MEASUREMENT OF THE EXPLOSIVE ORDNANCE IMPACT ON THE IRAQI ECONOMY

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ABSTRACT

The principal objective of this paper is to examine and analyze the Explosive Ordnance (EO) conditions in Iraq as a whole, and by Governorate (GO). An attempt has been made to quantitatively measure the economic and social impact of implanted explosive ordnance in Iraq, on multi-dimensions, i.e., sectoral, national, and sub-national. This has been carried out, as a first attempt, and is being assessed and measured for eighteen sectors (socio-economic variables), and eighteen sub-national (governorates) excluding Baghdad, the capital city of Iraq. The overall economic and social impact measured by this study varied by sector and by geographical and administrative location. Out of the eighteen sectors, the most affected sectors by the implanted mine explosive ordnance were: agriculture, water, infrastructure, roads, non-agriculture activities (mainly manufacturing industry projects), and oil fields. While the most impacted governorates (geographical location within the nation) out of the eighteen analyzed governorates were: Basra, Babylon, Anbar, Diyala, Ninawa, Wasit, and Missan. because these governorates have the highest contamination, besides their location closer to population communities

Key Word: Explosives Ordnance**,** National, Sub-National, Sectoral, Economic Impact

Jel classification: N50, E01,L60

INTRODUCTION

Many countries that experienced armed conflicts have suffered from tremendous social and economic negative impacts, from the implanted explosives ordnance, and Iraq is not an exception. The country has passed through three major armed conflicts, during the past four decades, where the explosives ordnance was one of the principal weapons used in these armed conflicts and has been laid down in different locations and in vast areas in the country.

It is, de facto, well recognized that the damages and the dangers of these explosive ordnances cannot be ended and halted when the armed conflicts ended, rather their dander and potential harms would continue much longer after the conflict ended, and it would be a high burden and costly function to the country and to the international community to discover and then to be removed.

Accordingly, having these explosives ordnances undiscovered and the process of discovering them as well as efforts of removing them in a safe and complete manner, have an economic and development impact on the nation. This is besides the well-known socio-economic development efforts and costs that have to be borne by the nation to carry out and sustain post-conflict reconstruction and stabilization programs. While essential programs to rehabilitate and rebuild the country's damaged infrastructure can be overwhelmingly capital intensive, required resources have to be mobilized and their allocations have to be well prioritized in order to achieve the objective of establishing the vital infrastructure sectoral activities, given the fact that the latter is vital in all dimensions and aspects of macroeconomic and microeconomic reconstruction processes and development efforts.

The main objective of this paper is to identify and measure the economic impact of landmine ordnances and their clearance on the Iraqi economy. This has been done with special emphasis on national, sub-national, and sectoral impact. This is done together with shedding a light on the fact that such an efforts and programs have to be integrated with the country's adopted development planning programs. However, it has to be pointed out that this is the first recent attempt made to analyze and assess the impact of the explosive mine ordnance on multi-sectoral and multi-spatial dimensions, in Iraq. Few studies have, previously, analyzed landmines impact on population[Handicap International Report, 2021], and overall socio-economic impact of landmines in [Townsend, 2003].

Landmines, as one of the types of (EO), have an impact on economic development, affecting agricultural land, water channels, roads, access to public spaces, and utilities. From the perspective of economic reconstruction, the presence of landmines leads to (destroying livestock, wildlife, and other environmental resources, preventing the maximum use of agricultural lands, disrupting markets and production, preventing tourism and investment, preventing the provision of government services, imposing an obstacle to economic reconstruction, impeding the reform of irrigation systems that allow restoring production, ... etc.) [Bier, 2003].

EXPLOSIVE ORDNANCE (EO) IN IRAQ: AN OVERVIEW

Explosives is a substance or mixture of substances that, under external influences, is capable of rapidly releasing energy in the form of gases and heat [IMAS 04.10, 2019].

The term [The term 'Explosive Ordnance' (EO) is interpreted as encompassing mine action's response to the following munitions: (Mines, Cluster Munitions, Unexploded Ordnance, Abandoned Ordnance, Booby traps, other devices (as defined by CCW APII), Improvised Explosive Devices **Note:** Improvised Explosive Devices (IEDs) meeting the definition of mines, booby-traps or other devices fall under the scope of mine action, when their clearance is undertaken for humanitarian purposes and in areas where active hostilities have ceased] means any substance containing at least one explosive substance (ES), or any other dangerous substance for military use [Đurić, et al., 2020].

Due to the nature of its life cycle, which includes stages from production, transportation, handling, storage and maintenance to end use or disposal and destruction, (EO) is a defining element in relation to other physical assets [ĐURIĆ, et al., 2018].

Thus, explosive ordnance is the process of translating ammunition into a state where it can no longer perform the basic function for which it was designed **[Jeremić, 2012]**. Removal of old or defective explosive ordnance has been a growing problem of late, with complex physico-chemical processes taking place over time, increasing the risk and likelihood of an unintended accident. Events of this kind can be hazardous to human safety and the environment and can lead to unintended consequences on a large scale [Finnveden, et al., 2008].

Explosive ordnance (EO) also poses a great danger as it represents a potential source of chemical contamination to the environment, as it has been shown in recent decades that the air, soil and water have been heavily polluted (https://reliefweb.int/report/world/guide-explosive-ordnance-pollution-environment) [Evans & Duncan, 2020].

Iraq is contaminated with non-explosive materials, such as minefields, unexploded ordnance, explosive devices and other remnants of war that have affected the daily lives of individuals and communities as well as development and reconstruction projects at all levels. The border with Iran, and the reason is the minefields planted in the first Gulf War in the eighties, as well as the military actions of the years 1990-1991, and the various conflicts from 2003 onwards. In southern Iraq, there are two clear threats: the old mines along the Iraqi-Iranian border, and new mines along the Iraqi-Iranian border. The border with Saudi Arabia represents about (50%) of mine victims [UNMAS, 2011] .

Iraq has a large legacy of ammunition and explosive materials and extensive contamination as a result of years of internal and external armed conflict, which made Iraq at the highest levels of contamination (CO) of explosive remnants in the world, and thus Iraq became a large field in which various types of land mines were planted (anti-personnel mines, anti-tank mines and napalm nests and others) [DMA, 2017] .

It is believed that the beginning of laying landmines dates back to the forties, but it was sporadic, as its impact on civilian life did not appear. It was limited, but its dangerous consequences were very great for the citizens, and mine-laying operations continued by both parties on roads, axes, agricultural lands, around water springs and other places throughout the period of skirmishes that stopped from time to time and continued again, and with the beginning of border skirmishes between Iraq and Iran in (1969) The eastern borders were planted with large numbers of mines and along the Iraqi-Iranian borders from Basra and towards the north, passing through Al-Amarah, Khanaqin, Mandali, Badra and Zurbatiyah, and with the beginning of the first Gulf War (1980) the number of planted landmines increased dramatically, as it included large areas of Iraqi lands. And some Iranian lands, with the withdrawal of the Iraqi army into Iraqi lands and the rush of Iranian forces, and as an attempt to Stop these forces. Vast areas of Iraqi lands have been planted within the borders with very large numbers of mines, especially in the areas of Basra, Amarah, Kut, Diyala, Sulaymaniyah and other areas of northern Iraq. The history of wars has not witnessed the planting of minefields with these numbers, which amounted to tens of millions, and without regard to what these fields cause. As a result of material and human losses in the future, the minefields extended from Ras Al-Bishah in southern Iraq, then Al-Faw, Abu Al-Khasib, Al-Tanuma, Al-Shalamcheh, and to Al-Tayyib, up to the meeting point of the Iraqi-Iranian-Turkish border.

The data shows that there are at least (3) billion square meters of contamination land in the governorates under the Iraqi government (Anbar, Babil, Baghdad, Basra, Diyala, Karbala, Kirkuk, Maysan, Muthanna, Najaf, Nineveh, Qadisiyah, Salah al-Din, Dhi Qar and Wasit). The real number is much higher for the low numbers (non-technical survey). It is very difficult to determine the exact extent of contamination in Iraq for various reasons, including (there is no reliable national survey of suspected and confirmed contaminated areas, which has led to a lack of mapping; the presence of disputed areas and armed groups), and that contamination impedes freedom of movement and renders the land unsuitable. to live and use [https://reliefweb. int/report/iraq/acaps-briefing-note-iraq-mine-action-22-january-2021].

The history of mines and remnants of war in Iraq can be shown in chronological order and according to the governorates in the table 1:

Table 1: History of Mines and Remnants of War in Iraq

Year	Case
1961	Planting mines in Iraqi Kurdistan as a result of the conflict between the region and the government
1980-1988	During the first Gulf War, the Iraqi army planted minefields along the Iraqi-Iranian border and over a length of more than (1,200 km) represented in the governorates (Diyala, Wasit, Maysan, Basra, Erbil, Sulaymaniyah), in addition to the minefields that were planted from the Iranian side inside Iraqi lands
1991	After withdrawing from Kuwaiti territory and for the purpose of obstructing the international coalition forces, the former Iraqi army planted large areas of minefields inside Iraqi territory on the Kuwaiti and Saudi borders, and the contamination reached vital installations such as the oil fields in the northern and southern Rumaila.
2003	In the attack of the US forces, military operations took place in all regions of Iraq, and this war left many areas contaminated with various types of war remnants, especially cluster munitions, which caused great losses. After 2003, Iraq suffered almost daily terrorist attacks using car bombs or improvised explosive devices that targeted civilians. And the military, in addition to huge quantities of explosive shells abandoned after the 2003 events.
2014	New contamination represented by (IEDs) as a result of the control of ISIS criminal gangs on large lands in several governorates and the planting of many (IEDs).

Thus, Iraq is one of the countries severely affected by explosive ordnance. Table.2 shows the total areas (m^2) of regional centers and at the governorate level, and the types and areas of contamination types (contamination types) with explosive ordnance in Iraqi territory until April 2021:

Table 2: Types of contamination with explosive ordnance according to the total areas of the governorates of Iraq and at the level of regional centers

Types and areas of contamination (CO) by exploded ordnance [2]										% (1) / (2)	Total area of CO (2)m^2	Area [1] (1)m^2	GO.
Area m^2	**CO.**	**Area** m^2	**CO.**	**Area** m^2	**CO.**	**Area** m^2	**CO.**	**Area** m^2	**CO.**				
-	Improvised Explosive Devices (IED)	1025502	Battle Area Clearance (BAC)	-	Explosive Remnants of War (ERW)	23204	Cluster Munitions (CM)	47289930	Mine Field (MF)	% 0.32	48338636	15074000000	Erbil
-		1315511		-		1474298		19591820		% 0.34	22381629	6553000000	Dohuk
-		5138773		-		524402		106650029		% 0.66	112313204	17023000000	Sulaymaniyah
179496780		35487855		334968		15726		1580		% 0.16	215336909	137808000000	Anbar
254158075		1147292		87939903		-		15791646		% 2.03	359036916	17685000000	Diyala
10091062		837540		78293523		-		53326		% 0.37	89275451	24363000000	Salahaddin
37484537		-		24186		-		5584		% 0.39	37514307	9679000000	Kirkuk
120550669		1346		2033842		4157090		523332		% 0.34	127266279	37323000000	Ninewa
3577320		10312198		3511		-		-		% 0.31	13893029	4555000000	Baghdad
5		-		75257646		299143		39583183		% 0.67	115139977	17153000000	Wasit
-		316650425		1457448		290702		-		% 6.22	318398575	5119000000	Babylon
-		-		4074340		2107445		-		% 0.12	6181785	5034000000	Karbala
				22375		5157540		1754329		% 0.02	6934244	28824000000	Najaf
-		-		57648972		3137824		-		% 0.75	60786796	8153000000	Diwaniyah
-		81941826		305609418		37045697		843913276		% 6.65	1268510217	19070000000	Basra
-		5277900		23138166		990313		51534874		% 0.50	80941253	16072000000	Maysan
-		548348		57711757		45188397		-		% 0.80	103448502	12900000000	Dhi Qar
-		-		10078226		68406293		38978577		% 0.91	468270096	51740000000	Muthanna

[1] Iraqi Ministry of Planning - Central Bureau of Statistics http://cosit.gov.iq -Annual Statistical Abstract 2018-2019 (the area of the governorates, the number of districts and their sub-districts, according to the update at the end of July 2019).

[2] Information Management System for Mine Action (IMSMA)/ (DMA) & (IKMAA).

From Table. 2, we see that there is a discrepancy in the percentage of polluted areas relative to the total area of the governorates, as this disparity ranged (0.02%-6.65%), which indicates that there are governorates affected more than others in the polluted areas caused by the presence of various types of contamination represented In (MF, CM, ERW, BAC, IED), we see that contamination rates are high in governorates of economic importance to Iraq, including Basra governorate, where the area of contamination constituted (6.65%) relative to the total area of the governorate, as well as the case in Babel governorate, which formed an area Contamination is (6.22%) relative to the total area of the governorate, and Diyala governorate constituted (2.03%) relative to the total area of the governorate, which requires an increase in all national and international efforts to get rid of war remnants resulting from previous and new wars in order for the Iraqi economy to flourish.

The following are pictures of the Iraqi Organization for the Removal of Mines and Unexploded Ordnance (UXO), (Iraqi Mine UXO Clearance Organization) (IMCO), showing the economic effects of explosive ordnance in Iraq:

Mines spread near electric power transmission towers

Cluster bomb on a farm in Basra Governorate

Cluster bomb on a palm

The pipeline for transporting oil passes through the minefield

Statistical Data Availability and the Impact Dimensions

The min statistical data sources, to carry out the analysis of the explosive ordnance impact on the Iraqi economy, are both; The Directorate of Mine Action (DMA) in Iraq, of Ministry of Environment, and the Iraqi Kurdistan Mine Action Agency (IKMAA) Authority in Erbil.

The statistical information has been supplied by the above two government institutions dealing with mine matters in Iraq, in the shape of areas that are fully affected and contaminated, and its spillover impact, on eighteen socio-economic and infrastructure sectors of Iraq as a whole, and in each of its 18 governorates.

The main matrix depicting the data on impact, by sector and sub-national, in percentages, is shown in the annex. For reasons of confidentiality, the percentage rather than the absolute figures by sector and location are shown in this paper.

The Impact on National Level

In this section, the measurement and analysis of the impact of the explosive Ordnances on different segments and sectors of the national economy, have been attempted. Such an impact on each sector of the Iraqi national economy has been derived from the collected statistical data from the min sources mentioned in the section above.

Table.3 below has indicted the percentage impact of the total national impact of the explosive ordnance in Iraq, on each of the affected sectors and segments of the economy. The table, also, has shown the sectoral ranking vis-à-vis the depth of the impact on the sector relative to the total national impact, with 1 being the worst and 18 being the least impacted sector.

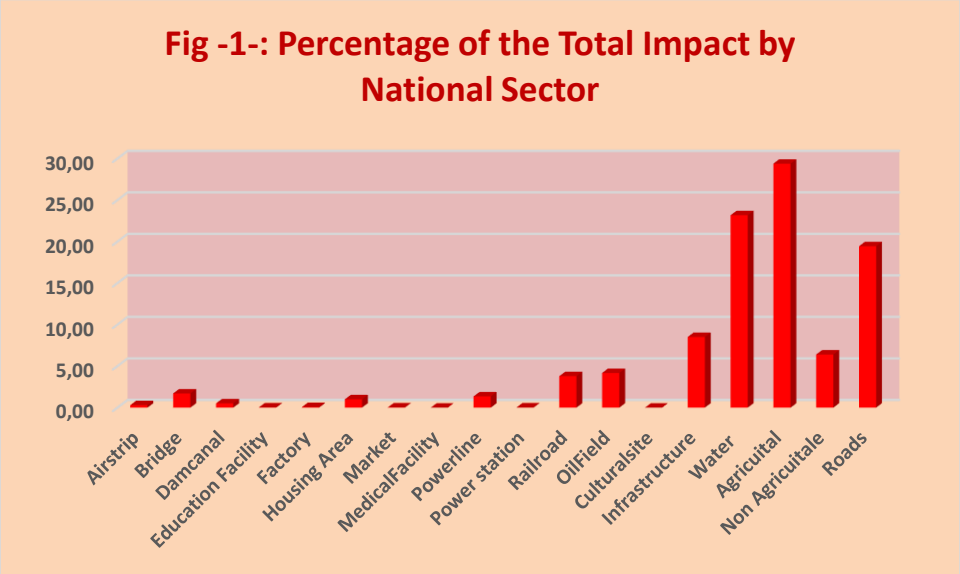
The analyzed data has illustrated beyond doubt that Iraq has been hit hard by the implanted land and other mines, resulting from a number of wars, conflicts, and terrorism activities in the past. The socio-economic impact of these implanted explosive ordnances is quite apparent and persisting, despite existing concerted efforts by national and international related organizations to alleviate such a negative national impact.

The table above shows the direct sectoral impact as a percentage of the total national existing impact of the explosive ordnance in Iraq. These percentages may potentially increase when the indirect impact of each sector, is taken into consideration. Such an indirect effect would reflect the causal-chain impact of the affected sector's activities on the other users and suppliers' sectors and activities of the impacted sector, i.e. the user and supply-chains impact within the national economy as well as with the rest of the world (ROW).

Table 3: Sectoral Percentage Impact of the Explosive Ordnance in Iraq and their Ranking

Number	Impacted Sector	Percentage of Total Impact by National Sector	Rank
1	Airstrip	0.31	12
2	Bridge	1.71	8
3	Dam canal	0.52	11
4	Education Facility	0.04	14
5	Factory	0.08	13
6	Housing Area	1.01	10
7	Market	0.03	16
8	Medical facility	0.00	17
9	Powerline	1.36	9
10	Power station	0.03	15
11	Railroad	3.80	7
12	Oil Field	4.18	6
13	Cultural site	0.00	18
14	Other Infrastructure	8.52	4
15	Water	23.18	2
16	Agricultural	29.39	1
17	Non-Agriculture	6.40	5
18	Roads	19.45	3
	Total	100.00	

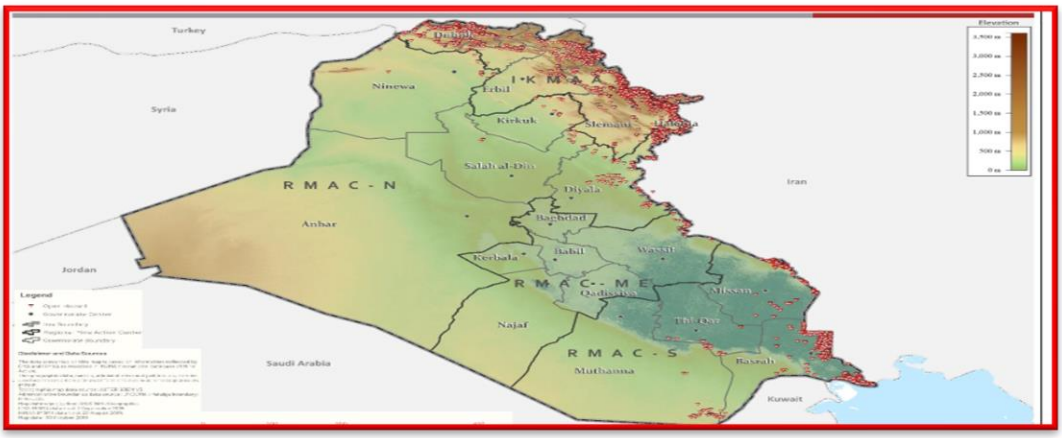
More than 85 percent of the total impact is born by five sectors of the economy, namely, **Agriculture, Water, Road, Other Infrastructure, and non-Agriculture** activities. Figure (1) demonstrates this sectoral impact. This, by and large, is quite significantly impacting the nation, socially and economically. Particularly, so when the agriculture and water sector have been hit hard and by over 50 percentage points of the total national impact in the country. These two sectors, by and large, are leading sectors, after the oil sector, in the Iraqi economy, and the principal contributing sectors to national food security, living standard, employment, income-generating, and main contributors to poverty reduction in Iraq. Besides, these highly impacted sectors are the main source of material inputs for the national productive activity chains, as well as for sustainable growth of the economy and stability of the Iraqi Balance of Payments (BoPs).



The Impact on the Sub-National (Provincial) Level

Having analyzed the national impact of the explosive ordnance, by the main affected sectors, in Iraq. This section is attempting to analyze the impact of sub-nationals, i.e. by Governorate (Province).

Iraq as a country is geographically divided into eighteen governorates, plus Baghdad the Capital of Iraq. Four out of these eighteen governorates are located in the Kurdistan Region of Iraq (KRI). The map below shows the Iraqi Governorates (Province) and their locations (i.e. Regional Mine Action Center (RMAC) in DMA/Iraq), and Landmine contamination as part of explosive ordnance over all governorates.



Source: [DMA, 2017]

From the statistical data supplied by both DMA and IKMAA, we have structured a matrix of percentage impact by sector in each of the eighteen sub-nationals. The rows of the matrix indicate the sub-nationals, while the columns represent the impacted sectors and activities. The row-sum is identified the total impact of all sectors in each sub-national (governorate). Table (4) displays the total sectoral impact of the explosive ordnance by governorate. This has been derived from the original statistical data, in percentage, together with the governorates have been ranked by the size of the actual impact.

Table 4: Sub-National Percentage Impact of Explosive Ordnance and Their Ranking in Iraq

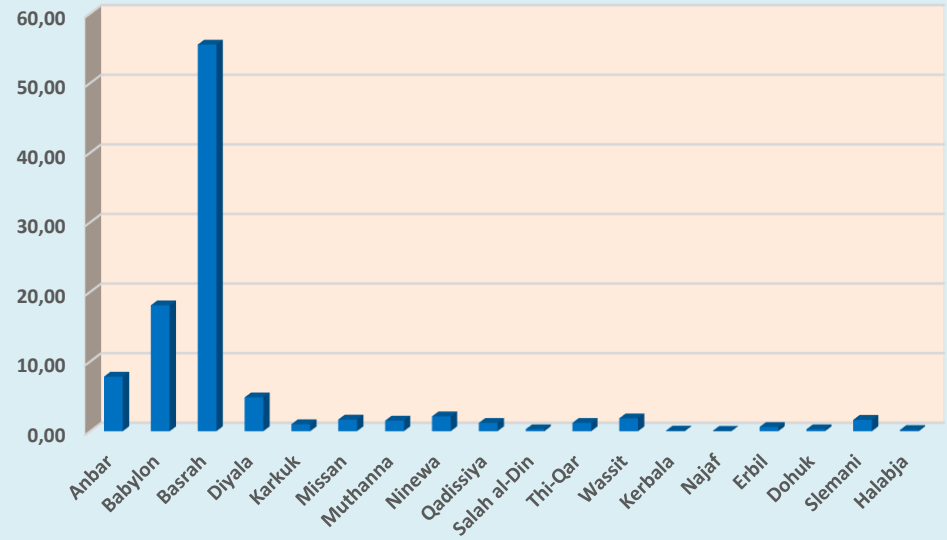
No.	Governorate	Percentage of total Impact by Governorate	Rank
1	Anbar	7.84	3
2	Babylon	18.08	2
3	Basrah	55.54	1
4	Diyala	4.86	4
5	Karkuk	1.00	12
6	Missan	1.67	6
7	Muthanna	1.52	7
8	Ninewa	2.13	5
9	Qadissiya	1.20	11
10	Salah al-Din	0.28	14
11	Thi-Qar	1.20	10
12	Wassit	1.85	8
13	Kerbala	0.08	17
14	Najaf	0.05	18
15	Erbil	0.61	13
16	Dohuk	0.28	15
17	Slemani	1.63	9
18	Halabja	0.18	16
	Total	100.00	

As can be seen from the above table (4), sub-national (governorates) located where war activities have taken place in Iraq in 1980-1988 (First Gulf War), 1991 (Second Gulf War), and 2003 war, i.e. Basra, Babylon, Missan, Muthanna, and Wassit, as well as those governorates that have suffered from the terrorist activities (ISIS) in 2014-2016, i.e. Anbar, Ninewa, Diyala, and Babylon, were the most affected sub-national, by the implanted explosive ordnance in Iraq.

Accordingly, more than 85 percent of the total socio-economic impact of implanted mines in Iraq is endured by the first seven ranked governorates. Basra governorate has more than 55 percent of the total explosive ordnance impact in Iraq, as a whole, followed by Babylon with about 18 percent and Anbar with a little less than 8 percent of the total impact.

Figure: -2-, depicts the percentage distribution of the total socio-economic and infrastructural impact of the explosive ordnance by the different governorates in Iraq.

Fig -2-: Percentage of total Impact by Governorate



At this conjuncture, it is worth mentioning that the highest sectors which have negatively impacted, in percentage points, in the four highly affected governorates, i.e. Basra, Babylon, Anbar, and Diyala, were the road, oil fields, water and water resources, agriculture, railroads, other infrastructure (ports, etc.), and non-agriculture (manufacturing industry and related activities) sector. Accordingly, these implanted mines' direct and indirect impact has hit quite hard the substantive sectors which are the pillars for resources utilization, trade, socio-economic development, and growth of the nation, and has contributed, to and exacerbated the slowing of the development processes, increasing unemployment, restricting significantly commodities and human mobilities, and increasing the overall poverty in the country.

CONCLUSIONS AND REMARKS

With the increasing realization of the importance of clearing the implanted mines due to wars and/or other destructive activities, taking place in the nation. Quite a number of research works have been carried out, on different countries, showing the negative impact of explosive mine ordnance on the economic development, growth, and social wellbeing of the affected countries' inhabitants. Notwithstanding, Iraq is not an exceptional and is one of these impacted countries with wars and conflicts' remnants of implanted mines.

This study has shown, and for the first time, the multi-dimensional impact of explosive ordnance on the Iraqi economy. The analysis assessed such an impact on sectoral and spatial (governorate) level. It has quantitatively measured and approved that the most impacted and hard hit are the productive sectors, such as; agriculture, water, oil fields, and manufacturing industries, as well as the main infrastructure sector, particularly, road, railroad, electricity, communications, and dams. Accordingly, more serious, and inserted efforts need to be taken to mitigate such a negative impact, on the Iraqi economy and society, in the nearest future.

It is expected that this study with its significantly resulted outcomes, would be used as a fundamental quantitative base to stimulate and encourage further and deeper research, on this topic, in the years to come.

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Annex

National Impact of the Explosive Ordnance on Iraq by Governorate and Socio-Economic and Infrastructure Sector (in Percentage)

No.	Governorate	Airstrip	Bridge	Dam canal	Education Facility	Factory	Housing Area	Market	Medical facility	Power line	Power station	Railroad	Oil Field	Cultural site	Other Infrastructure	Water	Agricultural	Non-Agricultural	Roads	Total
1	Anbar	1.31	0.46	0.52	0.45	0.75	2.96	0.24	0.01	15.42	0.09	0.37	0.00	0.00	9.59	15.76	28.22	0.00	23.83	100.00
2	Babylon	0.00	9.18	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73	24.01	24.03	14.83	24.12	100.00
3	Basra	0.01	0.00	0.59	0.00	0.00	0.56	0.00	0.00	0.16	0.03	6.72	6.18	0.00	11.42	27.82	26.51	1.02	18.98	99.99
4	Diyala	0.00	0.00	0.15	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	13.74	13.85	58.31	13.31	100.00
5	Kirkuk	0.00	0.00	4.53	0.25	0.00	1.88	0.00	0.01	0.13	0.54	0.12	0.00	0.04	3.02	25.17	37.78	0.00	26.53	100.00
6	Missan	0.14	0.00	4.34	0.03	0.00	0.25	0.00	0.00	0.00	0.00	0.03	14.72	0.00	7.91	20.69	28.79	0.84	22.25	100.00
7	Muthanna	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.21	0.00	10.94	1.38	58.54	0.95	0.98	100.00
8	Ninewa	0.00	0.67	1.29	0.00	0.05	14.49	0.00	0.03	1.00	0.00	0.00	0.00	0.01	9.23	10.95	37.55	0.00	24.72	100.00
9	Qadisiya	7.84	0.00	0.00	0.00	0.00	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.57	0.00	64.36	7.84	11.85	100.00
10	Salah al-Din	0.00	0.00	0.00	0.15	0.18	4.75	4.05	0.00	14.51	0.00	12.42	2.43	0.22	15.68	0.96	26.80	4.05	13.78	100.00
11	Thi-Qar	8.54	0.00	0.04	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	3.29	0.00	5.59	31.06	26.64	11.41	13.34	100.00
12	Wassit	0.00	0.00	0.00	0.00	0.11	3.07	0.00	0.00	0.00	0.00	0.00	2.16	0.00	2.14	8.76	59.48	0.65	23.64	100.00
13	Karbala	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.56	44.88	0.00	27.56	100.00
14	Najaf	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	50.00	100.00
15	Erbil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.94	97.56	1.49	0.00	100.00
16	Dohuk	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	2.33	88.90	8.73	0.00	100.00
17	Slemani	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	3.66	94.51	0.25	1.23	100.00
18	Halabja	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.96	97.12	0.00	1.79	100.00