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Unequal battles uphill: regenerative strategies of post-conflict Iraqi regions*

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Abstract

Infrastructural and economic reconstruction of a country following a geopolitical conflict requires a balanced policy strategy. This will be illustrated here for the case of Iraq. The long-range post-conflict recovery of this country needs a strategic, evidence-based approach to optimize regional resource allocation and to speed up regional regeneration. This study employs a qualitative type of Input-Output Analysis and a Multicriteria Decision Analysis (MCDA) to assess disparities in infrastructure, governance, and economic resilience among regions, providing an analytical and data-driven framework for prioritizing regional investment strategies. By ranking regions based on their recovery capacity, the study aims to provide a targeted strategy for stabilizing Iraq's space economy and strengthening its governance institutions. Our empirical findings stress the critical need for long-term investments, balancing immediate stabilization with long-term economic transformation. However, governance fragmentation, corruption, and weak institutional frameworks remain significant barriers to resilience, limiting the effectiveness of investments and hindering sustainable economic recovery. Addressing these structural issues – through governance reforms, institutional capacity building, and transparent resource allocation – is essential for the long-term economic resilience of regions in Iraq. If implemented effectively, this strategy can advance Iraq's space economy from post-war uncertainty to sustained stability and growth.

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1. Introduction

Post-conflict recovery of nations or regions needs a thorough analytical research framework. In this introductory section, we will first present the background scene of the present study, followed by a description of the aims and scope of the research.

1.1. Setting the scene

The Middle East has, over the past decades, been a continuous arena – and sometimes a battlefield – marked by (geo-)political and economic conflicts throughout its tumultuous history. Iraq, much like its regional counterparts, has demonstrated a complex evolution in recent years, influenced by international power dynamics, national policies, and regional cultural and socio-economic complexities. Understanding Iraq's economic resilience pattern after war crises necessitates exploring its multifaceted space-time dimensions, which manifest the complexity of its development. Iraq's historical trajectory is characterized by periods of prosperity, disruption, fluctuation, and occasional revival, influenced by a complex web of conflicting factors. To fully grasp this context, one must explore the confluence of distinct long-term economic cycles attributed to Nikolai Kondratiev, medium-term cycles reminiscent of Clément Juglar's theories, and short-term entrepreneurial disturbances exemplified by Joseph Schumpeter. These interwoven cycles shape Iraq's economic pathways over many years, influencing the recovery prospects across different regions (Acemoglu & Robinson, 2012). Iraq currently faces multiple challenges in its post-conflict regeneration efforts, including governance weaknesses, severe infrastructure damage, and the need for a sustainable recovery framework that promotes resilience. The destruction caused by years of war has left governance structures fragmented, weakened institutions, and disrupted essential services, making recovery an urgent but complex task (Collier, 2009).

Two significant observations clarify Iraq's complex behaviour. First, the regions within this diverse country demonstrate a remarkable degree of heterogeneity, including significant socioeconomic disparities, cultural-religious diversity, and varied physical-geographic characteristics. Second, Iraq's institutional landscape responsible for post-conflict economic rehabilitation is marked by a profound lack of homogeneity. Various political, cultural, and economic stakeholder groups, each driven by its unique interests and agendas, contribute to a fragmented institutional framework during the recovery period. This institutional fragmentation stands as a

significant barrier to achieving sustainable (re)development in Iraq and its regions (North, 2012). A nuanced understanding of these spatial-economic complexities is essential to advance the way forward. This understanding has to be translated into a structured assessment of regional disparities, ensuring that re-development investment priorities are set accordingly (Rodrik, 2011).

Iraq faces the colossal challenge of reconstructing its infrastructure and social systems in the wake of prolonged conflicts. The destruction of roads, bridges, schools, and healthcare facilities has severely hampered economic and social recovery efforts. As a result, investment strategies must differentiate between immediate stabilization needs and long-term development goals (Barro & Sala-i-Martin, 2004; Braunerhjelm, 2022; Pascariu et al., 2023). Clearly, Iraq is not an exception in the turbulent contemporary evolution of nations or regions. Many countries worldwide face deep institutional and governance challenges and crises in their space economy. The key challenge lies in designing recovery pathways that integrate long-term investments, ensuring that post-war fragility transitions into long-term resilience and stability (Pritchett et al., 2017). The economics of resilience is essentially based on a Schumpeterian growth paradigm, in which challenges and responses form a key mechanism. Any shock may cause a downturn of the (national or regional) economy, but the nature of the responses determines the effectiveness and speed of recovery strategies (Pascariu et al., 2023). This also holds for the economy of Iraq. The economic revitalization of Iraq's regions requires a data-driven approach that accounts for both institutional constraints and investment needs (Fukuyama, 2004; Bănică et al., 2020; Kourtit et al., 2023). Addressing governance inefficiencies, fostering infrastructure rehabilitation, and supporting economic diversification are essential to achieving long-term stability. Therefore, the prioritization of recovery strategies must be based on measurable criteria for mitigating regional disparities so as to allocate investments effectively (Easterly & Levine, 2002).

It is noteworthy that human-made shocks or devastations may also have long-term beneficial outcomes. Recent studies (Costantini, 2013; Ghani & Lockhart, 2008; Bănică et al., 2020; Kourtit et al., 2023) have tested the validity of the BiD ('Blessing in Disguise') concept through a global comparative analysis of significant area devastations worldwide. These studies highlight the role of institutional quality in determining recovery outcomes. Weak institutional mechanisms, ranging from governance failures to corruption, hinder post-crisis regeneration and economic revival. This finding is particularly relevant for Iraq, where governance fragmentation significantly influences regional recovery potential (Di John & Putzel, 2009). Despite an expanding body of literature on post-conflict recovery, there remains a gap in methodologies that quantitatively rank regions based on their regeneration capacity (World Bank, 2018). This study addresses that gap by employing structured evaluation methods that prioritize investments where they

will have the greatest impact. The present paper is a follow-up to previous applied studies on the recovery of the Iraqi space economy (see e.g., Kourtit et al., 2024). More specifically, the challenge is to determine how to prioritize investments across different regions that vary significantly in their recovery needs. A core aspect of this study is the development of a decision-support framework that assesses regional disparities, allowing for targeted, evidence-based, and capability-oriented resource allocation (Sen, 1999). The main aim of the present study is to evaluate the regenerative potential of various regions within Iraq and to provide a framework for prioritizing regional investments based on their growth potential and development needs. By utilizing a ranking system based on multi-criteria decision analysis (MCDA) and qualitative input-output analysis, this study offers a strategic approach to post-war investment planning (Friesz, 2007; Todaro & Smith, 2020).

1.2. Aims and scope

The regions in Iraq exemplify the devastating impacts of war conditions on regional economies. Against the backdrop of post-conflict recovery, the present study aims to introduce an evidence-based methodology for analysing and managing Iraq's regional reconstruction efforts. By systematically assessing key economic and social indicators, it establishes a clear, structured ranking system that guides investment prioritization based on regional resilience capacity (Donaghy, 2019). The approach focuses on strategic input investments that yield valuable output revenues, while considering short-term, medium-term, and long-term investment strategies within the framework of strategic (re-)development planning.

Given the data challenges at the regional scale, the study employs analytical decision support tools such as foresight or scenario analysis (van der Heijden, 2004) and multi-criteria analysis (MCA) (Beinat & Nijkamp, 1998; Rietveld, 1980) to create sustainable and resilient development in Iraq's regional system. These tools help classify regions based on their potential for recovery, ensuring that investment decisions are both strategic and data-driven. The research utilizes general input-output data and a qualitative categorical MCA approach to assess the regenerative potential of Iraq's regions based on infrastructure quality, social sector needs, and economic requirements.

The research questions guiding this study are:

- *How can investment strategies be structured to address both immediate stabilization needs and long-term development objectives in Iraq's administrative regions or governorates?*

- *What are the region-specific constraints and opportunities influencing recovery, and how can these be incorporated into public investment decision-making?*

• Is it possible to develop a systematic evaluation procedure that ranks investment priorities across Iraq's regions based on objective, measurable, or testable criteria?

By integrating qualitative multicriteria analysis (MCA), the study identifies the regions with the highest regenerative potential and determines investment scenarios that maximize long-term economic recovery. This structured ranking approach ensures that resource allocation aligns with regional disparities, avoiding inefficient distribution of investments (Fuentes-Sánchez et al., 2021). The findings contribute to post-conflict recovery literature by providing a structured, quantitative methodology for evaluating and prioritizing regional investments, offering insights for policymakers and international organizations involved in Iraq's development.

The study is organized as follows. Section 2 provides an overview of Iraq's space economy, governance challenges, and regional disparities. Section 3 defines the key economic input and outcome (output) variables, along with the research questions guiding the analysis. Next, Section 4 deals with the details of the methodological framework, integrating Input-Output Analysis and Multicriteria Decision Analysis (MCDA) to assess the regional recovery potential through structured ranking, investment scenarios, and prioritization strategies. Section 5 applies this framework to Iraq's governorates, presenting data normalization, weighted scoring, and regional rankings to identify high-priority areas for investment. Finally, the study concludes with key findings and policy recommendations, focusing on governance reforms, economic diversification, and phased investment approaches for long-term recovery.

2. Decision support systems for post-conflict recovery strategies: An overview

The re-development of Iraqi regions in the post-war era requires wide-ranging data and an evidence-based methodological approach to choose or develop strategically prioritized and cost-effective recovery alternatives for the various regions. A structured framework is essential to ensure that recovery investments are directed toward regions with the highest potential for regeneration. In general, policy analysis provides ways to achieve goals in a structured and systematic manner. Clearly, in most cases, the goals of regional recovery are multidimensional and often mutually conflicting. Therefore, balancing trade-offs between competing priorities is a key aspect of rational policy analysis. Policy-making is essentially the choice of an optimal package of scarce resources to realize a bundle of socially desirable outcomes, which aligns with broader goals of national and regional regeneration (Simon, 1955; Ostrom, 2015; Rietveld, 1980; Dentinho et al., 2021).

The above complex trade-off issues apply not only to macroeconomic decisions but also to microeconomic (e.g., consumer choices) and meso-economic decisions, such

as regional investment prioritization and sustainable infrastructure development. The integration of multi-criteria decision analysis (MCDA) and other decision support tools strengthens the ability to manage these complexities. These tools enable a systematic comparison of regions based on infrastructure quality, economic potential, and social sector needs, allowing for better-informed recovery strategies (Chang, 2010). To maintain consistency, the assessment of recovery strategies must reflect the actual disparities between regions, ensuring that the decision-support system remains practically applicable. One widely used and generic approach to structuring these complex evaluations is multi-attribute utility theory (MAUT) (Lancaster, 1971; Keeney et al., 1979). Examples of MAUT approaches can be found in consumer theory, operations research, and decision theory (see e.g., Nijkamp & van Delft, 1977; Saaty, 1980). This analysis trend has led to a wide range of multi-attribute variants, such as multi-objective programming, multi-dimensional decision theory, or multi-criteria analysis. However, these methods require continuous refinement to ensure their applicability in post-conflict settings. We refer here to overview studies by Keeney et al. (1979), Roy (1996), Nijkamp and van Delft (1977), and Belton & Stewart (2002).

Apart from empirical weaknesses caused by incomplete or unreliable data on future events, the paramount problem in decision support models is the fact that not all arguments (independent variables) in an MAUT or broader welfare framework have the same weights. Assigning appropriate weights to critical factors—such as infrastructure, governance capacity, and investment needs—ensures a balanced and objective evaluation of recovery priorities. This study, therefore, tries to employ a hybrid weighting approach to enhance reliability, ensuring that recovery strategies remain effective across varied regional contexts. To arrive at a feasible assessment of weights attached to each variable of a utility or welfare function related to recovery strategies, various methods are available:

- Direct determination of weights, based on:
  - Survey techniques among policymakers and experts.
  - Simulation techniques to test the robustness of trade-off scenarios.
  - Observation methods using real-world case studies of past recovery efforts.
- Indirect determination of weights, based on:
  - Experimental techniques, such as conjoint analysis or contingent valuation methods.
  - Minimum threshold approaches to ensure essential recovery objectives are met.

In the MCA context, preference elicitation methods (often in combination with expert opinion) have become standard, widely used tools in multidimensional

decision analysis. These were largely inspired by the path-breaking work of Keeney (1992), and they have found a rich application in operations research and decision analysis. However, these methods must be adapted to post-conflict settings, where regional disparities and data limitations require flexible decision-making frameworks. These methods help refine investment decisions by integrating both quantitative data and expert-driven insights, ensuring a realistic approach to reconstruction planning (Dupont & Noy, 2015). Most of these expert elicitation methods, however, have traditionally been reliant on subjective judgments rather than systematic data-driven validation. To counteract this, sensitivity analysis is usually applied to reinforce the robustness of weight assignments and policy recommendations (Triantaphyllou, 2000). Despite all weaknesses, MCA has generated a wide array of interesting and operational contributions to decision analysis, in particular in:

- *Preference elicitation techniques* that help define the relative importance of different recovery factors (e.g., in disaster recovery and post-conflict economic planning, such as Iraq).
- *Comparative assessments* using AHP, Promethee, MAMCA, Paprika or Regime models to support investment prioritization (Brans & Mareschal, 1994).
- *Efficiency benchmarking* through Data Envelopment Analysis (DEA) to identify regions with the best recovery potential (see Charnes et al., 1978; Suzuki & Nijkamp, 2017; Kourtit et al., 2024).

It goes without saying that the assessment of regional recovery strategies in Iraq is a highly complex evaluation problem involving numerous variables, competing interests, and incomplete datasets. The use of expert elicitation methods (including Q-analysis; see Dentinho et al., 2021) and DEA models has demonstrated potential for structuring investment priorities and guiding decision-making (see e.g. Cook & Seiford, 2009). However, the weak database for many Iraqi regions presents a challenge for purely quantitative modeling, reinforcing the need for a hybrid approach that integrates expert-driven qualitative assessment with structured data-driven methodologies. By combining both approaches, this study mitigates the limitations posed by data gaps and ensures a comprehensive understanding of regional potential. This study adopts such a hybrid approach, ensuring that both data limitations and practical recovery constraints are taken into account in the decision-making process. This approach also enhances the decision-support framework, making it more adaptable to different recovery scenarios.

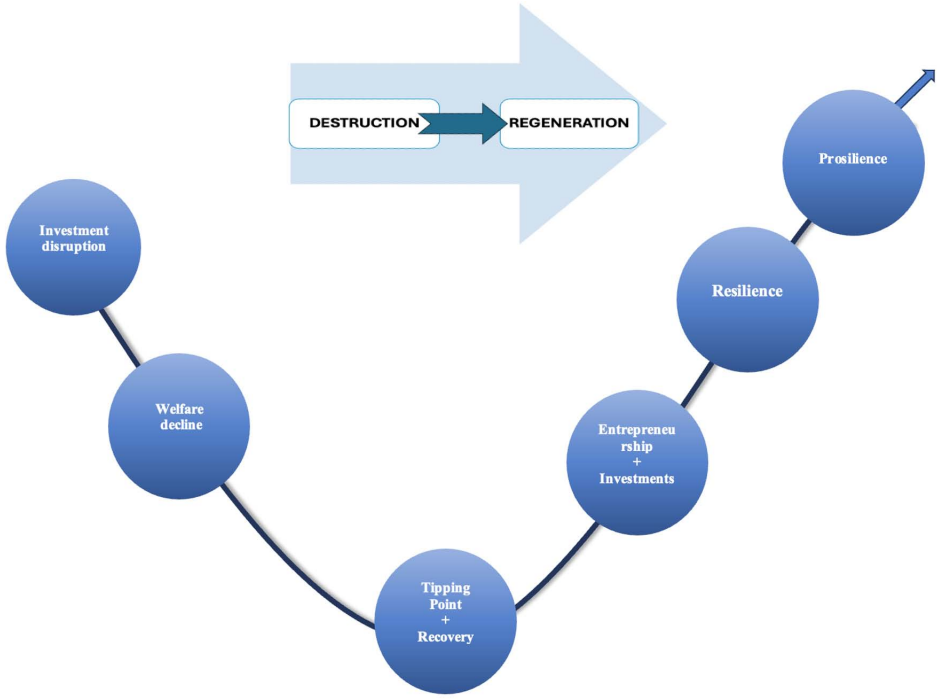
Finally, a caveat ought to be mentioned. The recovery strategies following the Iraqi war face multiple uncertainties, including weak institutional frameworks, socio-political instability, and economic volatility. The present study seeks to address these challenges by developing an adaptable, evidence-based investment

prioritization framework that accounts for both short-term recovery needs and long-term resilience building. It goes without saying that the supply of adequate broadly-composed infrastructure is a sine qua non for a balanced regeneration of regional economies in Iraq. And therefore, in our empirical analysis we have tried to address in particular the regenerative development capacity of regional infrastructure. Clearly, without proper institutional coordination, even the most well-planned recovery efforts may fail to achieve sustainable outcomes (Andrews et al., 2017). By evaluating multiple recovery scenarios, this framework helps identify the most effective strategies for sustainable regional development. Despite many limitations, this study provides an expert-driven assessment of bottlenecks and potentials, leveraging all available data sources to develop an actionable roadmap for regional recovery and investment prioritization. Thus, the proposed framework serves as a strategic tool for optimizing resource allocation and facilitating sustainable post-war reconstruction. This will be further highlighted in the remaining part of this study. We will begin with a concise sketch of Iraq's recent turbulent history.

3. Observations on the Iraqi economy and its governance

Iraq's development path is characterized by a great variety of time-varying economic waves. These waves, evoking Kondratiev's waves of innovation, Juglar's investment cycles, and Schumpeter's creative destruction pathways, merge to create a dynamic and fluctuating pattern (Acemoglu & Robinson, 2012; Piketty, 2014). Understanding these economic cycles is crucial for assessing the recovery potential of different regions, ensuring that investment strategies align with their long-term trajectories (Cuaresma et al., 2008). To enhance this assessment, it is critical to integrate a precise evaluation of each region's position in the economic cycle. Figure 1 below, represents this complex performance, portraying a cascade of downward steps representing the consequences of wartime conditions in Iraq (the 'avalanche' event). During this turbulent decline marked by chain reactions, a crucial tipping point emerges, enclosed by a U-shaped curve. The subsequent path, metaphorically represented as 'the battle uphill,' denotes the challenging path toward recovery. This trajectory highlights varying degrees of recovery potential across regions (World Bank, 2022), including also the well-known BBB principle (Building Back Better).

Figure 1**:** Trajectory from destruction to regeneration



Source: Author's constuction

Identifying where each region stands along this trajectory allows for a targeted approach to economic rehabilitation, ensuring that investments are directed toward regions with the highest potential for recovery. A structured recovery strategy is necessary to address these disparities effectively. If the recovery strategy is more ambitious than a return to the initial situation, the BBB objective may be achieved by a supra-resilience strategy (often coined '*prosilience*') that seeks to significantly enhance the new outcome as compared to the original state of affairs.

Iraq's economy has experienced significant structural imbalances due to decades of political, economic, and security uncertainties and shocks, which have intensified the country's current vulnerability (see e.g., Alayseri, et al., 2024; Melnyk et al., 2023). Over all these years, Iraq has remained heavily reliant on oil. In 2019, oil comprised over 96% of its exports, 92% of government budget revenues, and 43% of GDP (International Monetary Fund [IMF], 2024). This economic dependency influences regional recovery patterns, as oil-producing regions exhibit different trajectories compared to diversified economies. The nation's economic health is closely tied to global oil prices. The limited expansion of non-oil sectors can be attributed to numerous security shocks and political instabilities, including regional conflicts and terrorist attacks. This overreliance on oil has hindered investments in

other critical industries and sectors. The private sector's potential for job creation has been hampered by an unfavourable business environment and persistent bureaucratic inefficiencies that discourage foreign and domestic investment. These factors contribute to variations in private sector development across governorates, affecting economic revitalization efforts.

Due to the large public sector and fixed wage structures, there is limited revenue available for public investments in infrastructure, culture, and human capital, which restricts the ability to respond to economic disruptions (Alnasrawi, 2002; Larkin & Rudolf, 2023). A structured investment framework is needed to ensure that financial resources are allocated efficiently to maximize socio-economic recovery. Even before the global COVID-19 pandemic, public discontent was growing due to inadequate service quality, pervasive corruption, and increasing unemployment and poverty rates (Transparency International, 2020). Investment priorities must be determined based on regions where these socio-economic issues are most pressing. Obstacles faced by the private sector include limited access to financial services and investment credits, complex registration and dissolution procedures for firms, a shortage of skilled workers, outdated legislation, and unfavourable regulations, all of which hinder business activities and expansion (Nasir et al., 2021). A systematic approach is necessary to account for these constraints, ensuring that economic revitalization strategies address both infrastructure rehabilitation and business environment reforms.

Starting a business in Iraq presents a challenge with numerous obstacles, including collapsing infrastructure, an unstable legal framework for consumer protection and laws, inadequate production standards, and a lack of incentives for investment (Gatti et al., 2014). The dominance of public and semi-public enterprises has weakened the private sector. Additionally, the education sector, particularly in areas liberated from IS, lacks a robust knowledge infrastructure (Alison, 2019). Regional educational deficiencies must be addressed to align workforce development initiatives with local economic needs. While the government has pledged to construct 1,000 new schools as part of its strategic initiatives to enhance the education system, this represents only a minor step. A broader education reform and workforce development initiative is required to support long-term economic diversification and innovation. Workforce investments should be prioritized based on the most critical needs across regions. However, limited investment in human capital continues to hinder Iraq's long-term economic recovery and growth (OCHA Iraq, 2015; UNDP Iraq, 2014; World Bank, 2016; World Bank, 2018; Ministry of Planning Iraq, 2018; NIC, 2019; Alison, 2019; Central Statistical Organization Iraq, 2019; Directorate of Transport and Communications Statistics, 2021).

Iraq's economy faces severe challenges due to widespread corruption and a lack of economic diversification (see also Gunter, 2021). Moreover, the economic performance has been significantly affected by the COVID-19 outbreak in recent

years. Since the 2003 conflict, infrastructure and human potential have remained underdeveloped, intensified by the IS takeover (Cordesman & Khazai, 2014). Security spending consumes a significant portion of the state budget, detracting resources from essential sectors like health, education, and the environment. The impact of security expenditure on economic recovery requires more efficient resource allocation strategies, from regional to local levels (Lyall, 2021). Violence has severely damaged social capital, trust, and social harmony. Government positions based on sectarian affiliations rather than professional qualifications have contributed to a further decline in effective governance. Addressing governance inefficiencies is crucial in ensuring that post-conflict investments are implemented effectively and equitably across regions. Strengthening institutional frameworks is essential for maximizing the effectiveness of investment strategies. Ongoing security and political uncertainties, as well as COVID-19 restrictions, hinder long-term planning and discourage foreign investments. An ineffective legal system and pervasive corruption worsen the country's economic challenges.

The root of Iraq's persistent development issues and the key to recovery lies in its governance system. The often-temporary nature of the Prime Minister's Cabinet results in structural inconsistency. Addressing corruption and improving access to water and power are top government priorities. Institutional stability is a key factor in determining the effectiveness of recovery investments, as regions with stronger governance structures may be better positioned to absorb and utilize funds efficiently. Targeted governance reforms are necessary to ensure investment efficiency and accountability (IMF, 2025). Effective governance would have to align with the current social situation and directly impact fiscal sustainability, employment growth, public services, private sector development, and other critical objectives for Iraq's medium- and long-term growth and stability. Rebuilding and rehabilitation should involve stronger governmental institutions and a new social contract grounded in accountability, participation, and inclusivity. Effective diplomacy among various political groups and sectarian identities, emphasizing broader national interests, is essential. Governance plays a crucial role in shaping social cohesion. Iraq's government's inability to achieve medium- and long-term goals is closely tied to its excessive dependence on revenues from international oil sales, often leading to implementation challenges due to funding constraints. Reducing fiscal dependency on oil revenues is necessary to enhance economic diversification and long-term stability.

Over several decades, economists have been drawn to the discussion surrounding large-scale redevelopment through public investment, with a particular focus on the distinction between social overhead capital (e.g., transportation infrastructure) and direct productive capital (e.g., factories) (Rodrik, 2007; Camagni & Capello, 2013). In recent years, many researchers have examined both the advantages and drawbacks of such substantial investments, as demonstrated by Flyvbjerg (2010)

and Flyvbjerg et al. (2013). Balancing infrastructure investment with governance reforms is essential for ensuring sustainable recovery. Addressing governance gaps and ensuring financial transparency will be essential for the effectiveness of such efforts. This will be further refined and integrated into empirical experimentation within the scope of the present study. While progress has been made in some governance aspects, significant gaps remain that hinder Iraq's transition toward a resilient and self-sustaining economy. The challenge ahead is to build a governance structure that effectively integrates long-term economic strategies with short-term recovery measures, fostering an environment conducive to sustainable regional development (Despotakis et al., 1993). We will now present the research methodology adopted for the Iraqi case study.

4. Methodology and data for assessing regional regeneration potential in the Iraqi space-economy

In our exploration of Iraq's regional reconstruction, we adopt a stimulus-response approach. Drawing from the theoretical foundations outlined in Figure 1, we propose that after critical infrastructure disruptions and economic downturns, a region's regeneration potential can be evaluated by analyzing the relationship between various inputs (such as infrastructure and social sector expenditures) and their resulting outputs (e.g., economic recovery and growth potential). This approach is grounded in empirical research on the role of public infrastructure investment in economic recovery, which has been shown to significantly impact long-term growth trajectories (Aschauer, 1989; Barro, 1991; Chen & Rose, 2018). Moreover, post-conflict spatial disparities require targeted investment strategies that account for regional variations in economic potential (McCann, 2013; UNDP, 2021). This structured approach ensures that recovery strategies are tailored to each region's specific conditions while maintaining a coherent investment prioritization framework.

4.1. Data categorization and methodology

Our Iraq database includes input and output (or outcome) data on the success factors and performance outcomes of provinces (governorates), with a particular emphasis on transport infrastructure and investments. To ensure comparability, key indicators such as road quality, infrastructure investment, and social sector performance are systematically ranked. Recent studies emphasize the need for structured investment prioritization frameworks in post-conflict economies, where resources are constrained, and governance challenges persist (NDP, 2024). The prioritization model used in this study aligns with best practices for maximizing public investment efficiency in fragile contexts (Flyvbjerg, 2010; Flyvbjerg et al.,

2013). Table 1 outlines these indicators used in the analysis (see also Dawood & Zoghlami Shili, 2023). This study also compiles regional data focusing on transport infrastructure and investment needs, providing insights into the key success factors and performance metrics for Iraq's governorates. The role of transport infrastructure in economic recovery has been extensively studied, with studies indicating that accessibility and mobility improvements can accelerate regional regeneration (Banister & Berechman, 2001; Bertolini et al., 2005; Arbués et al., 2015). In post-conflict settings, strategic investment in transport networks is crucial for rebuilding economic connectivity and enabling trade (Berechman et al., 2006; World Bank, 2025). The cultural-ethnic diversity among Iraqi regions does not add to a balanced allocation of resources for infrastructure inputs, thus creating more socio-economic tensions and disparities. Levelling-up left behind places is, therefore, a major challenge (see e.g., Martin et al., 2021).

Table 1: Input and output categories at regional scale in Iraq

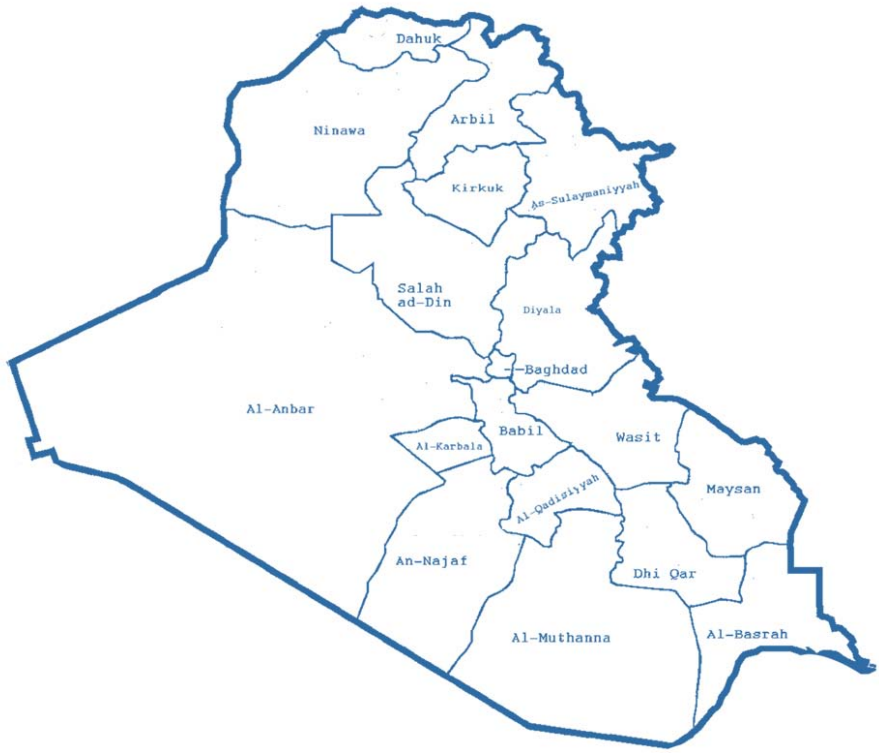
Selected Governorates	INPUTS				OUTPUTS				
	Road: SqKm	Quality Level Road Network	Infrastructure Needs (IQD billion, 5 yrs)	Sectoral Infrastructure (IQD billion, 5 yrs)	Per Capita Investment (IQD)	Health Care (IQD billion, yr 1)	Cultural Heritage & Tourism (IQD billion, yrs 2-5)	Education (IQD billion, 5 yrs)	Social Protection & Livelihood Support (IQD billion, 5 yrs)
Ninawa	37323	3	1,753.4	1,227.4	1400	480.7	565.3	1,447	3,162.5
Anbar	138501	3	1,590.6	1,113.4	800	183.6	285.9	1,458.9	1,102
Salah Al-Deen	24751	3	327.0	228.9	1200	67.6	22.8	272.1	1,200.9
Kirkuk	6679	2	464.1	324.9	900	202.8	54.7	925.5	511.2
Diyala	17685	1	186.6	130.6	900	73.7	45.7	323.8	369.1
Baghdad	4555	3	312.1	218.4	1400	20.5	100.5	768.2	892.4
Babel	5603	2	46.8	32.8	900	3.1	15.1	195.4	294.2

Source: Author's calculations based on World Bank (2016); World Bank (2018); Ministry of Planning Iraq (2018); National Investment Commission [NIC] (2019); U.S. Department of Defense, Measuring Stability and Measuring Stability and Security in Iraq (2009); NIC (2018); Directorate of Transport and Communications Statistics (2021) data

Given the incomplete and less reliable nature of some regional datasets, a hybrid assessment model should integrate quantitative data with qualitative evaluations to address inconsistencies and enhance analytical robustness (see also Nasir et al., 2021). This model ensures that only regions with rather complete, high-quality data are included in the analysis, narrowing the focus to seven key regions: Ninawa,

Anbar, Salah Al-Deen, Kirkuk, Diyala, Baghdad, and Babel. This choice brings some limitations, but the need to employ reasonably reliable data for the selected regions led us here. In any case, the most important regions are considered in our comparative study. The geographical position of these regions is depicted in Figure 2.

Figure 2: Map of the Iraqi governorates under study



Source: Author's construction

Infrastructure is a primary driver of economic recovery, necessitating targeted revitalization strategies supported by financial, technological, and institutional frameworks. Regions with critical infrastructure deficiencies are prioritized in order to maximize stabilization and long-term development. The effectiveness of public infrastructure investments also depends on institutional quality and governance efficiency (Rodrik, 2007; Camagni & Capello, 2013), requiring an integrated evaluation framework to prevent misallocation of funds and ensure measurable recovery outcomes (Friesz et al., 2007). Infrastructure quality and investment needs are central to this selection, ensuring that the most critical deficiencies are addressed first to promote long-term recovery and stability.

4.2. Analytical framework

This study employs a combination of a qualitative Input-Output Analysis (IOA) and Multicriteria Decision Analysis (MCDA) to ensure data-driven, transparent, and strategic investment decisions for Iraq's post-conflict regional recovery. IOA evaluates how infrastructure, investment, and social infrastructure capacity contribute to economic recovery, providing a structured framework for balancing rehabilitation with broader development objectives (Haddad et al., 2010). By quantifying how inputs (e.g., infrastructure, healthcare, education) translate into outputs (e.g., economic growth, social stability), IOA helps rank regions by recovery potential, which, in turn, informs investment priorities. This ensures that the ranking of regions by recovery potential directly impacts the prioritization of investments. MCDA complements this by evaluating multiple factors simultaneously, ensuring a comprehensive assessment of regional priorities. The regional recovery assessment follows a structured approach, beginning with the normalization of input and output variables to standardize data for fair comparisons across regions. This is followed by the weighting of input variables, which assigns importance to the factors influencing the socio-economic recovery of regions. The next step involves calculating a composite score to measure recovery potential. An analysis of investment scenarios explores how different investment levels impact recovery. Finally, regions are ranked and prioritized for investment based on their scores, with this ranking directly informing regional investment allocation.

Step 1: Normalization of input and output variables

In this step, we identify and standardize the input and output variables used in the analysis. To ensure comparability, all variables are normalized on a 0–1 scale, where 1 represents the highest value in a category across all regions. This ensures that all data, regardless of its original scale, is measured consistently, allowing for an objective ranking of governorates based on a standardized assessment. The normalization formula is:

$$Normalized\ Value_{i,r} = \frac{X_{i,r}}{max(X_i)} \tag{1}$$

This prevents larger or well-funded regions from automatically ranking higher based on absolute investment values. Normalization ensures equitable comparisons across regions by adjusting for scale differences. In this analysis, inputs represent the resources and investment needs for recovery, while outputs capture the anticipated regional development outcomes resulting from those investments. Inputs reflect the current state of infrastructure and the required investment for post-conflict recovery. Key inputs include:

• *Road Area (SqKm)* – Represents total land covered by roads, indicating transportation infrastructure availability.

• *Quality Level of Road Network* – Assesses Road conditions (e.g., paved vs. unpaved, maintenance), which influence logistics efficiency and economic mobility.

• *Infrastructure Needs (IQD billion, 5 yrs)* – Measures the total investment required to restore essential infrastructure like water, energy, sanitation, and transport.

• *Sectoral Infrastructure Needs (IQD billion, 5 yrs)* – Captures specific investment needs in sectors such as communications, transport, and public utilities

These inputs are critical drivers of regional recovery, as economic development is highly dependent on infrastructure availability and investment levels. Outputs measure the anticipated benefits of infrastructure investment, helping identify regions that will generate the highest return on investment. Next, key outputs include:

• *Per Capita Investment (IQD)* – Indicates investment per person, highlighting resource distribution equity across regions.

• *Health Care (IQD billion, Yr 1)* – Reflects funding requirements for rebuilding healthcare facilities, staffing, and medical infrastructure.

• *Cultural Heritage & Tourism Investments (IQD billion, Yrs 2-5)* – Estimates investment needed to restore historical sites and develop tourism, fostering economic diversification.

• *Education Needs (IQD billion, 5 yrs)* – Identifies funding gaps in school reconstruction, teacher training, and education infrastructure.

• *Social Protection & Livelihood Support (IQD billion, 5 yrs)* – Covers support for vulnerable populations, including job creation, economic aid, and displaced persons assistance.

By normalizing both inputs and outputs, we ensure that rankings are not skewed by absolute investment values, preventing larger or well-funded regions from automatically ranking higher.

Step 2: Weighting of input variables

After normalization, each input variable is assigned a policy weight based on its relative importance in regional recovery. This ensures that factors with greater impact on regeneration receive higher priority, allowing for a more accurate assessment of growth potential and investment needs. The weighting process focuses only on input variables, ensuring comparability across regions (see Table 2). These weights are qualitatively derived from a range of public policy documents

and experts. They are indicative for policy priorities, but by no means precisely measurable. This information was collected by expert judgement from team members involved in the recovery program of Iraq (both Iraqi and foreign experts), supplemented with information from a wide range of statistical documents on policy choices and directions which were publicly available on the internet.

Table 2: Weighting of input variables

Criterion	Weight	Description
Road Area	0.10	Supports logistical connectivity but is less critical than infrastructure or social sectors. While essential for trade and mobility, roads alone cannot drive long-term recovery.
Quality of Road Network	0.20	Impacts transportation efficiency and trade, influencing regional economic mobility and accessibility. High-quality roads facilitate faster economic recovery.
Infrastructure Needs	0.40	Essential for restoring critical services such as water, energy, and sanitation. Given its direct effect on economic stability, it is the highest priority.
Sectoral Infrastructure Needs	0.30	Focuses on key sectors (e.g., communications, utilities, transportation) to support long-term, sustainable recovery.

Source: Author's calculations

By assigning higher weights to essential infrastructure needs, this approach prioritizes foundational recovery drivers over secondary improvements. This ensures that investment decisions reflect the varying impact of each factor on economic recovery, emphasizing the most critical dimensions for stability and growth. The higher the weight, the greater the factor's contribution to post-conflict regeneration. Infrastructure receives the highest weight, as it directly influences the ability of a region to function and grow. Road quality follows, as efficient transport networks accelerate trade and economic activity. By prioritizing these factors, resources can be allocated effectively, maximizing recovery efforts and promoting sustainable development.

Step 3: Composite score calculation

In Step 3, we calculate a composite score for each region by combining both normalized input values and normalized output values, adjusting them by their respective weights. The composite score serves as an overall measure of each region's potential for recovery, growth, and regeneration, and it guides investment prioritization. The simplified formula to calculate the composite score for each region is:

$$Composite\ Score_r = \ _{i=1}^{I}\left(w_i \times NI_{i,r}\right) + \sum_{j=1}^{J}\left(NO_{j,r}\right) \quad (2)$$

where:

- Normalized Input Value: The normalized value of an input variable (e.g., Road Area, Infrastructure Needs).
- Weight: The weight assigned to each input variable based on its importance for recovery and development.
- Normalized Output Value: The normalized value of an output variable (e.g., Health Care, Education Performance, etc.).

The resulting composite score represents the region's overall recovery potential, taking into account both the necessary inputs and the anticipated outputs. Regions with higher composite scores have greater regeneration potential and are thus prioritized for investment. Conversely, regions with lower composite scores may still need support, but they are not the immediate focus for large-scale funding. This composite score helps in ranking regions, which leads into Step 4 (where investment scenarios are applied) and ultimately aids initiatives in Step 5 (where decisions are made on how to allocate resources effectively).

Step 4: Investment scenarios

In Step 4, we apply different investment scenarios (high, moderate, and low impact) to evaluate how varying funding levels influence the growth potential and regenerative capacity of each region. Using the composite scores from Step 3, we adjust the scores under each investment scenario to reflect the impact of varying funding levels on the recovery variables, such as healthcare, education, and social protection. This helps identify regions with the highest recovery potential, ensuring that resources are allocated efficiently. The performance score for each region under each investment scenario is determined using the following formula:

$$Performance\ score_{r,s} = Composite\ Score_r \times Investment\ Factor_s \quad (3)$$

where:

- Composite Score (region) is the region's baseline recovery potential calculated in Step 3, which combines both normalized input and output values with their respective weights.
- Investment Factor (scenario) is a qualitatively-based multiplier applied to adjust the performance score based on the different funding levels in each scenario:
    - *High-Impact (H):* A multiplier greater than 1 (e.g., 1.2), prioritizing regions with the highest recovery needs and potential.

- *Moderate-Impact (M):* A multiplier approximately equal to 1, balancing resource distribution across multiple regions.
- *Low-Impact (L):* A multiplier less than 1 (e.g., 0.8), focusing on urgent, short-term recovery needs.

This analysis of investment scenarios directly influences regional rankings in Step 5, providing insight into how different funding levels will affect the regeneration capacity of each region. The output scores from Step 4 are then used to rank the regions and determine investment priorities, ensuring that the regions with the greatest recovery potential receive the necessary funding. By integrating structured ranking systems with scenario-based investment strategies, this framework ensures that recovery planning remains data-driven and outcome-focused. This prioritization strengthens the practical application of the study's findings, offering a clear roadmap for post-conflict economic recovery in Iraq.

Step 5: Regional ranking

In Step 5, regions are ranked based on their performance scores from Step 4, reflecting the impact of various investment scenarios. This ranking is crucial for determining investment priorities, identifying regions with the greatest potential for recovery based on projected outcomes. By prioritizing regions according to their post-investment recovery potential, resources can be allocated more strategically and effectively. The regions with the highest scores in Step 4, which indicate strong recovery potential under specific funding levels, are ranked at the top and should be prioritized for funding (see Table 3). This ensures that investments are directed toward areas with the greatest regeneration potential. Once performance scores from Step 4 are calculated, regions are ranked in descending order, with the highest-scoring regions receiving top priority for funding allocation.

Table 3: Investment prioritization categories

Investment Priority	Investment implication
High	Require immediate investment to maximize economic regeneration. These high-scoring regions demonstrate strong recovery potential and a high return on investment, warranting urgent funding.
Moderate	Need strategic funding to support long-term recovery. These regions have moderate growth potential, requiring targeted investment rather than immediate large-scale intervention.
Low	Not immediately urgent but require long-term planning before major investment. These regions will see a delayed or limited impact from funding. While they may need support in the future, they are not an immediate priority for recovery efforts.

Source: Author's construction

Ranking optimizes investment allocation, ensuring high-scoring regions receive the necessary funding to drive regeneration. Moderate-scoring regions need targeted investments to support growth, while low-scoring regions are not an immediate priority but should be considered for long-term strategic planning. This process ensures that investments are directed to regions with the greatest recovery potential, fostering long-term economic stability (Dawood & Zoghlami Shili, 2023).

This ranking system ensures that investments are directed toward regions with the highest potential for economic and social recovery. The evaluation process follows structured principles, incorporating data normalization, weighting assignments, and ranking procedures to maintain consistency and reliability in recovery planning. This approach minimizes inefficiencies and supports long-term economic resilience.

The framework outlined in this section thus provides a systematic method for assessing regional disparities and prioritizing investments. By integrating structured ranking systems with scenario-based investment strategies, it ensures that recovery planning remains data-driven and outcome-focused. This prioritization strengthens the practical application of the study's findings, offering a clear roadmap for post-conflict economic recovery in Iraq.

To establish a transparent and objective investment prioritization framework, the methodology combines qualitative Input-Output Analysis and Multicriteria Analysis (MCA). Normalization ensures fair comparisons across regions, while weighing priority to the most influential factors. Composite scoring ranks recovery potential, and investment scenarios help forecast the impact of different funding strategies. Finally, regional ranking ensures resources are allocated effectively. By enhancing transparency, accuracy, and strategic decision-making, this approach maximizes the effectiveness of post-conflict investments, promoting long-term recovery and economic stability.

5. Results: Assessment of regional regeneration potential

In this section, we apply the five steps outlined in Section 4 to the data for the 7 governorates under study of Iraq. Each step is analyzed and presented with tables where necessary to assess the regional regeneration potential of these areas. The following steps are carried out: normalization of input and output variables, assignment of weights to each variable, calculation of composite scores, evaluation under different investment scenarios, and regional ranking.

In *Step 1*, we standardize the input and output variables for each of the 7 relevant governorates in Iraq. Normalization is essential to ensure that all variables are on a common scale, making them comparable across different regions. All input and output variables are scaled between 0 and 1 based on the minimum and maximum values for each category (see Tables 4 and 5).

Table 4: Normalized input variables

Governorate	Road Area (SqKm)	Road Quality	Infrastructure Needs (IQD billion, 5 yrs)	Sectoral Infrastructure (IQD billion, 5 yrs)
Ninawa	0.1628	0.1765	0.374	0.375
Anbar	0.6051	0.1765	0.339	0.340
Salah Al-Deen	0.1081	0.1765	0.070	0.070
Kirkuk	0.0291	0.1176	0.099	0.099
Diyala	0.0772	0.0588	0.040	0.040
Baghdad	0.0199	0.1765	0.067	0.067
Babel	0.0245	0.1176	0.010	0.010

Source: Author's calculations

The normalized input variables in Table 4 show the distribution of key infrastructure factors across regions. Anbar appears to have the largest share of road area, with 60.51%, while Baghdad has the smallest at 1.99%. For road quality, regions like Ninawa, Anbar, and Baghdad each have the highest share of 17.65%. Ninawa has the highest infrastructure needs, representing 37.4% of the total, while Babel has the smallest share at 1%. Similarly, Ninawa also has the largest sectoral infrastructure needs at 37.5%, and Babel again has the smallest share at 1%. Normalization helps ensure fair comparisons by adjusting for differences in scale across regions.

Table 5: Normalized output variables

Governorate	Per Capita Investment (IQD)	Health Needs (IQD billion, Yr 1)	Cultural Heritage Needs (IQD billion, Yrs 2-5)	Education Needs (IQD billion, 5 yrs)	Social Protection Needs (IQD billion, 5 yrs)
Ninawa	0.1842	0.465	0.519	0.268	0.419
Anbar	0.1053	0.177	0.262	0.270	0.146
Salah Al-Deen	0.1579	0.065	0.021	0.050	0.159
Kirkuk	0.1184	0.196	0.050	0.171	0.068
Diyala	0.1184	0.071	0.042	0.060	0.049
Baghdad	0.1842	0.020	0.092	0.142	0.118
Babel	0.1184	0.003	0.014	0.036	0.039

Source: Author's calculations

The normalized output variables in Table 5 show the distribution of key recovery factors across regions. Ninawa has the highest per capita investment (0.1842) and appears to lead in health care (0.465) and cultural heritage needs (0.519).

In contrast, Babel has the lowest values across most categories, with minimal health (0.003) and cultural heritage needs (0.014). Anbar has moderate values for most outputs, while Salah Al-Deen and Kirkuk are in the middle range for most categories, except for health needs, where Salah Al-Deen has a low value (0.065). Normalization allows these values to be compared across regions on an equal scale.

In *Step 2*, we calculate the composite scores for each region using the normalized values and the weights. Based on the weights provided in Step 2 in Section 4, we apply them to the normalized input variables (see Table 6):

Table 6: Weighted inputs for each region

Governorate	Road Area (Weighted)	Road Quality (Weighted)	Infrastructure Needs (Weighted)	Sectoral Infrastructure (Weighted)
Ninawa	0.01628	0.0353	0.1496	0.1125
Anbar	0.06051	0.0353	0.1356	0.102
Salah Al-Deen	0.01081	0.0353	0.028	0.021
Kirkuk	0.00291	0.02352	0.0396	0.0297
Diyala	0.00772	0.01176	0.016	0.012
Baghdad	0.00199	0.0353	0.0268	0.0201
Babel	0.00245	0.02352	0.004	0.003

Source: Author's calculations

In Table 6, each region's input values (for road area, road quality, infrastructure needs, and sectoral infrastructure needs) have been multiplied by their respective weights. The weights were chosen to represent the relative importance of each factor in the recovery and growth process. For example, infrastructure needs are considered most important, so it has been assigned the highest weight of 0.40, while road area is given the lowest weight of 0.10. These weighted values will be used in the next step (Step 3) to calculate the composite scores for each region, allowing us to rank them based on their overall potential for recovery and investment.

Now that we have normalized input values and assigned weights to these inputs in Step 2, we can proceed to calculate the composite score for each region in Step 3. The composite score combines both input factors (road area, road quality, infrastructure needs, and sectoral infrastructure needs) weighted by their importance, along with the normalized output values (per capita investment, health needs, cultural heritage needs, education needs, and social protection needs) (see Table 7).

Table 7: Summary of composite scores

Governorate	Composite Score
Ninawa	2.16988
Anbar	1.39471
Salah Al-Deen	0.53215
Kirkuk	0.69913
Diyala	0.38888
Baghdad	0.64039
Babel	0.24337

Source: Author's calculations

The composite score represents each region's overall potential for recovery and growth. Regions with higher composite scores, such as Ninawa, are seen as having greater recovery potential and would likely be prioritized for investment. In comparison, regions like Babel, which have lower composite scores, may still need support but are not immediate priorities for large-scale funding. This score helps in directing investments effectively, as regions with the highest scores are better positioned to utilize resources for regeneration and growth.

In *Step 4*, we develop different investment scenarios to evaluate how varying funding levels can influence the growth potential and regenerative capacity of each region. Using the composite scores calculated in Step 3 (which combine input and output data with assigned weights), we adjust these scores under three distinct funding scenarios: High Impact, Moderate Impact, and Low Impact. The performance scores in this step represent the projected outcomes for each region under each funding scenario, based on their calculated composite scores from Step 3. The main task is to assess how different funding levels would affect recovery variables like healthcare, education, social protection, and infrastructure, and then prioritize regions for investment based on these assessments.

Implementing different investment scenarios allows us to evaluate how regions perform under varying funding conditions. The performance scores calculated under each scenario give us insight into how different funding levels affect the regeneration potential of each region. The regions with the highest performance scores under each scenario are those that should receive higher priority for funding. Below is the table summarizing the Performance Scores for each region under the three above-mentioned investment scenarios (High-Impact, Moderate-Impact, and Low-Impact).

Table 8: Investment scenarios and performance score calculation

Governorate	High-Impact (H)	Moderate-Impact (M)	Low-Impact (L)
Ninawa	2.6039	2.1699	1.7359
Anbar	1.6737	1.3947	1.1158
Kirkuk	0.8390	0.6991	0.5593
Baghdad	0.7685	0.6404	0.5123
Salah Al-Deen	0.6384	0.5320	0.4256
Diyala	0.4667	0.3889	0.3111
Babel	0.2920	0.2434	0.1947

Source: Author's calculations

Table 8 summarizes how different funding scenarios influence the performance of each region, helping guide resource allocation for recovery and regeneration efforts. Ninawa and Anbar consistently rank at the top in all three scenarios, demonstrating that these regions have the highest recovery potential and should be prioritized for investment. This is reflected in their normalized input values (such as large road areas and high infrastructure needs) and normalized output values (including significant needs in health, education, and social protection). These factors contribute to their high composite scores, which reflect their overall recovery potential. As funding levels decrease, the performance scores of all regions decline, but Ninawa and Anbar maintain their high rankings, ensuring they continue to receive the most attention. Their composite scores, which combine input and output data, indicate they will yield the most meaningful recovery outcomes even under reduced funding. Regions such as Kirkuk, Baghdad, and Salah Al-Deen rank lower, showing how they may perform with more limited funding. These regions have smaller road areas, lower infrastructure needs, and less urgent recovery demands in key sectors (like health care, education, and social protection), which results in their lower composite scores.

Based on the output scores from Step 4, we now rank the regions in descending order to determine the priority for investment. The performance scores calculated under the three investment scenarios (High-Impact, Moderate-Impact, and Low-Impact) provide insight into the regeneration potential of each region. By ranking these regions according to their performance scores, we can identify the areas that would benefit most from targeted investment.

The regions with the highest performance scores under the High-Impact scenario are considered the highest priority for investment, as they have the greatest potential for recovery and growth. On the other hand, regions with the lowest performance scores should be considered for lower levels of investment, as their recovery potential may be less immediate or less significant.

Table 9: Ranking of regions by investment priority

Governorate	High-Impact Rank	Moderate-Impact Rank	Low-Impact Rank
Ninawa	1	1	1
Anbar	2	2	2
Kirkuk	3	3	3
Baghdad	4	4	4
Salah Al-Deen	5	5	5
Diyala	6	6	6
Babel	7	7	7

Source: Author's calculations

Finally, Ninawa is classified as the highest priority, followed by Anbar, Kirkuk, Baghdad, Salah Al-Deen, Diyala, and Babel at the lowest priority. The ranking in Table 9 reflects the priority for investment in each region under the three different funding scenarios. Ninawa and Anbar consistently occupy the top ranks across all scenarios, indicating that they are the most viable regions for high-priority investments. In contrast, Babel consistently ranks at the bottom, suggesting that it requires lower levels of funding and intervention compared to other regions. Ninawa and Anbar rank the highest in all three scenarios, demonstrating their strong recovery potential. This is driven by their significant infrastructure needs, substantial output requirements in sectors such as health care, education, and social protection, and favorable input variables like road area. Kirkuk, Baghdad, and Salah Al-Deen occupy mid-range ranks. While these regions exhibit some recovery potential, they are not as critical as Ninawa and Anbar, meaning they will require moderate investment to address their recovery challenges effectively. Diyala and Babel consistently rank at the lower end of the scale, with Babel receiving the lowest priority across all scenarios. While these regions may still need some investment, their regeneration needs are less urgent, and therefore, lower funding levels can be allocated to them accordingly.

This ranking analysis ensures that investments are strategically directed towards the regions with the most pressing needs and highest recovery potential, thereby maximizing the impact of the available resources. It should be noted that the Iraqi situation is not unique in the world. Many countries exhibit significant spatial disparities which are not only due to physical geography, but also to cultural-ethnic tensions and weak institutional quality (see for an overview Cuadrado Roura et al., 2025).

In conclusion, the integration of input-output analysis and multicriteria analysis provides a data-driven framework for understanding regional needs and regenerative capacities. The final regional rankings, based on adjusted composite scores

from Step 4, offer a clear method for decision-making in post-conflict investment, ensuring that resources are allocated effectively to maximize recovery and growth. By ranking regions according to their regenerative potential, this methodology enables the strategic allocation of resources to optimize long-term recovery.

6. Conclusion and policy recommendations

Iraq's post-conflict economy has a vulnerable structure caused by political and socio-structural discrepancies, a lack of a strongly coordinated governance system, and a weak international economic profile, hampering FDIs from scaling up the economy. Iraq's post-conflict recovery presents a complex challenge requiring a structured, evidence-based approach to ensure efficient resource allocation. This study applied Input-Output Analysis and Multicriteria Decision Analysis (MCDA) to assess Iraq's regional recovery potential, identifying priority areas for investment based on infrastructure quality, governance capacity, and socio-economic resilience.

The findings highlight the importance of strategic investment prioritization, as regions with stable governance structures can absorb funds effectively, whereas fragile regions require foundational reforms before economic investments can yield sustainable benefits. Sectoral needs also vary significantly, with some regions requiring urgent infrastructure rebuilding while others need investments in healthcare, education, and social services. A phased recovery strategy is necessary, starting with short-term stabilization efforts, followed by medium- and long-term development initiatives.

The study indicates that Ninawa and Anbar hold the highest recovery potential, whereas Diyala and Babel require long-term stabilization before large-scale investments can be effective. However, several critical challenges must be addressed. Weak institutional frameworks continue to hinder recovery, with corruption and governance inefficiencies limiting the effectiveness of investments. Iraq's overdependence on oil revenues makes economic diversification an urgent necessity. Infrastructure weaknesses, particularly in roads, power, healthcare, and education, require immediate strategic investment to support economic revitalization. Additionally, ongoing socio-political uncertainty and regional instability pose risks to sustained recovery. Addressing these challenges requires a phased, strategic recovery plan that integrates economic regeneration, governance reforms, and social development.

Investment should be prioritized based on recovery potential. High-priority regions such as Ninawa and Anbar should receive immediate and substantial infrastructure investments, particularly in transport, utilities, and education. Moderate-priority regions, including Kirkuk, Baghdad, and Salah Al-Deen, require targeted interventions to strengthen governance, healthcare, and the private sector. Low-priority

regions, such as Diyala and Babel, should focus on long-term, sustainable development strategies with phased investments over time.

Strengthening governance and institutional capacity is crucial for effective recovery. Establishing anti-corruption frameworks will ensure the transparent allocation of reconstruction funds, while the creation of regional development councils with clear mandates for economic planning will improve coordination. Institutionalizing data-driven decision-making, particularly using MCDA-based prioritization within national recovery plans, will enhance accountability and efficiency.

Economic diversification and private sector engagement must be prioritized to reduce Iraq's dependency on oil revenues. Encouraging investment in manufacturing, agriculture, and digital industries will foster economic resilience. Public-private partnerships (PPPs) should be leveraged to finance infrastructure and social projects, while investment incentives such as tax breaks and streamlined regulations can attract both local and foreign investors.

Infrastructure rehabilitation and strategic planning should focus on rebuilding transportation networks, including roads, bridges, and railways to improve connectivity and facilitate economic activities. Investments in renewable energy and decentralized power systems will enhance resilience and reduce reliance on state-controlled utilities. Strengthening digital infrastructure will also be essential to support innovation, trade, and remote education.

Social stabilization and human capital development are fundamental to long-term recovery. Expanding education and vocational training programs will help address labor market gaps and improve workforce capacity. Healthcare access must be improved by rebuilding hospitals and deploying mobile medical units to underserved areas. Additionally, strengthening social protection programs, including employment schemes and financial support for vulnerable populations, will be necessary to promote social stability and economic inclusion.

The present study has evidently various limitations. Not all Iraqi regions could be covered in detail, the databases used are not always up-to-date or mutually consistent, the development impacts of regional cultural-ethnic tensions are difficult to measure, and the role of public and private actors is sometimes diffuse. Clearly, in recent years, the statistical databases in Iraq have been improved. Important statistical sources on regional development are: the Central Bank of Iraq (including recent data on GDP and employment), the World Bank (including growth and investment data as well as trade data), Moody's Analytics (including economic development and unemployment data), and other open-access data platforms (e.g., Coface, Trading Economics). However, data on other indicators for all regions are so rare, that a more up-to-date analysis of the development potential of Iraqi regions is difficult to pursue.

Iraq's recovery demands a long-term commitment to strategic investment, governance reform, and economic diversification. A data-driven, phased, and regionally differentiated approach will maximize resilience and stability. If implemented with institutional integrity and consistent strategic planning, Iraq can transition from fragility to sustainable growth and long-term prosperity. But this 'battle uphill' will be a long-lasting and hopefully resilient process for the Iraqi regions.

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Neravnopravne teške bitke: regenerativne strategije iračkih regija nakon sukoba

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Sažetak

Infrastrukturna i ekonomska obnova zemlje nakon geopolitičkog sukoba zahtijeva uravnoteženu političku strategiju, ovdje ilustrirano na slučaju Iraka. Dugoročni oporavak ove zemlje nakon sukoba zahtijeva strateški pristup utemeljen na dokazima kako bi se optimizirala raspodjela regionalnih resursa i ubrzala regionalna regeneracija. U ovoj studiji primjenjuje se kvalitativna input-output analiza i multikriterijska analiza odlučivanja (MCDA) za procjenu razlika u infrastrukturi, upravljanju i ekonomskoj otpornosti među regijama, pružajući analitički i podatkovno utemeljen okvir za određivanje prioriteta regionalnih investicijskih strategija. Rangiranjem regija na temelju njihovog kapaciteta oporavka, studija istražuje kako omogućiti strategiju usmjerenu na stabilizaciju iračkog gospodarskog prostora i jačanje njegovih institucija upravljanja. Rezultati našeg empirijskog istraživanja ukazuju na kritičnu potrebu za dugoročnim ulaganjima kako bi uravnotežila trenutnu stabilizaciju s dugoročnom ekonomskom transformacijom. Međutim, fragmentacija upravljanja, korupcija i slabi institucionalni okviri ostaju značajne prepreke otpornosti, ograničavajući učinkovitost ulaganja i ometajući održivi gospodarski oporavak. Rješavanje ovih strukturnih problema – kroz reforme upravljanja, izgradnju institucionalnih kapaciteta i transparentnu raspodjelu resursa - ključno je za dugoročnu ekonomsku otpornost regija u Iraku. Ako se učinkovito provede, ova strategija može unaprijediti iračko svemirsko gospodarstvo od poslijeratne neizvjesnosti do održive stabilnosti i rasta.

Ključne riječi*: regenerativno djelovanje, oporavak, otpornost, postkonfliktni, multikriterijska analiza odlučivanja, regionalna ulaganja, institucionalni kapacitet*

JEL klasifikacija: *O18, H54, R11, O43, D70*

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