Overall, the IRCS helped 3,025 direct beneficiaries and 2,475 indirect beneficiaries in surrounding areas. While direct beneficiaries were provided with shelter materials and non-food items such as hygiene items, indirect beneficiaries were provided with food and hygiene kits. In addition, IRCS medical teams provided emergency first aid and transported the injured for further treatment to healthcare institutions (International Federation of Red Cross and Red Crescent Societies, 2018a).

Several other Red Cross and Red Crescent Societies have actively contributed to the humanitarian response. For example, the Turkish Red Crescent dispatched substantial quantities of relief items as well as medical personnel. The Finnish Red Cross, with assistance from the Finnish Foreign Ministry, the European Union and the Finnish people who have donated to the Fund for Disaster Relief. The emphasis has been on strengthening the IRCS's capacity. Furthermore, the European Union has supported the Red

Cross in providing relief items, access to clean water and mental health support to internally displaced people in Iraq (Finnish Red Cross, 2017).

In addition to the Turkish Red Crescent, other Turkish organisations were active in the aftermath, such as the Turkish Disaster and Emergency Management Presidency (AFAD), which immediately sent a medical team to provide assistance in Sulaymaniyah and Halabja. Türkiye, like Iraq, sees Kurdish rebels as a danger to their country's security. Only half a day before the earthquake struck on November 12th, Turkish fighter jets conducted airstrikes on the earthquake-ravaged area in Sulaymaniyah, Kurdistan, as part of their campaign against the Kurdistan Workers' Party. Nevertheless, Turkish military cargo planes were the ones who delivered relief supplies to quake-hit Iraqi Kurdistan after around 15 hours (Khezri, 2017).

Türkiye has a history of providing humanitarian aid to Iraq in times of crisis. Over the past decades it rose as a humanitarian player which is underscored by its strategic expansion of aid efforts mainly motivated by cultural, historical, and religious connections, Türkiye has strategically extended its reach beyond regions of former Ottoman influence to cover areas as far as Africa and Asia. In Iraq specifically, Türkiye's involvement in humanitarian aid reflects its geographical proximity, historical bonds, and strategic interests aimed at stabilizing the region and mitigating security threats. Additionally, aiding Iraq helps Türkiye to manage the flow of refugees and displaced persons, ensuring they do not further strain its own internal resources. This bilateral aid, demonstrated notably in response to disasters such as the 2010 Mosul flooding, emphasizes Türkiye's comprehensive approach to supporting neighbouring countries while enhancing its regional influence. Furthermore, Türkiye's unique position as a predominantly Muslim country with rather modern administrative capabilities enables it to deliver aid effectively within culturally similar contexts, fostering goodwill and strengthening diplomatic relations in the process (Aly, 2015).

In addition, a number of international organisations, including United Nations agencies such as the United Nations International Children's Emergency Fund and the World Health Organization (WHO), as well as non-governmental organisations, have contributed to the relief effort in Iraq, assisting local authorities in aided affected communities. The WHO sent two ambulances, an Immediate Response Team and trauma and surgical kits to support the hospital in Sulaymaniyah. NGOs such as the International Medical Corps have also deployed medical teams to the region to support the relief effort. A small United Nations Disaster Assessment and Coordination (UNDAC) team, highly specialised in natural disaster management, has been deployed to support the authorities' response efforts (OCHA, 2017). Overall, most of the relief efforts in Iraq have been perceived as positive and quick.

5. Comparative Analysis of Socio-Economic Impacts in Iran and Iraq

5.1. Economic Perspectives: Iran and Iraq in Contrast

Although both countries are situated in the Middle East and share certain geographical, historical and cultural similarities, they also exhibit significant differences in their socio-economic landscapes prior to and following the 2017 Kermanshah earthquake. The disparate internal economic and political structures of both countries presented unique challenges in the aftermath of the disaster, influencing the efficacy of relief and recovery efforts.

Demographically Iran has a larger more diverse population than Iraq and an overall younger population. Even though the growth rate of Iran's population has been declining, the country still faces great difficulties regarding urbanization, youth unemployment and providing opportunities for its growing workforce. Iraq has less inhabitants than Iran, however its population's growth rate is higher. Challenges for the Iranian government are mainly education, healthcare, and employment opportunities for its youth population.

Both countries are major players in the global oil market with economies heavily influenced by their vast hydrocarbon resources. Iraq's economy is highly dependent on oil whereas Iran has a more diversified economic base. Both countries face challenges in diversifying their economies. Iraq's reliance on oil leads to macroeconomic instability and limited fiscal flexibility, while Iran's economic diversification is constrained by international sanctions. Despite these challenges, both countries maintain strong trade relations with neighbouring and regional countries, particularly in Asia. They also have significant trade with the United Arab Emirates and China, highlighting their strategic economic alignments within the region. In conclusion, while Iraq remains heavily reliant on oil, Iran has a relatively broader economic base and both countries play critical roles in the global energy markets.

Iran and Iraq have contrasting economic landscapes shaped by their distinctive circumstances and challenges. While Iran's economy is comparatively diverse, it still relies heavily on the export of oil and natural gas. International sanctions over its nuclear activities have restricted access to global markets and deterred foreign investment. Iraq's economy is even more oil-dependent, as it possesses one of the world's largest oil reserves. Persistent internal instability, high levels of corruption, and slow post-war reconstruction efforts further hinder economic development. Major challenges in security, corruption, and political instability continue to affect Iraq's economic recovery years after the conflicts.

Overall, Iran has a larger economy than Iraq and a higher GDP in nominal terms. However, its GDP per capita is lower than that of Iraq. Inequality and disparities between urban and rural areas remain a major problem. Moreover, the level of inequality varies considerably between the different regions of the country. Although Iraq has a higher GDP in the capital region, its total GDP is lower. Again, income inequality is a major problem, exacerbated by corruption, lack of job opportunities and unequal distribution of wealth.

Iran has a more developed transportation network, including roads, railways and airports. However, still the development of infrastructure was heavily limited by the economic sanctions and limited access to international financing and banking. Iraq has suffered extensive damage to its infrastructure due to the prior years of conflict, neglect, and underinvestment. Even though there have been efforts to rebuild the infrastructure the progress is rather slow particularly in regions which were heavily affected by violence and instability.

Iran has made significant progress in education and health, with high literacy rates and a relatively well-developed health system. However, inequalities remain high between urban and rural areas and between socio-economic groups. The years of conflict and instability in the Islamic Republic of Iraq have left their mark, although there have been some improvements in access to education and health services in recent years. Nevertheless, the quality of the aforementioned sectors remains a concern and there are disparities between the various regions of the country.

5.2. Impact Assessment: Post-Kermanshah Earthquake Consequences

Iran's disaster preparedness plan, overseen by the NDMO, is structured relatively well. In the wake of the earthquake, Iran mobilized its military and rescue teams, and established temporary shelters. However, the response was marred by significant inefficiencies, including delays in aid distribution and insufficient infrastructure, particularly in rural areas. Communication breakdowns further exacerbated the challenges, leading to delays in medical assistance and basic supplies reaching the affected population. The earthquake exposed critical gaps in Iran's disaster response mechanisms, despite having a formal framework in place. Conversely, Iraq's preparedness for such disasters is notably less developed, primarily due to prolonged conflict and political instability. The KRG led the response in the most affected areas, relying heavily on local resources and international aid. Iraq's response was significantly hampered by limited organizational capacity and resources. The lack of a comprehensive national disaster management system meant that relief efforts were slower and less coordinated compared to Iran. This reliance on external aid underscored the insufficiencies in Iraq's internal preparedness and response capabilities. In summary, Iran's more structured disaster management plan faced critical implementation challenges, while Iraq's less developed system struggled with resource and coordination issues. Both countries' experiences underscore the need for strengthened disaster preparedness and more efficient, timely response mechanisms.

In a comprehensive study conducted by Abdullah et al. (2020), the structural prerequisites in the two countries were extensively examined. While the Earthquake had a significant impact on both the Kurdistan regions of Iraq and Iran, the latter experienced more severe structural damage and casualties compared to Iraq. Despite the epicentre in Halabja being in Iraq it didn't suffer noticeable damage to buildings and there were no reported casualties or serious injuries in that area. Furthermore, the overall damage and casualties between the two majorly affected regions are very different. As already mentioned, Halabja in Iraq reported no casualties while Sarpol-e Zahab lost 387 lives. Further factors that contributed to the severity of the damage included fault ruptures, structural response of buildings, the magnitude and intensity of the earthquake, the soil type, directionality effects, geographical effects and the quality of construction material used.

Furthermore, Abdullah et al. (2020) argued that the stiffness of the soil plays a crucial role in the damage caused by earthquakes. In this case most collapsed buildings in Iran were on farmland soils with high groundwater tables, which may have amplified the earthquake waves. In contrast, the soil stiffness in the Kurdistan region was considered rather stiff which could have helped reducing the impact of the earthquake waves. The directionality effect of the earthquake, with a meter of slip towards the south and half a meter of displacement towards the west of the epicentre, played a significant role in determining the areas most affected by the earthquake. The geological location of buildings was found to be insignificant in increasing the damage level of the buildings, highlighting the importance of other factors such as fault lines and structural response.

Research also suggests that several factors contributed to Iraq being less affected by the earthquake. Firstly, the epicentre of the quake was in Iran, causing significant displacement to the south and west. As most of the Kurdistan region of Iraq was north of the epicentre, it was less affected by the directional effects of the earthquake. Secondly, the stiffness of the soil played a crucial role in the damage caused by the earthquake. In the affected region of Iraq, the soil was mostly stiff, which may have helped to reduce the impact of the earthquake. Thirdly, the Kurdistan region of Iraq mainly used wall bearing systems and a combination of reinforced concrete frames and masonry systems, which may have provided better earthquake resistance due to the better quality of the building materials (Abdullah et al., 2020, p. 1).

The Kermanshah earthquake highlighted significant concerns regarding infrastructure and building standards in Iran, especially in rural areas where construction often fails to meet seismic resilience criteria. This issue is mirrored in Iraq, where rapid urbanization and informal construction practices have created vulnerabilities in urban areas. In the wake of the disaster, Iran's refusal of foreign aid underscored its focus on self-reliance and internal capabilities. In contrast, Iraq promptly sought international assistance, reflecting differing approaches to disaster response and recovery. These contrasting strategies illustrate the varying priorities and capacities in managing natural disasters within the region.

5.3. Relief Strategies: Contrasting responses to the Kermanshah Earthquake

To tackle the aftermath of the earthquake, national and international agencies joined forces to help the affected communities. In addition to the federal and local governments, the Iranian Red Crescent Society and the Iraqi Red Crescent Society had a major presence. In both countries, their national Red Cross and Red Crescent societies played a pivotal role as key humanitarian actors and were incorporated in leading the search and rescue efforts as well as the distribution of relief items. Due to their long-standing experience, the organisations possess the expertise, infrastructure, and networks necessary for efficient and targeted humanitarian interventions during crises. As trusted and reputable entities, they were responsible for coordinating and delivering vital aid to affected communities, often in collaboration with governmental agencies such as the military and other non-governmental organisations. Given their key role in disaster response and relief operations, examining the relief items distributed by these societies provides valuable insights into the core components of their humanitarian assistance efforts and fosters the understanding of the relief landscape in the aftermath of the earthquake.

A comparison of the scale and scope of humanitarian assistance supplied to the disaster-affected population in both countries shows differences in the relief efforts of the two nations. As displayed in the table below, in Iran, approximately 100,000 beneficiaries were recognized, and the distribution of relief efforts by the IFRC included 8,236 hygiene kits, 32,237 kitchen sets, 72 tonnes of rice, and 58,000 jerry cans. This indicates a thorough approach to tackling diverse needs, including sanitation, food security, and household essentials. Conversely, in Iraq, where the number of beneficiaries was significantly lower due to the less severe impact, at approximately 5,500, the relief efforts appeared to be of a more limited scale. A total of 1,100 hygiene kits, 100 kitchen sets, 100 bags of 35kg rice, and 200 jerry cans were allocated to the victims of the quake by the IRCS.

Country	Total Beneficiaries	Relief Item	Quantity Distributed
Iran	100,000	Hygiene Kits	8,236
		Kitchen Sets	32,237
		Rice	72,000 kg
		Jerry Cans	58,000
Iraq	5,500	Hygiene Kits	1,100
		Kitchen Sets	100
		Rice	3,500 kg
		Jerry Cans	200

Figure 9: Overview of similar products distributed by the IFRC and the IRCS

In order to assess the effectiveness and equity of relief efforts in addressing the needs of disaster-affected populations, it is essential to consider the per capita distribution of aid resources. A per capita distribution analysis provides a quantitative measure of the allocation of relief items relative to the size of the

beneficiary population. This analysis therefore provides important insights into the adequacy and fairness of the provided assistance. This section presents a comprehensive analysis of the per capita distribution of the key relief items, hygiene kits, kitchen sets, jerry cans and rice, which were distributed in both countries. The objective is to identify patterns, disparities, and the impact of relief strategies on affected communities. The per capita distribution rate is calculated as follows:

$$\text{Per capita distribution} = \frac{\text{Total number of relief item delivered}}{\text{Total number of beneficiaries}}$$

The application of the per capita distribution equation to the provided data reveals that the distribution of each relief item varied significantly between the two countries. This reflects the distinct approaches to addressing the needs of disaster-affected populations in Iran and Iraq.

Relief Item	Iran	Iraq
Hygiene Kits	0.08236	0.2
Kitchen Sets	0.32237	0.01818
Rice (in kg)	0.72	0.636
Jerry Cans	0.58	0.03636

Figure 10: Per capita distribution of relief items distributed by the IFRC and the IRCs

The structural differences between Iran and Iraq have played a significant role in shaping the outcomes of their relief efforts, as evidenced by the per capita distribution of relief items. Iran's centralized political system and refusal of external assistance, despite being significantly more affected by the crisis, may have led to challenges in relief distribution, as indicated by lower per capita allocations of hygiene kits compared to Iraq. Furthermore, Iran's relatively larger economy and more developed infrastructure might have provided it with greater internal resources, influencing higher per capita distributions of kitchen sets and jerry cans. In contrast, Iraq's engagement with the international community and acceptance of external help may have facilitated access to additional resources, contributing to relatively higher per capita distributions of hygiene kits. These structural differences serve to illustrate the intricate interrelationship between governance, economic resources, and international relations in determining the outcomes of relief efforts in humanitarian crises.

Despite these differences, the distribution of identical relief items in both countries underscores the universal importance of addressing basic humanitarian needs in the aftermath of a disaster. Hygiene kits, kitchen sets, rice, and jerry cans serve as essential lifelines for affected populations, regardless of the scale or severity of the disaster. Therefore, the strategic distribution of these items reflects a concerted effort to provide immediate relief and support the recovery efforts of disaster-affected communities in both Iran and Iraq.

When looking at the international scale especially Türkiye has an influential role as it has emerged as the main supporter of Iraq in the aftermath of the earthquake. Although Türkiye is an important trading partner for Iraq, it is far from the most important. Therefore, the rapid relief efforts can be attributed to other factors in their bilateral relationship. In addition to their economic ties, they also share close historical, security and diplomatic factors. Their shared Ottoman heritage fosters cultural and social ties, while mutual security concerns, such as combating the PKK¹² and maintaining regional stability, necessitate close cooperation.

Iran and Iraq's differing responses to the aftermath of the Kermanshah earthquake can be attributed to several factors rooted in political, strategic, and logistical considerations. Iran's reluctance to accept international aid was driven by a desire to project self-reliance and competence, as well as to avoid perceptions of weakness or dependence on foreign assistance. This stance was further reinforced by the country's political sensitivities, extensive international sanctions, and the logistical complexities associated with managing foreign aid. In contrast, Iraq's immediate request for international help reflected its urgent need for external resources and support, stemming from its less developed internal disaster response infrastructure and greater willingness to engage with the international community. Additionally, Iraq's recent history of conflict and instability has often necessitated reliance on international aid, making it more open to external assistance in times of crisis. These divergent relief strategies underscore the distinct political climates, capabilities, and priorities of the two nations in addressing the aftermath of natural disasters.

¹² For over four decades, the Kurdistan Workers' Party (PKK) has been engaged in a struggle for Kurdish independence from Turkey. Currently, the PKK is part of a network of regional groups that are seeking international legitimacy as well as Kurdish autonomy (Palmer & Holtz, 2023).

6. Limitations

Research into the effectiveness of foreign aid in rebuilding the economies of developing countries after natural disasters is fraught with challenges that can limit the scope and reliability of the evidence. One of the main constraints is the lack of consistent, high-quality data across countries and disaster scenarios. This data variability makes it difficult to draw broad, generalisable conclusions. Additionally, the political, economic, and cultural landscape of each developing country adds another layer of complexity, as these factors significantly influence how foreign aid is received and used.

Additionally, a critical aspect is the challenge of defining and quantifying what constitutes successful economic recovery. Recovery goes beyond mere economic metric, it encompasses the restoration of infrastructure, improvements in social welfare and building resilience. All of them are difficult to measure accurately over the long term required to see the full impact of aid. In addition, research must contend with political and governance variables within recipient countries, such as government stability and levels of corruption, which can dramatically affect the effectiveness of foreign aid. The objectives and policies of donor countries can also play a role, potentially distorting aid effectiveness according to their strategic interests.

Methodologically, striking a balance between qualitative insights and quantitative robustness is another hurdle, as each approach has its limitations in capturing the multifaceted nature of economic recovery. Finally, there's the issue of foreign aid dependency, which could hinder long-term sustainable development and economic self-sufficiency in the regions concerned. The combination of all these factors makes this area of research exceptionally challenging, yet crucial to understanding and improving the role of foreign aid in post-disaster scenarios.

7. Conclusion

This study examined the effectiveness of foreign aid in rebuilding developing economies after natural disasters, using the 2017 Kermanshah earthquake as a case study to highlight the different responses of neighbouring Iran and Iraq. The findings show that while both countries were affected by the earthquake, Iran was significantly more affected, as demonstrated by the destruction of buildings and infrastructure as well as the number of casualties.

However, when comparing the relief and reconstruction efforts, their internal political and economic structures and approaches to disaster preparedness and management strongly influenced the results. Iran, with a disaster management plan under the NDMO, encountered significant inefficiencies in the distribution of aid and infrastructure deficiencies due to a lack of policies, particularly in rural areas. In contrast, Iraq's even less developed disaster preparedness, exacerbated by protracted conflict and political instability, relied heavily on local resources and international assistance from countries such as Türkiye. Both countries provided emergency relief, including search and rescue, medical and food aid, and short-term relief such as temporary shelter. However, in Iran in particular, there was a lot of anger among the affected population because the aid was not always allocated according to their actual needs which probably exacerbated the dissatisfaction with the Iranian government further.

The discrepancy in the extent of damage and casualties between the Kurdistan regions of Iraq and Iran serves to illustrate the influence of structural factors, soil properties, and construction quality. Iran's rejection of external assistance, emphasising self-reliance, contrasts with Iraq's immediate request for international aid, reflecting their contrastive priorities and capabilities. These opposing strategies highlight the complicated back-and-forth of political, economic, and logistical factors that influence the effectiveness of foreign aid in disaster recovery.

While the study highlights the necessity for enhanced disaster preparedness and efficient response mechanisms, it also underscores the importance of carefully considering the role of foreign aid in economic rebuilding. As previously discussed, the most effective foreign aid is likely to be in accordance with the following criteria:

- The delivery of tailored foreign aid to address the specific needs of the affected population.
- The provision of a rapid response to address urgent needs.
- The establishment of effective coordination and collaboration among the different stakeholders.
- The evaluation and observation to identify successful strategies and areas for improvement.
- The implementation of capacity-building initiatives to improve resilience and sustainability.

While most of the foreign aid that has been received by Iraq appears to fulfil the majority of the criteria, the question of over-dependence on external donors arises. Such over-dependence may, in turn, diminish the motivation to develop and implement an elaborate disaster management preparedness plan. Given

the restrictions on available data, it is challenging to determine whether the devastation caused by the 2017 Kermanshah earthquake prompted a shift in the government's approach to disaster preparedness.

The limitations noted include the scarcity of comprehensive data and the need for further research to understand the long-term impact of foreign aid on the economic recovery and reconstruction process. Nevertheless, it is evident that humanitarian foreign aid, in addition to the prompt assistance provided by national organisations, played a pivotal role in the recovery process, particularly in the initial stages.

In the affected areas in Iran and Iraq, which were notably rural communities, the absence of vital infrastructure beyond health institutions increased the challenges of disaster response and recovery. With limited access to resources and logistical support, rural communities were confronted with heightened vulnerability in the aftermath of the disaster. The lack of critical infrastructure, such as transportation networks, communication systems, and utilities, hampered emergency response efforts and made the delivery of essential aid supplies to those in need difficult. Moreover, the absence of economic hubs or industrial centres in these rural regions limited the capacity for local self-sufficiency and economic resilience, further exacerbating the socio-economic impacts of the disaster on vulnerable populations. As a result, addressing the needs of rural communities in disaster-prone regions requires tailored approaches that prioritize infrastructure development, community resilience-building, and equitable access to resources and services.

It is worth considering whether the presence of critical infrastructure for a country's economy, such as an oil refinery, would have impacted the outcome of the relief and reconstruction efforts. The economic importance of such infrastructure could have led to swifter restoration efforts, prompting governments and stakeholders to prioritise infrastructure repair and recovery and potentially also gain greater foreign investments. As previously mentioned, there are still numerous people displaced and unable to return to their homes due to the slow reconstruction efforts, particularly in Iran. It can be speculated that if the region were perceived as economically more significant, the government would have been more motivated to facilitate a rapid reconstruction of the region. However, the vulnerability of critical infrastructure to natural disasters highlights the necessity of robust disaster mitigation plans and targeted preparedness measures. Considering the rising number of natural disasters ensuring the resilience of critical infrastructure against potential hazards becomes imperative to minimise the socio-economic impacts of such events.

In conclusion, this research highlights the necessity for strengthened disaster preparedness, efficient response mechanisms, and a nuanced understanding of foreign aid's role in post-disaster economic rebuilding. Future studies should explore scenarios involving critical infrastructure to form better disaster management strategies in developing economies especially for vulnerable communities.

Table of Figures

Figure 1:	
Direct/indirect and quantifiable/non-quantifiable losses (PreventionWeb, 2015)	11
Figure 2:	
Statistics on the frequency of natural disasters, the number of deaths and direct economic losses by continent, 2020 (Academy of Disaster Reduction and Emergency Management, 2021, p. 13)	14
Figure 3:	
Kermanshah earthquake (BBC Editorial Team, 2017)	22
Figure 4:	
Tectonic movement of the Arabian Plate (Abdul-Wahed, 2018)	22
Figure 5:	
Occurrences of natural disasters in Iran between 1950 and 2019 (Fischer, 2021)	24
Figure 6:	
GDP (current US\$) - Iran, Islamic Rep. between 2015 and 2022 (The World Bank, 2022a)	26
Figure 7:	
Average Annual Hazard Occurrence for 1980-2020 (Climate Change Knowledge Portal, n.d.)	34
Figure 8:	
GDP (current US\$) - Iraq between 2015 and 2022 (The World Bank, 2022b)	37
Figure 9:	
Overview of similar products distributed by the IFRC and the IRCS	45
Figure 10:	
Per capita distribution of relief items distributed by the IFRC and the IRCS	46

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