IRAQ

RECONSTRUCTION & INVESTMENT

PART 2

Damage and Needs Assessment
of Affected Governorates

WORLD BANK GROUP

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Disclaimer: *Although all efforts have been made to improve the accuracy of the information that was collected and analyzed, the assessment is broad-brush and was produced in a quick timeframe to ensure the relevance of damage data. It provides an overall picture of the effects of the conflict on physical infrastructure and the quality of services, but is not a replacement of in-depth sector-specific assessments. The damage data were collected in a challenging security environment, using ground and remote-based methods; and therefore, serious data limitations existed. Part of the presented damages provide assumption-based estimates, and the monetary value is expressed in terms of pre-crisis replacement costs.*

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Foreword

The conflict inflicted by ISIS has forced over 5 million ordinary Iraqis to flee their homes, left schools destroyed and hospitals dysfunctional. Seven governorates have been fiercely affected while the entire country felt the shockwaves. During these times of despair, our neighbors and the global community have stood in solidarity with us. After the human suffering and enormous physical destruction that the conflict inflicted, it is now time to turn our gaze from the past to the future. It is time to rebuild the country and the citizens' lives within.

Today, where half of the displaced Iraqis have returned it is necessary to plan for recovery and reconstruction, to create enabling conditions for their return, and to restore livelihoods and service delivery for all in Iraq. The challenges ahead are to craft and execute a reconstruction plan that takes into account the aspirations of people as well as the constraints posed by time and funds. The preparation of a comprehensive reconstruction plan needs proper assessment of the damage, loss, and recovery needs.

The Iraq Damage and Needs Assessment (DNA) is an assessment unprecedented in both its sectoral and geographic scope, covering damages, losses, and needs across 19 sectors in all conflict affected governorates in Iraq. Iraq's Ministry of Planning took on this challenging task with the help of all line ministries of the Government, and with close collaboration with the World Bank. Scores of national and international experts worked around the clock to produce this assessment. We focused not only on the product, but also on the process. Data was gathered from the ground by national experts, from the air by satellites and on the internet by collecting publicly available data via social media analytics. Endless hours of review and validation were dedicated to ensure that the assessment of damages and needs was as robust and comprehensive as possible.

The report has kept in mind what is desirable and what is possible. The objective is to estimate damages and to arrive at estimated needs to mobilize funds and to launch immediate recovery and incentivize private sector investments in the process.

My sincere thanks are due to the officials of the Government of Iraq, the advice and expertise of the World Bank, and to everyone who has contributed to this unprecedented undertaking. Special thanks to both the Reconstruction Fund for Areas Affected by Terroristic Operations (REFAATO) and the Kuwaiti Fund for Arab Economic Development. I look forward to their continued support in realizing the goals identified in the DNA report.

Dr. Mahdi Al-Alaq
Secretary General of the Council of Ministers, Government of Iraq

This destroyed site was believed to be the resting place of Prophet Jonah and serves as reminder of the interconnectedness of Iraq's diverse religious populations (Mosul 2014).
Photo credit: Lena Ha (Shutterstock).

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A young girl runs through the ruins of old Mosul with her pigeons (July 2017).
Photo credit: Herve Jakubowicz (Flickr).

EXECUTIVE SUMMARY

Context

The recent regional ISIS-created conflict in Iraq has resulted in a humanitarian crisis with the internal displacement of 5 million Iraqis and the destruction of infrastructure and services in the former ISIS-occupied areas. The Government of Iraq (GoI) requested the World Bank Group's (WBG) support to undertake a Damage and Needs Assessment (DNA) to estimate the effects and impacts of the crisis on key infrastructure and service delivery, livelihoods, social, productive, and cross-cutting sectors, and to identify recovery and reconstruction needs in Iraq. This country-led coordinated assessment will support the initiation of recovery and reconstruction planning processes, through an interinstitutional platform integrating the concerted efforts of national and international partners.

Objectives

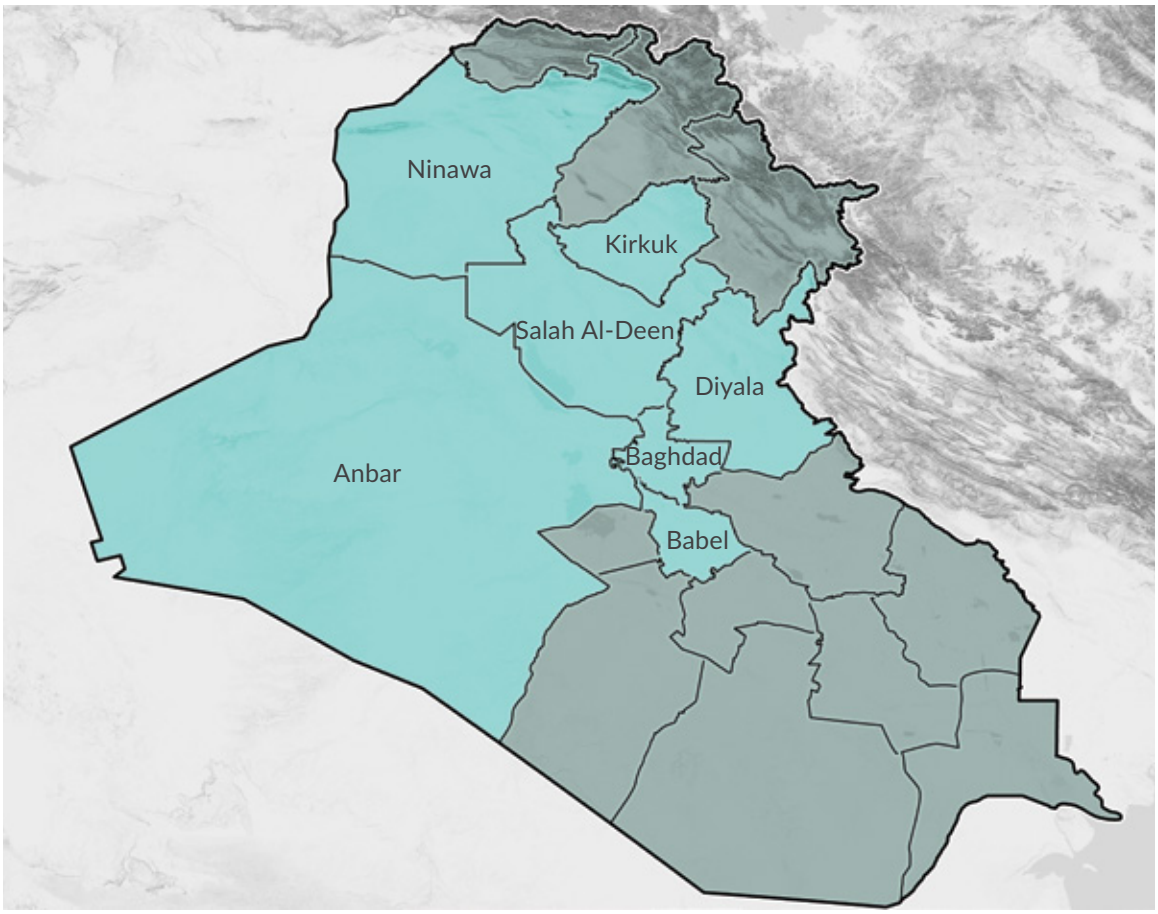
The key objective of the Iraq Damage and Needs Assessment is to inform the GoI, the international community, and other stakeholders on the effect of the crisis on the population, livelihoods, physical assets, infrastructure and service delivery, and cross-cutting areas like governance, social, and environment. It also aims to conduct a preliminary estimate of recovery and reconstruction needs in Iraq. The assessment will help inform recovery efforts toward creating enabling conditions for the return of the displaced population to their place of origin and restoring livelihoods and service delivery.

Approach and Scope

Temporal scope: Damages and losses were calculated according to the actual or estimated pre-2014 baseline of the physical assets. Damage data were assessed up to early December 2017.

Geographic scope: The Iraq DNA concentrated on the seven directly affected governorates, namely, Anbar, Babel, Diyala, Kirkuk, Ninawa, Salah Al-Deen, and Baghdad. A remote-based assessment, used for validation purposes, focused on the following 16 cities: Al-Jalawla, As-Sa'adiyya, Al-Ba'aj, Beygee, Bakhdida, Al-Falluja, Al-Hatra, Heet, Mosul, Al-Muqdadya (Ibid), Al-Ramadi, Sinjar, Al-Shirqat, Tal Afar, Tel Keppe, and Qarah Tabbah within the following the following four governorates for which data was available to the WBG: Anbar, Diyala, Ninawa, and Salah Al-Deen. These cities have been selected in consultation between the Iraq Ministry of Planning (MoP) and the WBG.

Figure 1: *Iraq DNA Geographic Scope*



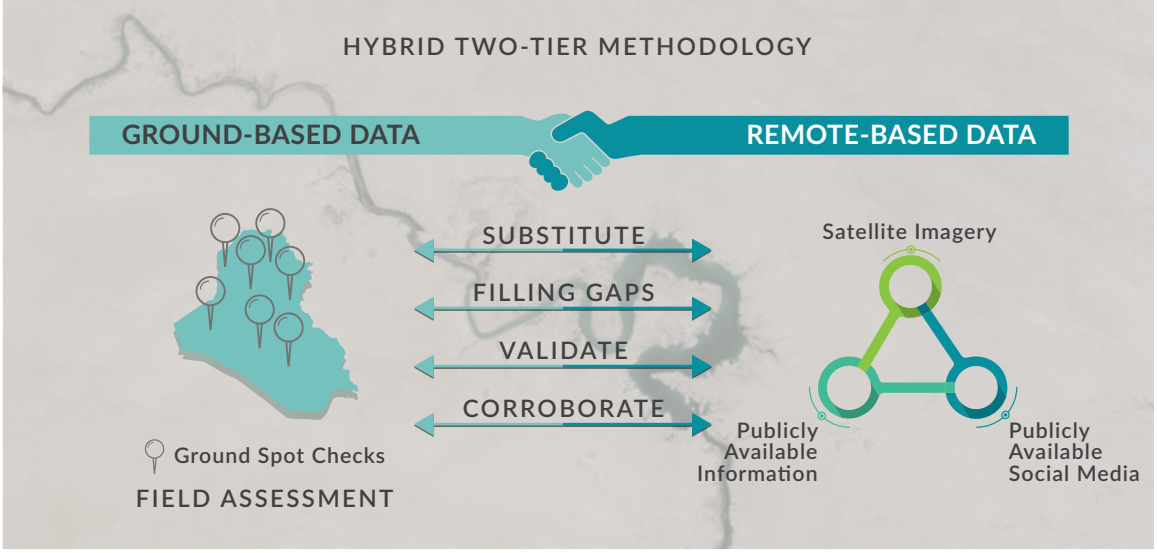
Sectoral scope: The Iraq DNA covers the damage and needs in 19 sectors and thematic areas as follows:

- *Social Sectors:* Housing; Health; Education; Social Protection, Employment, and Livelihoods (including poverty); and Cultural Heritage and Tourism
- *Productive Sectors:* Agriculture; Water Resources; Industry and Commerce; and Finance and Markets
- *Infrastructure Sectors:* Power; Oil and Gas; Information and Communications Technologies (ICT); Transport; Water, Sanitation, and Hygiene (WASH); and Municipal Services
- *Cross-cutting Sectors:* Governance; Environment; Social; Gender; and Macroeconomic Impact

Methodology

The Iraq DNA follows a two-tiered hybrid approach, relying on both ground-based and remote-based data. The analysis is based on direct damage data collected by the GoI. Where ground-based data gathering was not possible due to challenging security conditions and the inaccessibility of areas, remote-based data drawing on satellite imagery, publicly available information (PAI), and social media analytics were used to triangulate and verify ground-based data and to fill data gaps.

Based on the reported damage level, each asset was assigned a physical damage status based on three classifications: no damage, partially damaged (less than 40 percent of the asset damaged), or completely destroyed (more than 40 percent of the asset damaged, or the damage structural). For the damage estimation, the average was calculated based on the number of damaged facilities, their physical status (partially damaged or completely destroyed), and the estimated pre-crisis unit cost associated with each asset class. Governorate-level extrapolation for the seven directly-affected governorates was conducted on a sector-by-sector basis using city-level damage data. Whenever possible, the DNA also assessed the operational status of facilities (functional or nonfunctional) to determine the level and quality of service delivery across the different sectors. The assessment then included losses, i.e. changes in economic flows arising from the disaster, that occur until full economic recovery and reconstruction is achieved. Based on the estimation of both damages and losses, as well as qualitative impacts, each sector specified recovery needs and suggested sequenced priority interventions. This included the cost of reconstruction of destroyed assets, provision of services, improved specifications, and risk reduction measures.



Limitations and Key Challenges of the Assessment

Several challenges and limitations were mitigated through the design of the assessment methodology and close cooperation between the GoI and WBG, other donors, and ground partners. However, remaining key challenges to the assessment included: data limitations, the scope of the remote assessment, and the verification process. Data limitation due to the complexity of the political and security situation led to significant delays in data. The scope of the remote assessment was largely limited to 16 directly affected cities for which data was available to WBG. The WBG data relied to a large extent on satellite imagery, supported by social media analytics and ground spot checks. However, the imagery is broad-brush in nature as it is limited to what appears in the imagery frame. Security challenges on the ground made it difficult for the wider WBG DNA team to interact directly with the respective ministry counterparts, resulting in significant data delays despite tremendous efforts exhibited by the Ministry of Planning. Due to the challenging security environment, the report was reviewed and finalized by the GoI in consultation with the WBG in lieu of a validation visit.

Assessment Results at a Glance

The overall damages incurred in the seven directly affected governorates totals IQD 53.3 trillion (US$ 45.7 billion). By 2017, the cumulative real losses due to the conflict to non-oil GDP stood at IQD 124 trillion (US$ 107 billion), equivalent to 72 percent of the 2013 GDP and 142 percent of 2013 non-oil GDP, assuming the non-oil economy would have continued to grow at the pre-conflict rate of 8 percent. Some highlighted sectors are Housing, and Cultural Heritage and Tourism, respectively displaying damages that amount to IQD 18.7 trillion (US$ 16 billion) and IQD 1 trillion (US$ 858 million). The Governance sector incurred damages amounting to IQD 868 billion (US$ 745 million). In addition to the total damage assessed in this report, Government of Iraq estimates that the security sector has suffered around IQD 15 trillion (approximately US$ 13 billion) in damages. This estimate, however, is not reflected in the total and needs in this assessment.

The most affected Social sectors are Education and Health, which endured substantial damage totaling IQD 2.8 trillion (US$ 2.4 billion) and IQD 2.7 trillion (US$ 2.3 billion), respectively. Industry and Commerce and Agriculture incurred most of the damage among the Productive sectors, with damages amounting IQD 6 trillion (US$ 5.1 billion) IQD 2.4 trillion(US$ 2.1 billion) respectively. Damages to Infrastructure sectors were the highest in the Power and Oil and Gas sectors, amounting to IQD 8.2 trillion (US$ 7 billion) and IQD 5 trillion (US$ 4.3 billion).

The overall reconstruction and recovery needs are estimated at IQD 104.3 trillion (US$ 88.2 billion), with IQD 27 trillion (US$ 22.9 billion) needed for the short term, and IQD 77.3 trillion (US$ 65.4 billion) needed for the medium term. IQD 20.6 trillion (US$ 17.4 billion) is needed for the recovery and reconstruction of the Housing sector alone. The estimated needs in the Cultural Heritage and Tourism sector amount to IQD 2 trillion (US$ 1.7 billion). The recovery and reconstruction of the Governance sector will require an estimated IQD 1.6 trillion (US$ 1.4 billion).

The Social sectors with the highest recovery needs are Social Protection, Employment, and Livelihoods, and Education, for which needs amount to IQD 7.5 trillion (US$ 6.4 billion) and IQD 5.4 trillion (US$ 4.6 billion), respectively. Industry and Commerce, and Finance and Markets display the highest recovery and reconstruction needs among the Productive sectors with IQD 12.5 trillion(US$ 10.6 billion) and IQD 10.9 trillion(US$ 9.3 billion) respectively. The needs in Infrastructure sectors are the highest in the Power, and Oil and Gas sector, amounting to IQD 10.8 trillion (US$ 9.1 billion) and IQD 8.5 trillion (US$ 7.2 billion), respectively.

TOTAL DAMAGES ACROSS ALL SECTORS

IQD 53.3 TRILLION
(US$ 45.7 BILLION)

HIGHLIGHTED SECTORAL DAMAGES

SOCIAL

HOUSING
IQD 18.7 TRILLION
(US$ 16 BILLION)

CULTURAL HERITAGE AND TOURISM
IQD 1 TRILLION
(US$ 858 MILLION)

PRODUCTIVE

INDUSTRY AND COMMERCE
IQD 6 TRILLION
(US$ 5.1 BILLION)

AGRICULTURE
IQD 2.4 TRILLION
(US$ 2.1 BILLION)

INFRASTRUCTURE

POWER
IQD 8.2 TRILLION
(US$ 7 BILLION)

OIL AND GAS
IQD 5 TRILLION
(US$ 4.3 BILLION)

CROSS-CUTTING

GOVERNANCE
IQD 868 BILLION
(US$ 745 MILLION)

ENVIRONMENT
IQD 85 BILLION
(US$ 73 MILLION)

TOTAL NEEDS ACROSS ALL SECTORS

IQD 104.3 TRILLION
(US$ 88.2 BILLION)

SHORT TERM
IQD 27 TRILLION
(US$ 22.9 BILLION)

MEDIUM TERM
IQD 77.3 TRILLION
(US$ 65.4 BILLION)

HIGHLIGHTED SECTORAL NEEDS

SOCIAL

HOUSING
IQD 20.6 TRILLION
(US$ 17.4 BILLION)

CULTURAL HERITAGE AND TOURISM
IQD 2 TRILLION
(US$ 1.7 BILLION)

PRODUCTIVE

INDUSTRY AND COMMERCE
IQD 12.5 TRILLION
(US$ 10.6 BILLION)

FINANCE AND MARKETS
IQD 10.9 TRILLION
(US$ 9.3 BILLION)

INFRASTRUCTURE

POWER
IQD 10.8 TRILLION
(US$ 9.1 BILLION)

OIL AND GAS
IQD 8.5 TRILLION
(US$ 7.2 BILLION)

CROSS-CUTTING

GOVERNANCE
IQD 1.6 TRILLION
(US$ 1.4 BILLION)

ENVIRONMENT
IQD 6.5 TRILLION
(US$ 5.5 BILLION)

Figure 2: *Damage and Needs by Sector (in IQD billion)*

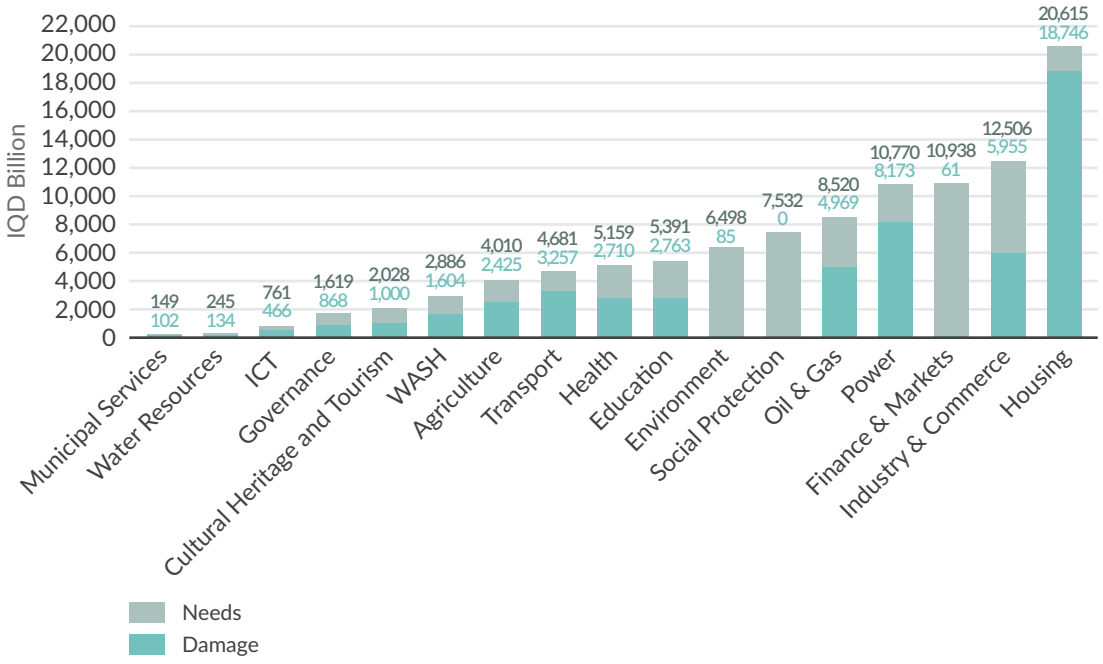


Table 1: *Damage and Needs by Sector (in IQD billion and US$ million)*

Sector	Damage Cost IQD Billion (US$ Million)	Needs (IQD Billion)	Needs (US$ Million)	Share of Total Needs
Social Sectors				
Housing	18,746 (16,077)	20,615	17,441	19.8%
Health	2,710 (2,324)	5,159	4,365	4.9%
Education	2,763 (2,369)	5,391	4,561	5.2%
Social Protection	n/a	7,532	6,373	7.2%
Cultural Heritage and Tourism	1,000 (858)	2,028	1,716	1.9%
Productive Sectors				
Agriculture	2,425 (2,080)	4,010	3,393	3.8%
Water Resources	134 (115)	245	207	0.2%
Industry and Commerce	5,955 (5,107)	12,506	10,580	12%
Finance and Markets	61 (52)	10,938	9,254	10.5%
Infrastructure Sectors				
Power	8,173 (7,009)	10,770	9,112	10.3%
Oil & Gas	4,969 (4,262)	8,520	7,209	8.2%
ICT	466 (400)	761	644	0.7%
Transport	3,257 (2,794)	4,681	3,960	4.5%
WASH	1,604 (1,375)	2,886	2,442	2.8%
Municipal Services	102 (88)	149	126	0.1%
Cross-cutting Sectors				
Governance	868 (745)	1,619	1,370	1.6%
Environment	85 (73)	6,498	5,498	6.2%
Total	**53,318 (45,727)**	**104,309**	**88,248**	**100%**

Table 2: *Prioritized and Sequenced Needs by Sector (in IQD billion and US$ million)*

Sector	Total Needs IQD Billion (US$ Million)	Short-Term (yr 1) IQD Billion (US$ Million)	Medium-Term (yrs 2—5) IQD Billion (US$ Million)
Social Sectors			
Housing	20,615 (17,441)	5,896 (4,988)	14,719 (12,453)
Health	5,159 (4,365)	1,032 (873)	4,127 (3,492)
Education	5,391 (4,561)	1,078 (912)	4,313 (3,649)
Social Protection	7,532 (6,373)	1,939 (1,641)	5,593 (4,732)
Cultural Heritage and Tourism	2,028 (1,716)	938 (793)	1,090 (922)
Productive Sectors			
Agriculture	4,010 (3,393)	1,202 (1,017)	2,807 (2,375)
Water Resources	245 (207)	169 (143)	76 (64)
Industry and Commerce	12,506 (10,580)	2,501 (2,116)	10,005 (8,464)
Finance and Markets	10,938 (9,254)	1,160 (981)	9,778 (8,273)
Infrastructure Sectors			
Power	10,770 (9,112)	5,385 (4,556)	5,385 (4,556)
Oil & Gas	8,520 (7,209)	870 (736)	7,650 (6,472)
ICT	761 (644)	248 (210)	513 (434)
Transport	4,681 (3,960)	1,404 (1,188)	3,276 (2,772)
WASH	2,886 (2,442)	2,020 (1,709)	866 (733)
Municipal Services	149 (126)	15 (13)	134 (113)
Cross-cutting Sectors			
Governance	1,619 (1,370)	1,134 (959)	486 (411)
Environment	6,498 (5,498)	19 (16)	6,479 (5,482)
Total	**104,309 (88,248)**	**27,011 (22,852)**	**77,297 (65,395)**

Guiding Principles of the DNA and Recovery Strategy

This assessment emphasizes the need for comprehensive recovery that meets the needs of the affected population, which requires a common framework to be adopted by all stakeholders involved to ensure speed, consistency, and equity across recovery and reconstruction efforts. The following guiding principles outline key areas that were observed during the preparation of this assessment, and that may be shared and adhered to by all parties when planning and implementing recovery.

- ***Citizens are a priority throughout recovery.*** The priority of the recovery efforts will be the affected citizens in terms of: (i) their psychological, health and social needs; (ii)restoration of their dignity and personal freedoms, and, (iii) compensating them for their losses and suffering.

- ***GoI-led recovery.*** The government will lead the recovery effort with the complete participation of the citizens, local governments and authorities, and substantial support from a wide range of stakeholders including international community, diaspora, private sector, and non-state actors (civil society, nongovernment organizations, religious groups, philanthropists, etc.). The international community and agencies will coordinate and harmonize their activities and comparative advantages.
- ***Ensuring sustainable solutions for internally displaced persons.*** This will include voluntary repatriation, prevention of demographic change, guaranteeing the right of return and secure living in liberated areas, local integration based on long-term safety and security requirements, restoration and exercise of freedoms and rights, and providing effective remedies and access to justice and participation in public affairs.
- ***Strengthening the capacities of the youth.*** Youth will play a key role in the recovery and reconstruction effort. Therefore, it is important for them to achieve their full potential and expand their opportunities for self-realization economically and socially.
- ***Recognizing precedence of the most affected and vulnerable groups.*** Social and legal protection measures and psychological support to women, children, youth, and displaced persons, with governmental care.
- ***Transparency.*** Achieve accountability and transparency through open processes and wide dissemination of information on all aspects of the recovery process.
- ***Promote economic and business recovery/development.*** It is important to create employment, develop productive capacities and stimulate economic activities and private sector engagement in the reconstruction effort. This can be achieved by using investment as development opportunities and taking into account the urban planning of cities and areas under reconstruction to ensure achieving the goals of the 2030 Agenda for Sustainable Development.
- ***Coordinated and coherent approaches to recovery.*** Ensure full and effective coordination among all involved stakeholders based on comprehensive information exchange, flexibility in administrative procedures, control of transgressions of implementation rules, and uniformity of policies.
- ***Strengthen the security-development nexus.*** After years of armed conflict, citizens' priorities include a return to normalization that entails an improvement in public safety and freedom from fear and the threat of violence and crime for all groups in society. Security reforms and immediate improvements in the local judicial system coupled with legitimate mechanisms to settle disputes will increase the space for sustainable recovery, and growth and stability in the short, medium, and long term.

Recovery Strategy

The following three strategic objectives are recommended to form a coherent basis to implement the National Plan for Reconstruction and Development of Iraq in a prioritized and integrated manner:

- ***Renew the social contract.*** The purpose of this strategic objective is to capitalize on the historic opportunity to break with past conflict patterns and to use the reconstruction effort to forge a new social contract between the Iraqi state and its citizens. Under this strategic objective, the government aims to:

- Improve transparency and accountability of the reconstruction effort itself as a means to rebuild trust and confidence;
- Advance critical policy reforms required to strengthen local-level implementation capacity, thus moving development closer to the affected populations and promoting local governance and functional decentralization;
- Strengthen the government's capacity and effectiveness to respond to and mitigate risks of future conflict; and
- Promote social cohesion and reconciliation.

- ***Promote economic and business recovery.*** The second strategic objective aims to create employment, develop productive capacities, and stimulate economic activities and private sector engagement in the reconstruction effort. Under this strategic objective, the government aims to:
  - Implement fiscal and financial reforms;
  - Improve the business and investment environment;
  - Promote job creation and employment; and
  - Expand productive capacities.

- ***Service rehabilitation.*** The third strategic objective aims to reconstruct damage infrastructure with a view of reinstating critical services across the country that have been hampered by the conflict. Under this strategic objective, the government aims to:
  - Improve access to basic services such as education, health, water and sanitation, and electricity, but also ensure access to a fair judicial system, particularly criminal justice;
  - Rebuild major roads and bridges; and
  - Reconstruct and improve the supply of housing and accommodation.

Several cross-cutting issues are also recognized as critical to successful reconstruction. The imperative of security, and of improving the state's ability to retain a monopoly on the legitimate use of force will be important both for the normalization process, for people's trust in government, and to facilitate reconstruction. Specific attention through the reconstruction framework will be placed on gender equality and on the role of women and youth, as well as to ensure that activities address both those displaced and host communities to avoid localized conflicts over resources and access to services.

Cross-cutting Sectors

Governance

Governance is the main driver of Iraq's many ongoing challenges and the key to recovery. It reflects the nature of the existing social contract and directly shapes fiscal sustainability, job creation, public services, private sector development, and other areas critical to Iraq's long-term development and stability.

It is essential that strong government institutions, and a new social contract based on participation, inclusiveness, and accountability are embedded into reconstruction and recovery design. This requires successful negotiation among various political factions and sectarian identities with a focus on national and collective priorities and interests. Restoring trust in the government and improving state legitimacy should be key priorities. For this, the reconstruction and recovery process will need to be based on principles of inclusion, transparency, and equity. Another priority should be the repair of the destroyed buildings (governorate and municipality buildings, police stations, fire stations, civil defense, courthouses, etc.), as they represent the face of government and are critical to enforce the law in those affected areas. Bringing back those buildings to normal functioning capacity would help in building and stabilizing security, bringing trust, and renewing the social contract with its citizens in the liberated areas. The functionality of more than 522 government administrative and security buildings that have been completely destroyed or partially damaged in the affected districts, as well as those damaged or destroyed at the municipal level, needs to be urgently restored.

Along with the restoration of public infrastructure to ensure the delivery of public services, Iraq will need a reform of public institutions to assure citizens' modern, professional, affordable, and accountable security and justice service provision. While an in-depth security assessment was unable to be conducted for this assessment, general reforms based on sectoral and contextual experience have been identified. These reforms should aim at strengthening accountability, transparency, and inclusion in the managing of public resources and delivery of services. In terms of security and rule of law, the reform efforts will require addressing the needs of current militia and armed forces, the creation of local and accountable policing services, provision of necessary support to judicial and legal aid services, as well as adequate correctional structures.

The total damage cost to the Governance Sector is estimated at IQD 868 billion (US$ 745 million). The total cost of infrastructure reconstruction is estimated at IQD 1.5 trillion (US$ 1.3 billion) with a total cost for service delivery rehabilitation of IQD 79.3 billion (US$ 67.1 million), resulting in a grand total for reconstruction and recovery at IQD 1.6 trillion (US$ 1.4 billion).

Further, governance has been identified as a key cross-cutting challenge which impacts social cohesion as well. Beyond the focus on service delivery with local governments and community leaders, governance would need to be addressed throughout all interventions (respecting contractual provisions, strengthening dispute settlement and anti-corruption measures, moving

towards Open Government, etc.), and supported with a strong communication strategy to enhance transparency, improve accountability, and support the renewed social contract. Addressing governance challenges systematically will improve the credibility of the overall recovery and reconstruction strategy.

Social

Iraq is emerging from a devastating period of conflict and violence. ISIS occupation prompted large-scale displacement, violence, and destruction. Years of instability and ethnic strife, compounded by the casualties and destructions inflicted during the fight against ISIS, have resulted in a legacy of social and religious tensions and persistent insecurity across the country. In addition, according to the UN Office for the Coordination of Humanitarian Affairs (UNOCHA), there are 5 million internally displaced persons (IDPs) and 6.2 million people in need of targeted humanitarian assistance. The effects of displacement are felt both by host communities and IDPs. In IDP camps, young men and women remain vulnerable and at increased risk to gender-based violence and exploitation. Iraqis between fifteen and twenty-four years of age constitute nearly 20% of the population but have had limited access to education and employment opportunities in the past three years. Protracted instability and the erosion of Iraqi social cohesion were exploited by ISIS to garner support among groups that felt disenfranchised or underrepresented. ISIS occupation further degraded governance and undermined service delivery in key sectors.

Iraq's post-ISIS political and social landscape requires conflict-sensitive recovery and reconstruction policies that leverage opportunities to reinforce resilience factors. Special attention needs to be paid to IDPs and returnees, as well as to preventing and redressing the impacts of gender-based violence (GBV) and violence on youth. The priority should be to improve security by investing in the short term in improvements in the local judicial systems and by building professional and inclusive Iraqi security forces. The disarmament, demobilization, and reintegration (DDR) of armed groups and security sector reforms will be critical to strengthen the security apparatus and Iraqi national cohesion. In addition, ongoing efforts to fight corruption should be strengthened and amplified. Inclusive reconstruction efforts need to promote the active participation of local groups and leaders, local government, and central institutions with the support of the international community to prevent future recruitment by ISIS and other anti-state actors. Good governance should be prioritized, as it will make an important contribution toward building citizens' trust in actors that can oppose the ISIS ideology. A new social contract ought to be built on more effective protection of vulnerable groups, inclusive and accountable service delivery, and a stronger private sector that can create jobs and opportunities for the youth.

Environment and Forestry

Damages incurred to the Environment and Forestry sector are estimated at IQD 85 billion (US$ 73 million), resulting in reconstruction and recovery needs estimate of IQD 6.5 trillion (US$ 5.5 billion). It is estimated that a 2,371,350 ha of high-use land has been rendered unusable due to landmines and that a further 10,569 ha has been lost due to pollution by hydrocarbons and other chemicals. A combined total of approximately 688 ha of woodland was destroyed in Salah Al-Deen, Diyala, and Anbar, and it is estimated that total forest loss may have been as high as 387,750 ha. Although not quantified, the impact on hunting is expected to have been at least 50 percent of the total hunting reserve. Environmental management capacity at the national and governorate level has also been damaged as a result of damage to several facilities used by the Ministry of Environment and Health (MoEH) including administration buildings, laboratories, and remote environmental monitoring stations. Damage will have a disproportionately high impact on the most vulnerable members of society, including IDPs and female-headed households, who are more reliant on natural resources to sustain their livelihoods. Many of these individuals will have no option but to continue accessing polluted areas despite the significant threats to their safety and health associated with military wastes/landmines and hazardous chemicals. Such activities are likely to result in fatalities or disabling injuries, thereby increasing the number of highly vulnerable individuals within communities.

Gender

ISIS occupation negatively affected women and girls, particularly in terms of health, mobility, and social composition, making for extremely vulnerable portions of the population. Early age forced marriage, which is considered a form of gender-based violence, has increased markedly in Iraq. Men and boys also face unique vulnerabilities because of years of conflict, including recruitment to armed forces and militia groups, targeted abuse and killings, and limited job prospects to support their families. Violence against women and girls, particularly sexual violence, has been a widely-used tactic of terror in the armed conflict, and the conflict has increased the level of threat, both real and perceived, to women and girls. Data on rates of GBV in conflict-affected regions are not available, but United Nations (UN) agencies and women's groups working in these regions report sharp increases of GBV in Iraq, more so among IDPs because of increased interpersonal violence and the breakdown of social and support networks.

Reconstruction programs will need to consider the gender-specific impacts of the conflict on men and women and children in communities. Violence against women and girls needs to be tackled across sectors, and infrastructure and other reconstruction projects will need to consider how to mitigate the risk of increased GBV as result of their activities. This will entail engaging with women early —through dedicated safe spaces —in the prioritization, planning, and selection of reconstruction projects. Tenders for work in all infrastructure sectors will need to include the requirement that contractors propose actions and measures to mitigate risk of gender-based violence. Employment opportunities will need to be designed and created in sectors where the security situation, working conditions, and skills required make it possible for women to work.

Macroeconomic Impact

Economic losses due to conflict have been significant. Iraq's conflict, accompanied by an oil price shock, has caused a three-year recession in terms of non-oil GDP. The conflict has hurt the non-oil economy through destruction of infrastructure and assets, disruptions in trade, and deterioration of investor confidence. The impact of the decline in oil prices has considerably worsened the fiscal situation, the external sector, and the medium-term growth potential. By 2017, the cumulative real losses due to conflict to non-oil GDP stood at IQD 124 trillion (US$ 107 billion), equivalent to 72 percent of 2013 GDP and 142 percent of 2013 non-oil GDP, assuming the non-oil economy would have continued to grow at the pre-conflict rate of 8 percent. The conflict has only marginally affected oil production, which has continued to grow.

The immediate concern is to restore the productive means of livelihood for millions of people in agriculture, services, and industry. This has to be achieved at the same time while broadening the revenue base of the state and continuing the fiscal adjustment process supported by the WBG and International Monetary Fund (IMF) to ensure sustainability and increase resilience toward future shocks. To consolidate improvements in the non-oil economy, emphasis must be placed on reducing the level of violence and rebuilding the social contract. If augmented by deep structural reforms that strengthen governance and the provision of public services, improved macroeconomic and natural resource wealth management, and a stronger ability of the Iraqis to reach their potential and work in productive jobs, this will lay the foundations for lasting peace, justice, and opportunity for all.

Social Sectors

Housing

The total damage to the Housing sector in the seven assessed governorates is estimated at IQD 18.7 trillion (US$ 16.1 billion). An approximate 138,051 residential buildings are impacted. Half of these structures are destroyed beyond repair. The housing stock in Iraq consists of apartment units, single-family homes, low-income housing, and villas. Mosul holds the largest share of total housing damage in the seven governorates with an estimated damage cost that ranges between IQD 6-8 trillion alone (US$ 5.1 - 6.9 billion). Total losses to the Housing sector total IQD 1.8 trillion (US$ 1.6 billion).

Addressing housing recovery needs in post-war Iraq necessitates an area-based, multi-sectoral, participatory, and inclusive approach. This implies sequencing government engagement along a rationale of "fast-tracking housing repairs and preparing for housing reconstruction." An interim strategy would suggest addressing first the needs of residents of partially damaged housing that can be repaired quickly. In the short term (one-year timeframe), this will require a total IQD 5.9 trillion (US$5 billion). In the medium term (two- to five-year timeframe), a detailed strategy of how to rebuild destroyed houses using a special lens should be devised; this will require an

estimated IQD 14.7 trillion (US$ 12.5 billion), bringing the total needs for the sector to IQD 20.6 trillion (US$ 17.5 billion).

Health

Estimated damages incurred by Iraq's health system due to the prolonged conflict total IQD 2.7 trillion (US$ 2.3 billion). Out of this total, damages to hospitals alone in the 16 assessed cities are expected to cost an approximate IQD 1.2 trillion (US$ 1 billion); damage estimates incurred by health centers and health offices point to a total damage cost of IQD 14.7 billion (US$ 12.6 million). In terms of damages to facilities - with the exception of Tal Afar, Al-Muqdadya (Ibid), and Al-Ramadi - all cities, for which data was available, have at least half of their facilities either partially or fully damaged. Such damages significantly hinder service delivery by affecting bed capacity and ability of the system to provide critical inpatient care. Service delivery is also affected by the functionality of facilities. Available data show high rates of nonfunctional facilities in cities that have high damages.

Analysis of the cost of short- and long-term finance needs for the health sector, including extrapolation, shows a total estimated cost of IQD 5.2 trillion (US$ 4.4 billion) in the governorates covered by this DNA. Proposed funding recovery should focus first on increasing access to primary health care services provided mainly by rehabilitation of primary health care (PHC) facilities, training health workers to fill the gap in the short term, and ensuring availability of medical supplies. In the medium term, focus should be laid on expanding rehabilitation efforts to improve the curative sector (secondary and tertiary care hospitals) and to reach rural areas. Focus should also be on improving financial coverage for the poor through, for instance, defining and subsidizing a package of essential health care services to the poor, mainly women and children. The package should include reproductive health, maternal and child health, and nutrition services. In the long run, further damage and needs assessments are needed to get more accurate numbers to prioritize needs.

Education

The total cost of conflict damages to the education sector in seven governorates within the Republic of Iraq is estimated at IQD 2.8 trillion (US$ 2.4 billion). In-depth analysis was conducted across 16 cities within the seven governorates, indicating that severe damages to the sector were incurred. Only 38 percent of the total school infrastructure for which data were available in the 16 cities remain undestroyed, while 18 percent (190 facilities) were completely damaged. Education facility damages are concentrated in Al-Falluja, Mosul, and Al-Ramadi, where 71, 65, and 62 percent, of facilities were respectively damaged due to heavy fighting. It is expected that all school materials have been depleted or destroyed. Areas formally under ISIS control endured the greatest losses given the group's intentional campaign to spread extremism through education.

Total reconstruction and recovery needs costs are estimated at IQD 5.4 trillion (US$ 4.6 billion) for the seven governorates. Reconstruction efforts will need to abide by government standards for building safety and habitation, while adhering to gender and physical accessibility standards for school common grounds and WASH facilities. Parallel to the reconstruction efforts is the need to restore interim and long-term teaching and learning services (recovery needs). This includes the necessity to provide school equipment, textbooks, teaching and learning materials, opportunities for teachers' professional development, and overall sector support to ensure day-to-day functioning of services. Accelerated learning programs (ALPs), remedial support, community-based early childhood education programs, and out-of-school youth programs, are programs that will support student learning, either solely or in combination with other interventions. Children and teachers also require support for psychosocial and emotional well-being, which should include reaching out to communities to support better social cohesion and inclusion. These programs work with the objective of reorienting students so that they are ready to enter the formal system, or so that they may acquire the skills necessary to help them succeed beyond schooling.

Social Protection, Employment, and Livelihoods (including poverty)

The impact on livelihoods was severe in the affected governorates, which saw an increase in unemployment from 12.6 percent to 17.7 percent between 2014 and 2017, as well as increased underemployment from 5.9 percent to 9.7 percent.[1] In total, the seven affected governorates saw 314,000 newly unemployed and a further 224,000 people who had become newly under-employed.

This represents total losses to livelihood from the conflict of IQD 3.5 trillion (US$ 3 billion) annually. Agriculture has been particularly affected, with sustained losses in production, storage, and livestock, affecting agricultural income and employment, as well as food security. IDP and IDP-hosting households have been hardest hit by loss of livelihoods and displacement. Food shocks reached 40 percent of IDPs in affected governorates and close to 20 percent of non-IDP households. Household assets have been significantly diminished, and multi-dimensional poverty has reached 23 percent amongst IDPs, while asset poverty has reached 70 percent. Consequently, the poverty rate in 2014 across the seven governorates is estimated to have climbed to 22.8 percent from 17.0 percent in 2012.

Total recovery needs are estimated at IQD 7.5 trillion in Year 1 (USD 6.4 billion). The most urgent need is cash support for the many newly poor households not covered by the existing cash transfer program, estimated at around 333,000 households.[2] The cost of extending the current program to these households is an additional IQD 7.0 trillion above existing spending. In addition, short-term employment is badly needed given the widespread loss of livelihoods. A public works program (costed elsewhere in the DNA) would both contribute to local infrastructure reconstruction and provide much-needed employment. There are currently 98,000 registered unemployed individuals in the affected governorates (although this excludes Mosul, Kirkuk and Baghdad), but

1 2017 SWIFT data and World Bank calculations.
2 MOLSA administrative data, 2017 SWIFT data and World Bank calculations.

the number of registered unemployed persons is considerably lower than the estimated 929,000.[3] While waiting for public works to become operational, short-term cash support for three months at (IQD 350,000 per month) for non-poor households with unemployed members would cost an additional IQD 540 billion (USD 457 million).

Cultural Heritage and Tourism

The culture sector operates under a broader definition of value, which includes two fundamental parts: intrinsic values that evoke spiritual or emotional significance and instrumental values such as those that are derived as economic benefits. Therefore, the study includes only a small part of what would normally be understood as the cultural heritage sector in Iraq. Overall, the Cultural Heritage and Tourism sector suffered IQD 1 trillion (US$ 858 million) in damages to its historic religious and secular buildings, ancient archaeology, contemporary religious facilities, priceless museums and libraries, and hotels. The crisis has created an emergency at the global level, due to the universal value of Iraqi heritage. The deliberate destruction of cultural heritage is considered a war crime, as it is used as a war strategy to erase cultural identity. It is important to highlight that in some cases in the Cultural Heritage sector, reconstruction may not be possible or desirable. However, reconstruction of religious buildings offers an important opportunity to reestablish communities, build back a sense of national identity, and begin the process of reconciliation. Active communities are already prioritizing their culture by continuing religious services even in partially functioning facilities. However, support for these efforts across the broad spectrum of religious expression will be essential to build up communities within a fragmented society. Furthermore, reintegrating heritage sites into the fabric of society is also a means for reestablishing identity, perhaps for marginalized groups associated with the asset or for regaining a prominence that serves as a reminder of shared history. Priority should be given to those assets that can foster a sense of shared heritage and should involve communities once the basic protective measures are undertaken. The estimated needs for these activities amounts to IQD 2 trillion (US$ 1.7 billion).

Productive Sectors

Agriculture

The total damages to the agricultural sector are estimated at IQD 2.4 trillion (US$ 2.1 billion). This entails damages to fixed assets, which included damage to machinery and greenhouses as well as livestock assets. The cost of damaged agricultural machinery, which is critical for future production, stands at IQD 689 billion (US$ 590.9 million). Damages to other fixed assets such as greenhouses and grain stores cost IQD 13 billion (US$ 11 million), while damages to plantations are estimated at IQD 212 billion (US$ 181.8 million). Of the four affected governorates, damages were the largest in Ninawa at IQD 764 billion (US$ 655 million) followed by Salah Al-Deen and Diyala governorates with a total damage of IQD 559 billion (US$ 479 million) and IQD 557

3 2017 SWIFT data and World Bank calculations.

billion (US$ 478 million), respectively. A substantial size of crop and livestock facilities as well as research centers and veterinary clinics were damaged.

The critical reconstruction needs of the agricultural sector are estimated at IQD 4 trillion (US$ 3.4 billion). The most urgent requirement of the agricultural sector is restoring farm machinery and other input delivery systems (access to roads, market places, and irrigation systems) for farmers to resume their agricultural activities. The restoration of machinery is estimated to cost IQD 1.1 trillion (US$ 1 billion) in the following five years. It is critical to provide livestock, especially breeding livestock, so that farmers restore their pre-crisis incomes: replenishing of breeding livestock to farmers costs IQD 2.2 trillion (US$ 1.9 billion). The total financial requirement to reconstruct greenhouses and warehouses is estimated at IQD 19 billion (US$ 16 million). Other medium- to long-term reconstruction costs include replanting orchards and date palm plantations, which is estimated to cost in order of IQD 357 billion (US$ 302 million).

Water Resources

The Water Resources sector is examined on a governorate-level basis, as its assets and infrastructure generally encompass and affect more than a single city. The assets that fall under this sector are from the seven governorates that were affected the most. The costs of damages are estimated at IQD 134 billion (US$ 115 million).

Overall, total damages to the Water Resources sector made up 94 percent of all identified facilities, with most damaged assets being barrages, followed by pumping stations and water bridges. Dams, dikes, levees, and other assets were also at least partially damaged. The cost estimate excludes the cost of rehabilitation to the dams and barrages, and the cost of offices for the ministry as additional on-ground assessment for each asset would be required to ensure an accurate cost estimate. These assets, as mentioned, affect more than a single city. Moreover, the interdependence of the WASH and water sectors is undeniable. Cities and their populations are directly affected by the services of the water resources sector, and related sectors such as Agriculture are directly affected by damages to water infrastructure. Given the damages that have taken place, the functionality of these assets has extremely deteriorated. The needs are estimated at IQD 245 billion (US$ 207 million).

Industry and Commerce

It is estimated that there is a minimum damage of at least 8,000,000 m^2 along with a cost of at least IQD 6 trillion (US$ 5.1 billion) to the Industry and Commerce sector.

The needs costs are estimated to be around IQD 12.5 trillion (US$ 10.6 billion). The most urgent requirements for the Industry and Commerce sector are restoring facilities that produce construction materials and facilities that can process food for domestic production, as well as restoring public market facilities necessary for the conducting of basic commerce. Firms will need funding as well as capital investments and infrastructure. In the short term, matching grant and

challenge fund programs can provide a relatively quick way to inject liquidity into the private sector. Capital grants as well as business development services, would be justified. Arrears owed to the private sector should also be cleared. In the medium term, broader sources of demand should be tapped to support private sector recovery and growth, including transport and logistics, food and agribusiness, and religious tourism. Reforms to procurement processes and the broader investment climate are also essential. Spatial opportunities exist through the re-opening of transport corridors to Jordan and Saudi Arabia, as well as proposed connectivity investments to new port infrastructure in Basra.

Finance and Markets

The conflict caused physical damage to financial sector infrastructure and losses to financial assets, and exacerbated pre-existing weaknesses in the financial sector, resulting in further losses of efficiency and access. One central bank branch (in Mosul) and 121 commercial bank branches were directly affected by the conflict, with total physical damage estimated at IQD 61 billion (US$ 52 million). Physical damage is only a fraction of the losses to financial assets, which are estimated at IQD 11.8 trillion (US$ 10 billion). The single largest item is the additional provision needed to cover credit impairment of the state-owned banks (SOBs), notably Rafidain and Rasheed (R&R), in the amount of IQD 9.6 trillion (US$ 8.3 billion). For private banks, additional provision to cover incremental non-performing loans is estimated at IQD 1.1 trillion (US$ 1 billion). Total bank deposits seized by ISIS amounted to IQD 971 billion (US$ 833 million). Four out of twelve microfinance institutions (MFIs) went out of operation due to the conflict, resulting in a total loss to their portfolios of IQD 25 billion (US$ 21 million). Damaged banking infrastructure, loss of assets, displacement, restricted payment system access due to emergency measures taken by the Central Bank of Iraq (CBI) to cut off financial flows to ISIS, the closure of MFIs, and overall security concerns have caused further loss of efficiency and financial access.

The financial sector plays an important role in post-conflict reconstruction and recovery by facilitating both short-term recovery responses and medium- and long-term development. Short-term priorities for the financial sector should focus on the immediate needs of restoring the basic functions of the banking and payment systems, and to facilitating aid efforts, including through the development of mobile/e-payment to deliver assistance to IDPs. Medium-term priorities include banking sector reform, in particular, the financial and operational restructuring of R&R, and developing specialized finance to support critical areas for economic recovery and development (such as infrastructure, housing, and agriculture). Microfinancing is also needed to facilitate the transition from aid to income-generating activities to build sustainable livelihoods. These will need to be supplemented with improved credit infrastructure and financial sector oversight. Developing a balanced, sophisticated, and sustainable financial sector to support the economy will require continued efforts in the long-term to improve the business environment, develop markets, and enhance human capacity, with technical assistance and capacity building supported by the international community. The recovery and reconstruction finance needs are estimated at IQD 10.9 trillion (US$ 9.3 billion).

Infrastructure Sectors

Power

IQD 8.2 trillion (US $7 billion) is the estimated cost of damage to the power sector. Damage to the electricity sector consists primarily of partially or destroyed power plants, substations, electricity transmission towers, and local electricity directorate offices. As of 2017, most of the power system's assets are either partially functioning or not functioning, with residents in nine major cities out of the seven governorates assessed for the purposes of this DNA without any form of access to public electricity service. Eight out of the 17 power plants in the assessed governorates have been completely destroyed. The remaining nine power plants are either operating at lower generation capacity or are not functioning at all, and will require repairs to return to full operational status. As a result of this extensive infrastructure damage, evidence suggests most public network power availability has been significantly diminished in the majority of the governorates assessed. Rehabilitation work on the power sector is ongoing, but public electricity, upon which many other services rely, remains unreliable.

The total value of needs is estimated at 10.8 trillion IQD (US$ 9.1 billion) to fund the provision of adequate electricity supply and restoration of power system operations, which must be an integral component of the planning and implementation process. In the short-term, there is an urgent need to add new generation capacity, restore electricity services—especially in the recently liberated areas—and rehabilitate dilapidated infrastructure following years of neglect and sanctions to increase supply availability and quality in other parts of the country. In the medium-term, it will be critical to expand and upgrade the generation, transmission, and distribution infrastructure, and increase power system efficiency. Moreover, improving sectoral operational efficiency would attract much-needed private sector investment. In the long-term, sector reforms, performance improvement, and fiscal sustainability will be necessary. Grid integration on a regional level, either as a net exporter or as part of a regional grid for reserve sharing and load balancing, should also be considered.

Oil and Gas

IQD 5 trillion (US$ 4.3 billion) is the estimated cost of damage to the Oil and Gas sector in the seven assessed governorates. Over 50 petroleum-related installations were affected, ranging from the country's largest refining complex to much smaller refined products distribution plants, oil field production facilities, warehouses, and offices. Approximately 85 percent of the monetary damages were sustained at the Beygee refinery complex (including associated pipelines and storage facilities). Extensive levels of aerial bombardment, artillery shelling, and subsequent looting of removable equipment and piping resulted in the categorization of these assets as fully destroyed and not operating. Adjacent petrochemical and power generation plants also suffered damages and are no longer operable due to lost fuel and feed from the refinery. Loss of livelihood and damages of war have resulted in the displacement of the majority of residents in Beygee city. Additionally, the loss of high-quality refined products used for transportation, residential and

commercial heating and cooking, and power generation have caused disruption in service and higher costs throughout the entire Iraqi commercial value chain.

Recovery and reconstruction needs over five years are estimated at IQD 8.5 trillion (US$ 7.2 billion). The most urgent requirement within the petroleum sector is to resume some level of operations at the Beygee refinery complex. The refinery previously operated three separate and self-contained trains, and it may be possible to restore operations at one of the least damaged trains fairly quickly (under 24 months). Coincidentally, storage facilities and pipelines associated with the refinery complex must be repaired and replaced in a phased approach to match the refining capacity as it is restored. This rapid reconstruction effort would generate significant employment and may partially restore power supply to the area. These short-term (up to 1 year) measures are estimated to cost around IQD 870 billion (US$ 736 million) depending on the amount of repair and replacement required. Over the medium to long term, the remainder of the Beygee complex will need to be rebuilt. This will involve close coordination with other elements of the industrial and energy sectors and with institutions coordinating the reestablishment of housing and social services within Beygee city. The remainder of the damages in the petroleum sector can be dealt with on an ad hoc basis as needed and as capacity permits.

Information and Communications Technologies (ICT)

IQD 466 billion (US$ 400 million) is the estimated cost of damage to the ICT sector. The governorates of Ninawa and Anbar hosted the largest number of assets and had the highest level of destruction compared to Diyala and Salah Al-Deen. The level of damage in the fixed network is by far the greatest in the governorate of Ninawa, and amounts to 75 percent of the total cost of damage. Most of the mobile network assets are only partially destroyed. However, data show that most of the fixed network facilities are completely destroyed and will need to be rebuilt.

The total needs estimated for the reconstruction and recovery of the public and private sector is IQD 761 billion (US$ 644 million). The reconstruction needs for mobile networks with a building back better objective is estimated at IQD 50.2 billion (US$ 42.5 million) in the first year and the same cost for the medium term of 2 to 5 years. The reconstruction of the fixed network is more complex and costly than the mobile network since most of the inner cities networks and facilities in Iraq are based on legacy networks and are defunct. It is estimated that a total of IQD 660.5 billion (US$ 559 million) will be needed to build a state-of-the-art and robust fixed network in the affected areas. It is important to revisit the regulatory action to allow all operators to invest in infrastructure and devise public-private partnerships for the reconstruction of critical infrastructure.

Transport

Transport infrastructure damage due to the conflict amounts to IQD 3.3 trillion (US$ 2.8 billion). Total damage to roads is estimated at IQD 610 billion (US$ 523.1 million), and bridges at IQD 1.4 trillion (US$ 1.2 billion). The intensity of the damage varies from one city to another.

It is estimated that 2,300 km of roads are damaged. Out of this, 57 km are primary roads, 118 km are secondary roads, and 207 km are tertiary roads, representing 17 percent of all damaged roads. Out of these roads, approximately 33 percent of the total roads damaged are under the responsibility of the Ministry of Transport. The rest are under the responsibility of the local city administration. Damage to Mosul Airport is estimated at IQD 120 billion (US$ 102.9 million), and the damage costs of assessed railway systems in Mosul, Al-Ramadi, and Heet are estimated at IQD 236.6 billion (US$ 202.9 million). It is worth noting that damages to roads and bridges extend far beyond localized damages. Therefore, our estimates take into account collateral damages resulting from roadblocks, falling debris, and neglect of maintenance during years of conflict. The damages to the transportation sector have significantly impaired the mobility and transportation of the vulnerable population in the country.

Total recovery and reconstruction needs are estimated to be around IQD 4.7 trillion (US$ 4 billion) with IQD 1.4 trillion (US$ 1.2 billion) and IQD 3.3 trillion (US$ 2.8 billion) in the short- and medium-term, respectively. It is worth noting that given the magnitude of the damages, reconstruction will take more than five years to fully restore service delivery to pre-crisis levels. Priority interventions include improving the condition of transport assets and infrastructure by rehabilitating highly damaged segments of the country's roads, bridges, railways, and airports. Interventions should also aim at restoring the technical and institutional capacity to manage and maintain transport subsectors. Ultimately, this strategy will contribute to the country's economic and social recovery and job creation.

Water, Sanitation, and Hygiene (WASH)

The WASH sector in Iraq has seen significant damage amounting to IQD 1.6 trillion (US$ 1.4 billion). Although efforts have been made in rehabilitation by several governmental and international development agencies, a bulk of the infrastructure is still either partially damaged or fully destroyed. The extensive damage of assets deeply affects their functionality in the cities and governorates examined, therefore affecting households' daily usage and service of water. Across all governorates, the percentage of households that had access to water varied from 40 to 60 percent. However, in cities like Al-Ramadi, Beygee, Bakhdida, Al-Ba'aj, and Al-Hatra, 20 percent or less of households have access to water.

The total amount of reconstruction and recovery needs is estimated to be around IQD 2.9 trillion (US$ 2.4 billion). As for the needs in the short-, medium-, and long-term, it is suggested to have a plan to prioritize the rehabilitation and reconstruction of assets. Considering the one-year time frame, the focus should be on the relatively less damaged facilities. The provision of key equipment for water and sewerage operations and maintenance is crucial. It is also suggested that a thorough assessment of damages should be done in the one-year time frame. As for the medium-term, rehabilitation as well as building activities of new structures replacing complex damaged and destroyed assets should be continued, while at the same time searching and advertising for contracts. Finally, in the long-term, a preparation of a governorate master plan for water and sewerage systems for the next 15-20 years is needed. In parallel to the work needed in the medium-

term, a goal of securing private sector participation in the WASH sector, including but not limited to reconstruction and rehabilitation, is critical in the long-term.

Municipal Services

Total damage to the municipal services sector in the governorates for which data were available is estimated to be IQD 102 billion (US$ 88 million). Municipal services are critical services that facilitate citizens' safety, sanitation, and access to economic opportunities. Among the assessed governorates, the highest damage cost is perceived in Anbar governorate with a total damage cost of IQD 54.6 billion (US$ 46.8 million). In Ninawa, municipal assets have retained damage totaling IQD 46.3 billion (US$ 39.7 million), while in Diyala, damage to municipal assets amounts to an estimated cost of IQD 1.5 billion (US$ 1.3 million).

Total recovery and reconstruction needs are estimated at IQD 149 billion (US$ 126 million). These include a total of IQD 139 billion (US$ 117.6 million) for infrastructure construction and a total of IQD 9.6 billion (US$ 8.2 million) for service delivery restoration of the municipal services sector in Anbar, Diyala, and Ninawa governorates. Short-term (1 year) reconstruction and recovery needs are estimated to be IQD 15 billion (US$ 13 million) and include recovery of street lighting and community markets to ensure the safety of citizens as well as to facilitate resumption of their livelihoods and strengthen social cohesion through public spaces. Medium- to long-term needs (2–5 years) are IQD 134 billion (US$ 113 million) and include the recovery of community facilities, entertainment facilities, libraries, public affordable housing, parks/playgrounds, public parking lots, slaughterhouses, and others to increase the livability of neighborhoods and hence contribute to social cohesion and reconciliation.

Over 5 million Iraqis have been forced to leave their homes due to the conflict (2014).
Photo credit: Answer5 (Shutterstock).

I. INTRODUCTION

Context

Poverty headcount rates declined from 22.4 percent in 2007 to 18.9 percent in 2012, and Iraqi education and health systems were ranked near the high middle income country levels in 2014. Since 2014, conflict, combined with economic constraints in recent years have reversed the gains in poverty reduction that were attained between 2007 and 2012. Poverty headcount rates are estimated to have increased by 7.5 percentage points or roughly an additional 3 million as a consequence of the twin crises. The magnitude of the impact is likely to have pushed Iraq back to poverty levels similar to those of 2007. While, health and education indicators have fallen to near the bottom today. A huge vulnerable population, including millions of IDPs and refugees, exacerbates pressure on an already weak system, sharpens disparities of access between regions, and is poorly served by the education and health systems and by social safety nets. Poor quality services, inadequate infrastructure and low levels of public spending were aggravated by the crisis.[4]

The recent regional ISIS-created conflict in Iraq has resulted in a humanitarian crisis with the internal displacement of over 5 million Iraqis and the destruction of infrastructure and services in the former ISIS-occupied areas. The United Nations Office for the Coordination of Humanitarian (UNOCHA) Affairs estimates that about 6.2 million people are in need of targeted humanitarian assistance, including food, shelter, clean water, sanitation services, and education support. Food and rent prices are increasing, especially in the northern governorates that are hosting a large share of Syrian refugees and Iraqi Internally Displaced Persons (IDPs). The impact on livelihoods has been severe in the affected governorates, which saw an increase in unemployment from 12.6 percent to 17.7 percent between 2014 and 2017.[5]

The scale and speed of the displacement as a result of the crisis make it a challenge for the government to deliver quality services, especially in the newly liberated areas where the infrastructure destruction has been most severe and service delivery has been adversely impacted. The Government of Iraq (GoI) requested the World Bank Group's (WBG) support to undertake a Damage and Needs Assessment (DNA) to estimate the effects and impacts of the crisis on key infrastructure and service delivery, livelihoods, social, productive, and cross-cutting sectors, and to identify recovery and reconstruction needs in Iraq. This country-led coordinated assessment will support the initiation of recovery and reconstruction planning processes, through an interinstitutional platform integrating the concerted efforts of national and international partners.

4 World Bank. 2016. Iraq - Country partnership framework. Washington, D.C.
5 2017 SWIFT data and World Bank calculations.

Objectives

The key objective of the Iraq Damage and Needs Assessment (DNA) is to inform the Government of Iraq (GoI), the international community and other stakeholders on the effect of the crisis on the population, livelihoods, physical assets, infrastructure, and service delivery, and cross-cutting areas like governance, social, and environment. It also aims to conduct a preliminary estimate of recovery and reconstruction needs in Iraq. The assessment will help inform recovery efforts toward creating enabling conditions for the return of the displaced population to their place of origin and restoring livelihoods and service delivery.

Approach and Scope

Temporal scope: The conflict in Iraq escalated in June 2014. Therefore, the damages and losses are calculated according to the actual or estimated pre-2014 baseline of the physical assets. Damage data were assessed up to early December 2017 for the purpose of this assessment.

Geographic scope: The Iraq DNA concentrated on the seven directly affected governorates, namely, Anbar, Babel, Diyala, Kirkuk, Ninawa, Salah Al-Deen, and Baghdad. A remote-based assessment, used for validation purposes, focused on the following 16 cities: Al-Jalawla, As-Sa'adiyya, Al-Ba'aj, Beygee, Bakhdida, Al-Falluja, Al-Hatra, Heet, Mosul, Al-Muqdadya (Ibid), Al-Ramadi, Sinjar, Al-Shirqat, Tal Afar, Tel Keppe, and Qarah Tabbah within four most affected governorates: Anbar, Diyala, Ninawa and Salah Al-Deen.

These cities have been selected in consultation between the Iraq Ministry of Planning (MoP) and the WBG due to (i) being recently liberated cities from the conflict; and/or (ii) having sustained heavy damage during the conflict.

Sectoral scope: The Iraq DNA covers the damage and needs in 19 sectors and thematic areas as follows:

- Social Sectors: Housing; Health; Education; Social Protection, Employment, and Livelihoods (including poverty); and Cultural Heritage and Tourism
- Productive Sectors: Agriculture; Water Resources; Industry and Commerce; and Finance and Markets
- Infrastructure Sectors: Power; Oil and Gas; Information and Communications Technologies; Transport; and Water, Sanitation, and Hygiene Municipal Services
- Cross-cutting Sectors: Governance; Environment, Social; Gender; and Macroeconomic Impact

Methodology

The Iraq DNA relies on a cost-effective and replicable damage, loss, and needs assessment methodology, which aims to provide a broad-brush estimate of the impact of the conflict on infrastructure, service delivery, human development, social cohesion, and governance in the seven directly affected governorates.

Following a hybrid two-tiered approach, the Iraq DNA relies on both ground-based and remote-based data. The analysis is based on direct damage data collected by the GoI. However, where ground-based data gathering was not possible due to the challenging security conditions and the inaccessibility of areas, data gaps were filled with remote-based data. Triangulating and verifying the ground-based data with remote-based data drawing on satellite imagery, publicly available information (PAI), and social media analytics, as well as ground spot checks, allowed for the most comprehensive assessment and robust expression of damage costs and recovery needs possible.

Whenever possible, asset baseline information for each sector was developed at the district level, drawing on ground-based data, satellite imagery, social media analytics, and publicly available information (PAI). Damage information from the different sources was then assessed against the baseline. Based on the reported damage level, each asset was assigned a physical damage status based on three classifications: no damage, partially damaged (less than 40 percent of the asset is damaged), or completely destroyed (more than 40 percent of the asset is damaged or the damage is structural).

For some sectors, the DNA relied primarily on an inventory-based damage assessment methodology that used facility-by-facility damage information. For other sectors, a percentage-based approach was adopted, and in some cases both approaches were utilized in conjunction. Where the physical status of an identified facility could not be verified by any sources of information, an unknown damage level was assigned based on (a) the actual level for similar facilities with confirmed physical status and/or (b) proxy indicators, such as the intensity and extent of conflict around the facility. Housing data for urban and rural areas at the governorate level was collected by the GoI relying on a mixed inventory- and percentage-based approach. Ground-based data was triangulated by producing damage estimates for the housing stock in 16 cities for which remote-based data, in particular satellite imagery, was available. The distinction between partially damaged and completely destroyed housing stock was estimated using a percentage-based collateral damage model, which considers the density of the urban space and the conflict intensity in the area.

Whenever possible, the DNA also assessed the operational status of facilities (functional or nonfunctional) to determine the level and quality of service delivery across the different sectors. In general, a facility was coded as functioning when it was able to operate or provide some level of services, even at a limited capacity. Some facilities were also reported as partially functioning to account for facilities that may be functioning at a lesser capacity due to lack of supplies, such as power or water or maintenance issues rather than physical damage. The functionality analysis was based on the facilities' physical status (based primarily on satellite imagery) as well as qualitative data derived from ground-based data, social media, news reports, and ground partner surveys conducted in the fall of 2017.

For the damage estimation, the average was calculated based on the number of damaged facilities, their physical status (partially damaged or completely destroyed), and the estimated pre-crisis unit cost associated with each asset class. These unit costs were based on primary information by the GoI or estimated by the sector specialists, and/or local (government) contacts. In line with

standard DNA methodology, completely destroyed assets were costed at 100 percent of the unit cost and partially damaged assets at 40 percent. The sector reports also include a governorate-level extrapolation of the damage based on the city-level damage levels for the seven directly affected governorates. While extrapolation at the governorate level was done on a sector by sector basis, many sectors adopted a similar approach utilizing conflict, population, and existing damage data to identify proxy cities. Estimations were adjusted to account for differences between facilities and services in urban and rural areas. This extrapolation method provides a very rough estimate and not an accurate and detailed analysis of the governorate-level damages. Its monetary value was expressed in terms of replacement costs according to prices prevailing just before the escalation of the conflict in June 2014. The assessment then included losses, i.e. changes in economic flows arising from the disaster, that occur until full economic recovery and reconstruction is achieved. Typical losses included the decline in output in productive sectors (e.g., Agriculture, Industry and Commerce, and Finance and Markets), as well as lower revenues and higher operational costs in the provision of services (e.g., Education, Health, WASH). Losses were expressed in current values.

The Iraq DNA presents an estimation of forward-looking recovery and reconstruction needs. Reconstruction needs across the various sectors convert the damage to current prices, considering inflation, security, and insurance premiums, as well as a "build back better" factor. Recovery needs take into account "softer" and non-infrastructure–related aspects, such as staffing, equipment and/or material, which are necessary to provide services at par with pre-crisis levels. Once calculated, both recovery and reconstruction needs are prioritized and distributed over the short term, medium term, and long term over a five-year time period. Based on the estimation of damages as well as qualitative impacts, each sector has specified recovery needs and suggested sequenced priority interventions. This includes the cost of reconstruction of destroyed assets, provision of services, improved specifications, and risk reduction measures.

Limitations and Key Challenges of the Assessment

Since this report presents findings using two streams of data, it is important to indicate limitations and key challenges faced during this exercise. Many of these challenges were mitigated through the design of the assessment methodology and close cooperation with the GoI, the WBG, other donors, and ground partners.

Data limitation: Given the complexity of the political and security situation, damage information has often been limited and delayed. For certain areas where conflict is still ongoing, it was not possible to collect extensive ground data, and this assessment relied on remotely collected data as a supplement. Moreover, while this is a comprehensive assessment of the seven liberated governorates, it is broad-brush in nature to ensure the relevance of the data. Data collection was focused on the cities and districts with available data, and spatial and sectoral extrapolation was used to estimate damage, loss, and needs for some parts of the affected governorates. In an effort to mitigate this to the extent possible, remotely collected data were used to complement the ground-based data. The remotely collected information was used to corroborate, validate, and fill in data gaps from the ground- based data. Additionally, each sector made reasonable assumptions in line with their data gaps to estimate costs.

Furthermore, this rapid and broad-brush assessment does not include gender disaggregated data due to the unavailability of such, which would have been important to different challenges created by the conflict in terms of access to services for women and girls. Similarly, the data available were in many cases not detailed enough to make a distinction between private and public assets. Whenever such a distinction was possible, it has been highlighted in the report (e.g., Information and Communications Technologies, and Health).

Lack of baseline information: Accurate baseline information detailing the sector-specific pre-conflict conditions is key to conduct a systematic assessment of the impact of conflict on infrastructure and services. Unfortunately, baseline information was sometimes limited; however, several steps were taken to minimize the gap. Baseline information was established using the vast swath of satellite imagery and data mining as well as extrapolation based on older statistics and reports combined with current population data.

Remote assessment: The scope of the remote assessment focused on the 16 cities selected in consultation between the MoP and the WBG. The WBG data relied heavily on satellite imagery, which is broad-brush in nature as it is limited to what appears in the imagery frame. Whenever possible, the WBG data has been corroborated and cross-validated by other sources and means including social media analytics, publicly available information, ground spot checks and assessments from other donors. With all the appropriate caveats mentioned in this section, the confidence level of the remotely collected data is high, as the damage information is as robust as the cost-effective methodology and the dynamic conflict situation allows.

Verification process: While some of the WBG sector specialists undertaking the assessment collaborated closely with representatives from the GoI, security challenges on the ground made it difficult for the wider WBG DNA team to interact directly with the respective ministry counterparts. This resulted in significant data delays despite tremendous efforts exhibited by the Ministry of Planning. In principle, the draft assessment is presented and discussed in a validation workshop with all the relevant ministries and departments to finalize the estimates. However, due to the challenging security environment, the report was reviewed and finalized by the GoI in consultation with the WBG in lieu of a validation mission visit.

ISIS training center in Christian church, Iraq.
Photo credit: Lena Ha (Shutterstock).

II. SOCIAL AND CONFLICT ASSESSMENT

In June 2014, the Islamic State of Iraq and Syria (ISIS) took over one-third of Iraq, including its second largest city Mosul. Despite initial territorial gains, ISIS was gradually defeated by the Iraqi security forces with Iraq's international allies and partners. On December 9, 2017, the GoI announced victory over ISIS, declaring an end to more than three years of counter-terror operations.

The emerging post-ISIS political landscape in Iraq presents new opportunities to address the underlying drivers and factors that enabled ISIS to occupy Iraqi territory.

1. Insecurity and Violence

Iraq is emerging from one of the most devastating periods of conflict and violence. Control of the Anbar, Al-Sulaymaniyah, Diyala, Kirkuk, Ninawa, and Salah Al-Deen governorates by ISIS resulted in large scale displacement, violence, and destruction. Years of instability, lack of governance, and ethnic strife, compounded by the casualties and destructions inflicted during the fight against ISIS have resulted in social and religious tensions and persistent insecurity across the country.

With the support of government-sanctioned paramilitary forces, Iraqi security forces achieved a decisive victory over ISIS. However, pre-existing communal, socio-economic, and political fault lines were further strained by the military operations conducted by both regular and irregular forces and battles for Iraqi territory.

With the defeat of ISIS as a strategic threat to Iraqi security, and given the gradual restoration of key metrics of stability across Iraq, the GoI now seeks to disband and/or integrate state-sanctioned paramilitary forces into existing GoI national security forces.[6]

1.1 Conflict Dynamics at the City-level and Impacts

In cities like As-Sa'adiyya, Al-Shirqat, Al-Ba'aj, and Al-Muqdadya (Ibid), control over the territory and local populations often oscillated between ISIS and the government, and temporary battlefield victories often led to tit-for-tat acts of violence between different local groups. Under ISIS occupation, historical grievances between communities worsened, and polarization and mistrust between communities grew. While ISIS has been defeated, ongoing security concerns persist.

6 Margraret Coker and Falih Hassan, "Iraq Prime Minister Declares Victory Over ISIS," The New York Times, December 9, 2017.

Impacts

- While the GoI has regained control over Iraqi territory, covert ISIS presence in some cities could create a situation of persisting instability and insecurity, undermining reconstruction efforts.
- State-sanctioned irregular paramilitary groups, the military, and some opposition groups are heavily armed and remain suspicious of each other. The use of arms to resolve conflicts or to gain access to resources remains a persistent challenge.
- At the city level, tensions remain high, especially in multi-ethnic, multi-sectarian, disputed areas.[7] Minor disputes can rapidly escalate into conflict and violence. These tensions could remain localized at low intensity or morph into more organized, large scale violence.
- There have been vicious human rights violations, with Iraqis being both the targets and agents of cyclical ethnic, sectarian and communal violence throughout ISIS's takeover of Iraqi territory from 2014 to 2017. Iraq's judicial and criminal justice system in its current form is ill-suited to dealing with perpetrators of human rights violations.

1.2 Recommendations for Future Government Programming

Two positive developments stand out. First, the emergence of an Iraqi nationalism supported by a broad cross-section of Iraqi society, including leading ethnic and sectarian groups. Second, the acceptance of the principle that the majority should ensure the welfare and protection of minorities across Iraq.

- The top priority of the government should be to improve security and to restore some degree of law and order. The GoI needs to especially support the needs of IDPs as well as their host communities. As fighting dies down across the country, both hosts and IDPs have to feel safe if they are to rebuild and resume productive activities and contribute to reconstruction efforts.
- The GoI must invest in building professional Iraqi security forces. This will require structural reforms that promote professionalism and inclusion coupled with adequate compensation and career development, regardless of ethnicity, religion or sect.
- The demobilization, disarmament, and reintegration (DDR) of irregular paramilitary forces will be critical. Broad backing for GoI DDR programming can both reduce insecurity and bolster efforts to strengthen Iraqi national security forces.
- The GoI should take advantage of quick-win activities that promote concrete peace dividends and build trust and reconciliation among communities based on the common interests that bind Iraqis together over the underlying factors that drove them apart.

7 It's Too Early to Pop Champagne in Baghdad: The Micro-Politics of Territorial Control in Iraq, War on the Rocks, 24 October, 2017.

2. The Challenge of Internal Displacement

According to UNOCHA, there are over 3 million IDPs (half being children) and 6.2 million people in need of targeted humanitarian assistance. Basic infrastructure has either been destroyed or is in a debilitated state, with cities like Mosul and Tal Afar facing over 70 percent destruction. The effects of displacement are felt both by host communities and IDPs; especially by women and children. Since October 2016, as counter-ISIS forces cumulated victories, IDPs started returning in waves to their places of origin. As of 2017, 2.2 million are estimated to have returned to their places of origin.

2.1. Displacement Patterns at City-level and Impacts

The main factors encouraging or deterring the return of IDPs are linked to the security situation and the delivery of services in their place of origin vis-à-vis conditions in the areas of displacement.

Impacts

- If IDPs are not given opportunities to return to stability (livelihoods, security, etc.), some groups, particularly young people, could resort to violence and covertly support groups like ISIS.
- ISIS imposed strict restrictions on gender roles, undermining roles women had played in the past. Exclusion from the work force and loss of male breadwinners exacerbate their vulnerability.
- Iraqis between fifteen and twenty-four constitute nearly 20 percent of the population but had limited education and employment opportunities. They, in turn, became prime candidates for recruitment by ISIS and other armed groups.
- In IDP camps, young men and women remain vulnerable and at increased risk to gender-based violence (GBV) and exploitation.

2.2 Recommendations for Future Government Programming

- A comprehensive response is required to address the challenge of IDPs, starting with a detailed profile of the various segments of those populations, with special attention to ethnicity, sect, vulnerability, and special needs.
- The re-integration of women into the workforce in areas liberated from IS through income generation activities such as cash for work programs and community policing remains a priority. Ensuring property rights and access to services for women will also be critical as well as support to victims of gender-based violence.
- Conflict-sensitive youth policies, including employment opportunities outside the public sector, skills training, opportunities to learn positive behaviours, and targeted education, and a focus on building bridges between youth groups across groups and social classes, need to be implemented.

3. The Governance and Service Delivery Challenges

Protracted instability and the erosion of Iraqi social cohesion were exploited by ISIS to garner support among groups that felt disenfranchised or under-represented. However, ISIS's actions and policies further degraded governance, deepened corruption, and undermined service delivery in key sectors including energy production, transport and communication, water and irrigation, and overall administrative services.

3.1 Governance and Service Delivery Patterns at the City-level and Impacts

The challenges of poor governance and corruption are mirrored at the micro-level. The assessment of available remote-based data of sixteen cities liberated from ISIS demonstrates varying degrees of recovery and service delivery. A sustained GoI effort to rebuild key infrastructure, bolster service delivery and improve overall governance, and support for IDPs to return to their areas of origin could make an important contribution to cement citizens' allegiance to national institutions.

Impacts

- There are differences in the level of reconstruction and effective service delivery (education, health, shelter, WASH) across the sixteen cities, due to the amount of destruction and the varying quality of leadership at the city level.

3.2 Recommendations for Future Programming

- Opportunities to deliver services at the city level that are inclusive of various groups need to be identified and supported to the extent possible. Inclusion and representation of various groups in reconstruction efforts could prevent future recruitment by ISIS and other non-state actors.
- On-going efforts by the GoI to fight pervasive corruption should be strengthened and amplified.
- Reconstruction efforts need to promote the active participation of local groups and leaders, local government, and central institutions with the support of the international community.

4. Strategic and Operational Guidance

Based on the analysis of the previous sections, this section seeks to translate the findings on Iraq´s fragility, conflict and violence dynamics into strategic and operational guidance that ensures conflict-sensitive engagement and leverages opportunities to reinforce resilience factors and promote peace and stability.

Promote security and stability. Increased stability and security for all groups in society after the defeat of ISIS will make an important contribution towards promoting social cohesion, strengthening socio-economic recovery and promoting national, regional and international investment in the liberated areas. Special attention needs to be paid to IDPs and returnees as they engage with host communities.

Improve the capacity of regular security forces and disarm, demobilize and reintegrate nongovernmental security forces. Disarmament, demobilization and Reintegration of armed groups and security sector reforms are critical. The consolidation and professionalization of GoI security services will bolster institutionalization and strengthen long-strained Iraqi national cohesion.

Promote development opportunities that are inclusive and benefit various groups in society. Reconstruction efforts need to be responsive to opportunities and local initiatives that can benefit various groups in society and can facilitate dialogue and joint problem-solving. The active participation of local government and community leaders that spouse tolerance and social inclusion would send an important signal that the GoI is committed to supporting all groups in society.

Focus on preventing and redressing the impacts of gender-based violence and violence on youth. There is an urgent need for the design and implementation of policies and programs that will focus on the victims of GBV and promote the socio-economic reintegration of youth. Opportunities for youth to learn technical skills as well as positive social behaviors and collaboration among groups in society need to be offered in the newly liberated areas. Supporting youth participation in effective and inclusive development efforts will provide an important alternative to the violent behaviors and values promoted during the ISIS occupation.

Strengthen the GoI's narrative on reconstruction efforts. Better communication on reconstruction efforts that is transparent and inclusive of the needs of minority ethnic groups will help cement the social contract between the Government and groups in the newly liberated areas.

Support the GoI implement strong accountability measures. International agencies need to support the GoI's efforts to adopt transparency and accountability tools to fight corruption. Mechanisms to promote citizen engagement and participation will have to be strengthened, including at local government level and within central agencies.

Eradicate the inequality gap between different regions of Iraq, especially the poverty solidified in rural areas and in provinces with a larger concentration of ethnic and religious minorities.

Promote better and inclusive governance and support credible actors against ISIS. Good governance should be prioritized as it will make an important contribution towards building citizens' trust in actors that can oppose the ISIS ideology. Local actors, with the support of inclusive and effective national policies, ought to be supported to break the vicious cycle of social and political exclusion, radicalization, and extremism and spark a virtuous cycle that offers security, jobs, education, moderation, dignity, and hope for a stable Iraq.

Building of a new social contract in Iraq. A new social contract is more likely to last if it is built on greater citizen trust; more effective protection of the poor and vulnerable; inclusive and accountable service delivery; and a stronger private sector that can create jobs and opportunities for the youth.

A man picks up his medicine in a healthcare centre in Kabertoo refugee camp in Iraq (January 2016).
Photo credit: Matus Duda (Shutterstock).

III. SECTOR REPORTS

Social Sectors

Housing

A. Sector Summary

The total damage to the Housing sector in the seven assessed governorates is estimated at IQD 18.7 trillion (US$ 16.1 billion). An approximated 138,051 residential buildings are impacted. Half of these structures are destroyed beyond repair. The housing stock in Iraq consists of apartment units, single-family homes, low-income housing, and villas. Mosul holds the largest share of total housing damage in the seven governorates with an estimated damage cost that ranges between IQD 6-8 trillion alone (US$ 5.1 - 6.9 billion). Total losses to the Housing sector total IQD 1.8 trillion (US$ 1.6 billion).

To address the housing recovery needs in post-war Iraq, an area-based, multi-sector, participatory, inclusive approach is needed. The sheer scale of destruction entails sequencing GoI engagement along a rationale of "fast-tracking housing repairs and preparing for housing reconstruction." This strategy suggests increasing housing supply by facilitating the repair of damaged housing that can be restored swiftly to the housing market. This could be implemented in the short-term and would require a total of IQD 5.9 trillion (US$ 5 billion). In the medium-term, a comprehensive solution to restore destroyed housing stock using an area-based approach should be devised and would require an additional IQD 14.7 trillion (US$ 12.5 billion). In aggregate, Housing sector needs for the five years total IQD 20.6 trillion (US$ 17.4 billion).

B. Background, Conditions, and Trends

Prior to the conflict, Iraq suffered from chronic housing shortages that resulted in a deficit of around 1.4 million housing units. An estimated 670,000 housing units was needed annually to accommodate the 3.1 percent population growth, which was beyond the absorption capacity of the housing market.[8] In addition, weak housing and land management policies, limited access to housing finance, and insufficiency of private public partnerships precipitated the degradation of housing conditions throughout the country, as well as the overcrowding of lower-income households. The Government's National Housing Strategy (2010) aimed to increase access to housing for all Iraqis. The strategy recommended that the government gradually evolve from a direct provider of housing to an enabler for private sector provision of housing. It underscored the importance of land management and the priority of strengthening the private supply chain by encouraging public-

8 MoCH. National Housing Policy Iraq, 2010.

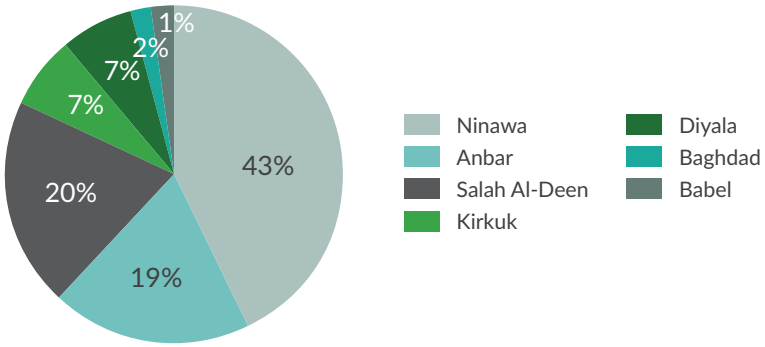
private partnerships. Thus, two new institutions were established to stimulate housing solutions: The National Housing Fund (NHF) and the National Investment Commission (NIC).

C. Sectoral Damage and Loss Assessment

In the seven governorates covered in this assessment, data were collected from 63 urban centers and 1,746 villages where around 138,051 residential buildings were affected. The total damage to the housing sector is estimated at IQD 18.7 trillion.[9]

The housing stock in Ninawa was the most affected, displaying 43 percent of the total share of reported damage to housing assets. The urban centers in Ninawa alone incurred 58 percent of the total damage to urban centers across the seven governorates (Table 3). On the other hand, Salah Al-Deen, which sustained 20 percent of the share of total damage, had the highest percentage of destruction to rural housing assets across the seven governorates. Anbar, Kirkuk, and Diyala have experienced levels of damage at 19, 7, and 7 percent, respectively, followed by Baghdad at 2 percent, and Babel at 1 percent (Figure 2). In general, the level of damage was distributed equally between "partially damaged" and "completely destroyed." Yet, in governorates like Diyala and Babel, most impacted housing assets are destroyed beyond repair.

Figure 3: *Share of Housing Damage*



9 Damages have been estimated based on the latest unit rate which are applicable to future needs as well.

Table 3: *Housing Damage in Seven Governorates*

Governorate	Urban Housing Damage (Affected residential area) Square Meter	Rural Housing Damage (Affected residential area) Square Meter	Damage Cost Iraqi Dinar Billion
Ninawa	26,494,995	8,863,789	8,001
Anbar	8,377,846	5,289,694	3,592.1
Salah Al-Deen	4,215,830	9,686,038	3,781.2
Kirkuk	1,038,491	4,398,375	1,354.5
Diyala	964,330	4,486,567	1,399.5
Baghdad	73,736	1,268,545	337.5
Babel	106,672	982,373	279.8
Total	**41,271,900**	**34,975,381**	**18,745**

A detailed analysis was conducted focusing on 16 cities: : Al-Jalawla, As-Sa'adiyya, Al-Ba'aj, Beygee, Bakhdida, Al-Falluja, Al-Hatra, Heet, Mosul, Al-Muqdadya (Ibid), Al-Ramadi, Sinjar, Al-Shirqat, Tal Afar, Tel Keppe, and Qarah Tabbah. The analysis covered 544,000 housing units across the 16 cities. These assets are divided into apartment units (55%); single-family houses (38%); villas (1%); and low-income housing (5%). Mosul accounts for 73 percent of the total stock impacted across the 16 cities, while Al-Falluja and Al-Ramadi together account for 10 percent. The assessment revealed the extent of severe damage inflicted on the housing stock with 59 percent of all housing units affected to some extent in these 16 cities. Out of all impacted housing stock, 22 percent is completely destroyed while 37 percent are partially damaged. Only 41 percent of the housing stock across the 16 conflict-affected cities were spared.

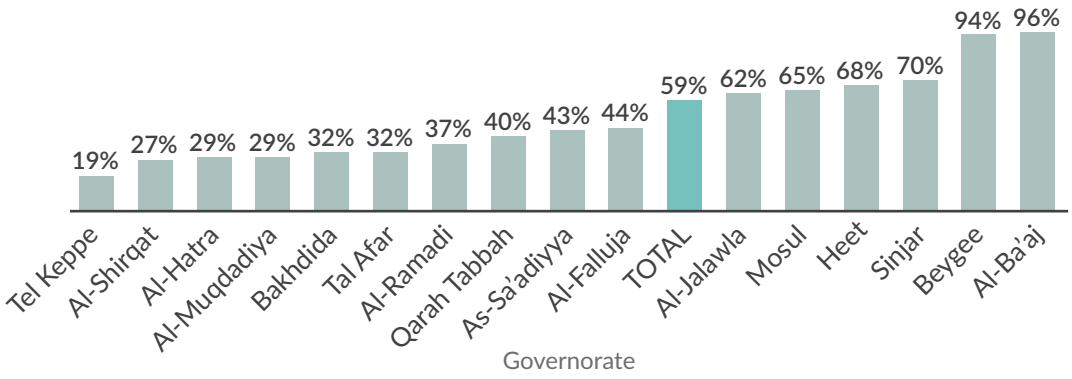
Table 4: *Damage to Asset Classes across 16 Selected Cities*

	Asset Types	Baseline	Total Damaged	Partially Damaged	Destroyed
DAMAGE	*Apartment units*	300,498	175,251	112,302	62,949
	Low income-housing	25,075	17,050	8,763	8,287
	Single family home	211,701	125,875	78,238	47,637
	Villa	6,831	3,097	2,060	1,037
	Total Damage	**544,105**	**321,273**	**201,363**	**119,910**

Housing damage varies across the four housing asset classes. Low-income housing has experienced the bulk of the damage, at 68 percent, indicating that the conflict has severely impacted the low-income population of Iraq, worsening an already fragile situation. In turn, 59 percent of single-family

houses and 58 percent of apartment units were affected by the conflict. Villas experienced less damage, with 45 percent impacted by the conflict. As demonstrated in Figure 4, the extent of housing damage is spread unevenly across the 16 analyzed cities. Three groups of cities emerge. The first group of ten cities with housing damage below 50 percent, four cities where damage levels reach 60—70 percent, and the final group of two cities with around 95 percent of their housing stock reported some impact.

Figure 4: *% Total Damage per City (housing assets)*



D. Sectoral Needs Assessment

To address housing recovery needs in post-war Iraq, an area-based, multi-sector, participatory, inclusive approach is needed. The sheer scale of destruction entails sequencing GOI engagement along a rationale of "fast-tracking housing repairs and preparing for housing reconstruction." As such, it is recommended that:

In the short term, the government: (1) initiates a comprehensive assessment of housing damage and property title status in various areas affected by the conflict. Concurrently; (2) supports housing repairs in cities to fast-track shelter provision and restore livelihoods. The above would be implemented in tandem with the rehabilitation of basic municipal services following an area-based approach; (3) provides temporary and rapid housing solutions to those who live in unsafe structures, in collective centers, or spontaneous settlements including cash transfer and vouchers, supporting ongoing quick, incremental housing repair programs; and (4) designs an inclusive national housing reconstruction scheme that promotes inclusivity, equity, and transparency, while safeguarding housing stock with cultural heritage value.

In the medium term, the government: (1) initiates and facilitates a three- to five-year program for providing incremental housing solutions to residents of destroyed housing (for both homeowners and renters) focusing on vulnerable groups; (2) restores the institutional capacity to manage the sector and initiate policy reforms that strengthen the enabling environment to private sector active engagement in recovery and reconstruction; and (3) initiates policy reforms that introduce land management systems for Iraq that can address land tenure issues, resolve land disputes, and tackle the overall housing supply chain including land use planning and regulation.

In the long term, the government: (1) initiates a 10-year program for the provision of affordable housing solutions to vulnerable groups including implementing public-private partnerships programs in affordable housing and land supply; (2) initiates a 15- year urban upgrading program that addresses the needs of low income social groups living in substandard neighborhoods; and (3) institutionalizes transparency in land management by introducing land management information systems.

Service Delivery Restoration

Restoring housing service delivery requires policy reforms that address both institutional and legislative aspects, as well as capacity building, to; (a) Support the GoI in its vision of transitioning from direct provider of housing to an enabler for the private sector provision of housing; (b) Support market-based finance solutions; (c) Provide nuanced, targeted subsidies; (d) Support land management reforms; (e) Provide an institutional structure that supports the required reforms, and; (f) Support public-private partnerships and solutions in housing provision.

Prioritized and Sequences Needs

Policy options to address housing repair and reconstruction needs depend on several factors, including available resources and existing capacities. These solutions should be based on a comprehensive and ground-based diagnostic. Meanwhile, an interim strategy would suggest increasing housing supply through facilitating the repair of damaged housing that can be restored swiftly to the housing market. This could be implemented in the short-term and would require a total of IQD 5.9 trillion. While support to fully destroyed houses would be initiated in the short-term, a comprehensive neighborhood-wide solution would be required. An area-based approach could support an adequate planning of the reconstruction. Medium- to long- term support to the Housing sector would require an additional IQD 14.7 trillion. In total, the Housing sector needs for the five years will amount to IQD 20.6 trillion.

Table 5: *Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Ninawa	8,800	2,517	6,283
Anbar	3,950	1,130	2,820
Salah Al-Deen	4,158	1,189	2,969
Kirkuk	1,490	426	1,064
Diyala	1,539	440	1,099
Baghdad	371	106	265
Babel	307	88	219
Total	**20,615**	**5,896**	**14,720**

Financing for housing recovery and reconstruction: Financing housing recovery and reconstruction requires a blend of public and private contributions. Based on experiences from other disaster- and conflict-affected regions across the globe, the government should subsidize the construction or repair of core units with a focus on the needs of the vulnerable.[10] To complement the subsidy program, simultaneously, the government should facilitate access of the affected population to finance for housing repair and reconstruction.

Implementation modalities: Housing repair initiatives can be addressed through private sector actors either via owner-driven or contractor-driven modalities based on the nature of the damage in the targeted area, as well as existing capacities. Addressing areas with a high levels of destruction requires planned government interventions to facilitate the private sector and civil society participation.

E. Recommendations and Limitations

(a) Beneficiary identification: A detailed housing damage assessment and beneficiary identification is needed to provide an inclusive, transparent, and equitable basis for supporting affected households with different tenure status (e.g., owners, tenants);

(b) Housing property and land claims: Loss of land records can be a significant source of risk associated with housing recovery and needs to be mitigated at the onset;

(c) Womens rights to land and property ownership: Housing initiatives ought not to exacerbate the already low percentage of property ownership by women. Also, modalities of intervention need to be tailored to cater to the needs of women head of households;

(d) Land use planning, in-situ reconstruction: Support in-situ rebuilding and only adopt relocation when inevitable;

(e) Build back better: Ensure that newly built and rehabilitated houses are resilient to shocks;

(f) Protecting the vernacular architecture: Housing repair and reconstruction need to respect Iraq's unique local architecture and maximize the innovative use of local building materials;

(g) Debris removal: Debris removal, transportation, and processing or disposal as cost and time intensive effort poses significant organizational and environmental challenges. Thus, it is recommended to identify ways to reduce the amount of debris removal by using building techniques that utilize debris for infill or other reconstruction uses. Also, providing incentives to use salvaged materials can be labor intensive, create job opportunities, and provide a quick supply of building and finishing materials;

(h) Housing with historical, cultural value: Addressing damage to residential units with cultural value in neighborhoods such as Mosul's Old City should utilize an adequate strategy that ensures protection and restoration of these houses.

10 The World Bank is currently engaged in conducting a detailed study to provide policy option for the government of Iraq on housing reconstruction subsidy.

Social Sectors

Health

A. Sector Summary

Over the course of prolonged conflict, Iraq's health sector has experienced devastating damages. Damages to the health sector are estimated at a total of IQD 2.7 trillion (US$ 2.3 billion) for the governorates covered in this DNA. Out of this total, damages to hospitals alone in affected cities is expected to cost an approximate IQD 1.2 trillion (US$ 1.0 billion), damage estimates incurred by health centers and health offices point to a total damage cost of IQD 14.3 billion (US$ 12.2 million), In addition, losses are estimated at IQD 935.8 billion (US$ 802.6 million). Such damages have severely affected health care service delivery causing spikes in morbidity and mortality.

An analysis of the needs on the short- and long-term points to a total needs estimate of IQD 5.2 trillion (US$ 4.4 billion).

B. Background, Conditions, and Trends

Once considered among the best in the region, Iraq's health indicators have deteriorated as a result of prolonged conflict and are currently below comparative countries. Life expectancy in Iraq stands at around 69 years, a figure that is below comparative countries and the MENA average of 73 years. While life expectancy has increased since the 1960s, growth seems to have stagnated in the last decade, likely due to ongoing conflict in the country. Iraq's maternal and child health indicators have not achieved the millennium development goals (MDGs). Malnutrition is emerging as an important public health challenge particularly for children under the age of five. Furthermore, a growing and aging population combined with a rise in noncommunicable diseases (NCDs) and injuries will carry significant implications for the health care financing and service delivery in the future.

C. Sectoral Damage and Loss Assessment

Facilities covered under this DNA are hospitals, health centers, and health offices in the governorates of Anbar, Diyala, Salah Al-Deen, and Ninawa. The facilities analyzed include 56 hospitals, 87 health centers, and 3 health offices distributed in 15 cities.

Damages

In terms of damages to those facilities, with the exception of Tal Afar, Al-Muqdadya (Ibid), and Al-Ramadi, all other cities have at least half of their facilities either partially or fully damaged. Such damages significantly hinder service delivery by affecting bed capacity and ability of the system to provide critical inpatient care. Service delivery is also affected by the functionality of facilities. Available data show high rates of nonfunctional facilities in cities that have high damages. Tal Afar, Al-Muqdadya (Ibid), and Al-Ramadi seem to be exceptional cities with 50 percent of more of their facilities incurring no damage.

Table 6: *Damage Inventory*

	Asset Types	Baseline	Total Damaged	Partially Damaged	Completely Destroyed
DAMAGE	*Hospital*	56	43	24	19
	Health center	97	42	35	7
	Health office	3	2	2	0
	Total Damage	**156**	**87**	**61**	**26**

Damages to hospitals alone in affected cities is expected to cost an approximate IQD 1.2 trillion. Using satellite imagery, social media, and ground verification mechanisms, a damage assessment was conducted on the hospitals of each city. Damage was estimated by assessing physical damages incurred by hospitals, determining their size in square meters, and estimating damages per operational square meter. The estimated damage per operational square meter of $1800 was determined by reference to previous DNAs conducted in the region.[11] Estimated unit costs provided by the vendor were not applicable because they did not hold any indication on the size of facilities analyzed and cost estimates deviated significantly from the cost used in other countries with similar experiences.

If no data are provided on the size of the hospital, the average size of hospitals included in this analysis is used as a proxy. All costs include damage cost of infrastructure and do not include cost of land acquisition (assuming that facilities could eventually be rebuilt on the same parcels of land). Table 6 provides a detailed breakdown of the damage assessment by governorate and by city for both private and public health hospitals.

The bulk of the damage cost is related to public hospitals. Damages to public hospitals were estimated to be approximately 92 percent of total damages for hospitals, whereas damages to private hospitals amounted to approximately 8 percent of total damage costs for hospitals.

Damage estimates incurred by health centers and health offices point to a total damage cost of IQD 14 billion. Cost of damages for such facilities depends on the magnitude of damages and is calculated as a lump sum fixed cost per facility since size tends to be uniform.

Governorate-level Damage Extrapolation

Total damages, including extrapolated damages to the health sector in the governorates covered by this DNA, is estimated to be approximately IQD 2.7 trillion and losses are estimated at a total of IQD 935.8 billion). Data could only be gathered for 16 cities within the assessed governorates. Given that these cities serve the majority of the population of each governorate, estimates for

11 Cost of reconstruction is US$ 1,700 per square meter as used in other DNA exercises such as Egypt, Syria, and Yemen plus an addition $100 premium per unit for various costs such as transportation, security premium, etc.

damages and losses will be calculated using extrapolation based on population size and conflict intensity. Also since rural areas tend to rely mostly on primary health care services supplied through health centers and offices, extrapolated figures will take this difference into account. Table 7 presents the estimated damages and losses incurred in each of the governorates included in this DNA.

Table 7: *Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	477.8
Babel	13.8
Baghdad	91.9
Diyala	190.6
Kirkuk	523.3
Ninawa	1,236.8
Salah Al-Deen	175.6
Total	**2,709.8**

Damage and losses incurred by the health sector in Iraq significantly hinder service delivery by affecting characteristics such as bed capacity and ability of the system to provide critical inpatient care.

D. Needs Assessment

Analysis of the cost of short- and long-term needs for the health sector, including extrapolation, shows a total estimated cost of IQD 5.2 trillion out of which IQD 4.7 trillion are public sector needs and IQD 440 billion are private sector needs.

Proposed funding recovery should focus first on increasing access to primary health care services provided mainly by rehabilitation of primary health care (PHC) facilities and training health workers to fill the gap in the short term, and ensuring availability of medical supplies. As the data show, rehabilitation of health centers is estimated at around IQD 15 billion which is a reasonable budget to allocate in year one. However, one should also ensure that these centers are linked to functioning secondary care hospitals to ensure appropriate referral between health centers and hospitals. Hence, it is important to map these PHC centers and include the closest regional referral hospital in the rehabilitation plan. Funding should also focus on increasing the provision of essential health services (immunization, maternal and child health, and psychosocial support services) by leveraging resources on the ground (contracting and partnering with international organization, and non-state actors), strengthening community-based interventions, and strengthening surveillance systems to control the spread of diseases. It will be key to actively engage women in these efforts, due to their prominent role in caregiving activities.

In the medium term, focus should be laid on expanding rehabilitation efforts to improve the curative sector (secondary and tertiary care hospitals) and to reach rural areas. Focus should also be on improving financial coverage for the poor through, for instance, defining and subsidizing a package of essential health care services to the poor, mainly women and children. The package should include sexual and reproductive health, maternal and child health, nutrition services, and mental health and psychosocial support with a focus on women survivors of gender-based violence. Funds should be channeled as well to introduce financing mechanisms to increase demand (such as conditional cash transfers to the poor) and strengthen supply of human resources (such as introduction of results-based financing (RBF) mechanisms to incentivize providers for the delivery of quality care).

Extrapolating needs using the same methodology used previously leads to a total estimate of IQD 5.2 trillion for all governorates covered by this DNA. Table 8 breaks down those needs by governorate.

Table 8: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	*Infrastructure reconstruction*	834.5	166.9	667.6
	Service delivery restoration	83.5	16.7	66.8
	Total Anbar	**918**	**183.6**	**734.4**
Babel	*Infrastructure reconstruction*	14	2.8	11.2
	Service delivery restoration	1.4	0.3	1.1
	Total Babel	**15.4**	**3.1**	**12.3**
Baghdad	*Infrastructure reconstruction*	93.1	18.6	74.5
	Service delivery restoration	9.3	1.9	7.5
	Total Baghdad	**102.5**	**20.5**	**82**
Diyala	*Infrastructure reconstruction*	335	67	268
	Service delivery restoration	33.5	6.7	26.8
	Total Diyala	**368.5**	**73.7**	**294.8**
Kirkuk	*Infrastructure reconstruction*	921.6	184.3	737.3
	Service delivery restoration	92.2	18.4	73.7
	Total Kirkuk	**1,013.8**	**202.8**	**811**
Ninawa	*Infrastructure reconstruction*	2,185	437	1,748
	Service delivery restoration	218.5	43.7	174.8
	Total Ninawa	**2,403.5**	**480.7**	**1,922.8**
Salah Al-Deen	*Infrastructure reconstruction*	307.1	61.4	245.7
	Service delivery restoration	30.7	6.1	24.6
	Total Salah Al-Deen	**337.8**	**67.6**	**270.2**
Grand Total–All Governorates		**5,159.3**	**1,031.9**	**4,127.5**

Long-Term Needs (beyond 5 years):
In the long run, further damage and needs assessments are needed to get more accurate numbers to prioritize needs. Future iterations of this exercise should focus on increasing triangulation with as many different sources as possible, as accurate estimates of damage are difficult to obtain. It is also recommended to coordinate with reputable international humanitarian NGOs who have a presence in Iraq to provide further verifiable data. These assessments will be essential to develop a long-term strategy for improving health coverage in Iraq.

E. Implementation Arrangements

Implementation of health needs based on the assessment will require continuous coordination between financing institutions and various government agencies including the Ministry of Health, the Ministry of Finance, the Ministry of Construction and Housing, and the Ministry of Labor and Social Affairs. Challenges that might be faced during implementation involve mainly ongoing security concerns that might prevent efficient reconstruction and rehabilitation in some affected areas.

F. Recommendations and Limitations

Limitations to this assessment primarily involve scarcity of data that could minimize the use of assumptions and yield more accurate estimations of damages, losses, and needs. Having said this, and since health sector data are typically extremely challenging to gather in fragility, conflict, violence settings, particularly in a short period of time, future analysis should lay great emphasis on allocating an expansive amount of time for accurate data collection both virtually and on the ground.

It is also recommended that future assessments emphasize further linkages between the health sector and other basic services such as access to water, electricity, and road infrastructure to get a better determinant of the functionality of health facilities. Furthermore, health services must be considered from a quality as well as from an accessibility standpoint. Although this assessment does take quality of health services into consideration through its assessment of recovery needs, more thorough examinations should consider key components that yield high-quality health services.

Social Sectors

Education

A. Sector Summary

The total cost of the severe conflict damages to the Education sector in seven governorates[12] within the Republic of Iraq is estimated at IQD 2.8 trillion (US$ 2.4 billion) (Table 10).[13] Primary and secondary schools represent more than 90 percent of facilities assessed (59 percent and 32 percent of infrastructures assessed respectively). Most schools assessed are public schools, as the proportion of private sector schools is still underdeveloped across the seven governorates, except for Baghdad, which has an estimated total of 5 percent of private schools.

Losses in education equipment are immense and range from large-scale items such as school buses to smaller, but equally important items, such as student notebooks and chalk. Across the seven governorates, it is expected that all school materials have been depleted or destroyed with total loss estimates reaching IQD 123 billion (US$ 106 million). Conflict areas endured the greatest losses, given the intentional campaign to spread extremism through education. In the recovery and reconstruction phase, all such textbooks that promoted extremism must be removed and new materials need to be printed and distributed to students. Needs for the Education sector accrue a total IQD 5.4 trillion (US$ 4.6 billion).

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

Iraq's education system significantly deteriorated over the last 40 years in terms of access, equity, and quality. Despite efforts to remain perseverant and resilient, several years of crisis contributed to out-of-date policies and regulations.

Despite the threats of conflict, access to primary and secondary education increased over time but dropout rates remained significant. Total enrollment in primary education reached 6 million in 2012, compared to 3.6 million in 2000 (UNICEF 2017). Despite this positive trend, it is estimated that in 2013, about 14 percent of school aged children did not have access to primary education. Gender gaps remained high, with girls more likely to experience poor access and remain out of school. About 500,000 children of primary school age and 650,000 children at lower secondary age were out of school, including those who dropped out and never attended school (UNICEF 2017). Concerns with girls' safety on their journey to school and the introduction of practices, such as early marriage, have resulted in higher dropout rates for girls and an underrepresentation of girls in both primary and secondary schools. In addition, the share of qualified teachers was 79 percent of the total teaching workforce, with most unqualified teachers found in pre-primary education.

12 The seven governorates included in this assessment are: Anbar, Babel, Baghdad, Diyala, Kirkuk, Ninawa, and Salah Al-Deen.
13 Levels of education included primary, secondary, vocational, college, and universities, as well as one education office in Mosul. The 16 cities included in the analysis are: Al-Jalawla, As-Sa'adiyya, Al-Ba'aj, Beygee, Bakhdida, Al-Falluja, Al-Hatra, Heet, Mosul, Al-Muqdadya (Ibid), Al-Ramadi, Sinjar, Al-Shirqat, Tal Afar, Tel Keppe, and Qarah Tabbah. Damages assessment include facilities, furniture, and equipment using unit cost derived from similar recent exercises in Iraq, in particular from the costing of the Emergency Operation for Development/Additional Financing (EODP/AF).

The median education level of Iraqis was low and of poor quality due to multiple sectoral constraints coupled with economic and social limitations, namely (1) a significant number of overaged and out-of-school children, (2) an increase in inequities in gender and in urban/rural distribution, (3) deterioration of teaching and learning conditions, (4) erosion of the quality of the teaching force, (5) distorted and outdated curricula, and (6) a standstill in policy and system development.

The extent of damages to education facilities and the limited access to functioning schools with safe learning environments varies across governorates and cities. For example, education facilities in the city of Sinjar were destroyed much more extensively compared to Qarah Tabbah. This variation is dependent on the location of IDPs and the status of the security situations.

Schools often serve multiple functions, some of which have no relation to the education sector. During the conflict, school facilities were targeted as a resource by armed groups and displaced populations. In 2015/2016, 1,500 school buildings across Iraq were used to house displaced populations, while 130 were occupied by armed groups in areas such as central Iraq.

It is estimated that across the seven governorates, access to education is severely limited and services have not been restored to normal levels of functionality. Although, demand for schools is high in areas with functioning facilities; however, the school resources and availability of qualified teachers to manage overflowing classrooms and the myriad of psychosocial and learning challenges facing their students are limited. Anecdotal evidence suggests many teachers have been unpaid for months and years (UNICEF 2017).

Table 9: *Damage Inventory—All City Roll Up (no. of facilities)*

	Asset Types	Baseline	Total Damaged	Partially Damaged	Completely Destroyed	Unknown
DAMAGE	*Primary school*	609	327	229	98	34
	Secondary school	326	189	139	50	11
	Primary and secondary school	6	4	4	0	0
	Vocational school	48	40	23	17	2
	College/university	41	36	12	24	0
	Education office	1	1	0	1	0
	Total Damage	**1031**	**597**	**407**	**190**	**47**

Source: World Bank 2017.

Table 10: *Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	747.6
Babel	100.1
Baghdad	393.7
Diyala	165.9
Kirkuk	474.3
Ninawa	741.5
Salah Al-Deen	139.4
Total	**2,762.6**

C. Key Constraints and Challenges

Access to functioning safe school facilities is limited due to both facility and infrastructure degradation. Other binding constraints include the lack of appropriate teaching and learning materials; limited access to water and electricity in most schools; limited number of qualified teachers and people trained to manage children emerging from traumatic experiences; and limited district and central level managerial capacity.

D. Needs Figures

Total reconstruction and recovery costs are estimated at IQD 5.4 trillion for the seven governorates. This figure considers both the recovery, which is the soft aspect of rehabilitation, such as teacher training, remedial programs, and so on, and reconstruction needs, which account for infrastructure. It is estimated that the reconstruction of education facilities across the 16 assessed cities will cost the government of Iraq (GoI) IQD 921 billion, while the recovery needs amount to IQD 92 billion, totaling an overall needs number of IQD 1 trillion. Reconstruction and recovery efforts will need toabide bygovernment standards for building safety and habitation, while adhering to gender and physical accessibility standards for school common grounds and WASH (water, sanitation, and hygiene) facilities.

Parallel to the reconstruction efforts is the need to restore interim and long-term teaching and learning services (recovery needs). This includes the necessity to provide school equipment, textbooks, teaching and learning materials, opportunities for teachers' professional development, and overall sector support to ensure day-to-day functioning of services. Accelerated learning programs (ALPs), remedial support, community-based early childhood education programs, and out-of-school youth programs are programs that will support student learning, either solely or in combination with other interventions. These programs work with the objective of reorienting students so that they are ready to enter the formal system, or so that they may acquire the skills necessary to help them succeed beyond schooling.

Total recovery and reconstruction costs for the Iraqi education sector in the seven identified governorates are IQD 5.4 trillion (Table 11). Ninawa, Kirkuk, and Baghdad represent 58 percent of the total damages. The most affected governorates are Anbar and Ninawa with total reconstruction and recovery needs amounting to IQD 1.5 and 1.4 trillion, respectively.

E. Assessment of Crisis Effects and Impact

The ISIS education system was designed to incite violence and extremism, and prompted parents to refrain from sending their children to school. This had two major effects: (1) it undermined parents' trust in the Iraqi education system, and (2) it planted the seeds of violence and radicalism in the minds of children and adolescents. Reconstruction efforts in education would include an integrated curriculum focused on peace and social cohesion, as well as accelerated learning programs to rapidly bridge the gap of education for those children who missed years of schooling.

F. Sectoral Needs Assessment

Restoration of education services must not sideline support aimed at girls and out-of-school youth. Restoration must reduce the congested classrooms, along with development of a monitoring and evaluation system to assess progress and anticipate issues. While the primary focus of reconstruction efforts should be on rehabilitation and reconstruction of damaged facilities with equipment and furniture, it is critical to start institutional capacity strengthening as well. A comprehensive implementation plan should be developed based on a detailed assessment on the ground, which could focus on the following:

- Provide education services in all cities with facilities to be restored progressively, starting with populated areas, but also in areas where all schools are damaged. The implementation plan should include provisions for girls, disabled children, and children with special needs.
- Restore administration facilities to ensure a functioning system is in place.
- Develop and implement an in-service teacher training program, which includes psychosocial and emotional support, and social cohesion.
- Develop a system approach to improve education services with a sound data system, teacher professional development, curriculum improvement, student learning assessments, vocational/technical education, and higher education.

G. Implementation Arrangements

The Ministry of Education (MoE) is primarily responsible for restoring education services and rebuilding the education system and infrastructure. International experiences also suggest that restoration of post-conflict social services requires strong community participation and engagement through social mobilization and empowerment. The reconstruction process must be seen as an opportunity to rebuild social cohesion and communities' engagement, which can in turn become a leverage for attenuating risks related to extremism, fraud, and corruption.[14]

14 WB report Iraq Economic Monitor, April 2017.

Main limitations of the assessment: Limited data on the size of schools and number of classrooms meant that unit cost based on the number of classrooms could not be conducted.

Table 11: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	*Infrastructure reconstruction*	1,326.3	265.3	1,061
	Service delivery restoration	132.6	26.5	106.1
	Total Anbar	**1,458.9**	**291.8**	**1,167.1**
Babel	*Infrastructure reconstruction*	177.7	35.5	142.1
	Service delivery restoration	17.8	3.6	14.2
	Total Babel	**195.4**	**39.1**	**156.3**
Baghdad	*Infrastructure reconstruction*	698.3	139.7	558.7
	Service delivery restoration	69.8	14	55.9
	Total Baghdad	**768.2**	**153.6**	**614.5**
Diyala	*Infrastructure reconstruction*	294.4	58.9	235.5
	Service delivery restoration	29.4	5.9	23.5
	Total Diyala	**323.8**	**64.8**	**259**
Kirkuk	*Infrastructure reconstruction*	841.4	168.3	673.1
	Service delivery restoration	84.1	16.8	67.3
	Total Kirkuk	**925.5**	**185.1**	**740.4**
Ninawa	*Infrastructure reconstruction*	1,315.4	263.1	1,052.4
	Service delivery restoration	131.5	26.3	105.2
	Total Ninawa	**1,447**	**289.4**	**1,157.6**
Salah Al-Deen	*Infrastructure reconstruction*	247.4	49.5	197.9
	Service delivery restoration	24.7	4.9	19.8
	Total Salah Al-Deen	**272.1**	**54.4**	**217.7**
Grand Total–All Governorates		**5,390.9**	**1,078.2**	**4,312.7**

I. Recommendations for future recovery plans

In addition to rehabilitation and reconstruction activities, the following should be priority interventions: (1) delivery of teaching and learning materials; (2) continuous professional development, to re-skill teachers and provide them with the necessary knowledge and tools to address the varying needs of students; (3) community engagement program and capacity building to support improved accountability and service delivery; and (4) develop an education management information system to ensure accurate availability of data for decision making.

Recovery plans need to focus on the rehabilitation of access to safe, equitable, and quality education that is well coordinated and driven by an evidence-based development approach. A multifaceted approach to restoring and upgrading the education sector needs to be established that includes cooperation between state, non-state (i.e., nongovernmental organizations, aid and development agencies), and community actors. To bridge short-term demands for the education sector, the GoI needs to create the space for other entities to enter the sector and offer interim support services that can address the high demand for education services. Community-based approaches and temporary programs are one way to bridge such gaps and afford the government with added time to assess and determine their human and resource capacity needs to deliver education services. Given the high level of destruction and sector needs, MoE could focus on the following three areas:

a) Expanding access to safe and equal opportunity education

- Facilities need to be restored and rehabilitated in a manner that ensures equal access for all students, including gender sensitive access to WASH facilities and power, teaching staff, and learning resources that need to be exerted particularly in areas that were most devastated by the crisis

b) Improve the quality of formal education

- Rebuilding the teaching profession by recruiting qualified teachers and expanding teacher professional programs to prepare and incentivize teachers to return to the field
- Capacity building for central and regional ministry personnel to implement education development efforts to allow for medium- and long-term planning (e.g., community support and engagement, parental participation and local donations)
- Expanding the MoE approved curriculum and integrating peace education as a key priority (e.g. distributing MoE approved textbooks to territories formerly controlled by ISIS is a high visibility approach to re-instilling trust in the sector)

c) Strengthen the capacity of the education system and communities to deliver a timely, coordinated and evidence-based education response

- Instilling a culture of evidence-based decision making by strengthening institutional capacity, data collection, and analysis practices across all MoE administration
- Updating or developing an Education Management Information System (EMIS) within the MoE and introducing a strong monitoring and evaluation system to support evidence-based policy making

Social Sectors

Social Protection, Employment, and Livelihoods (inc. Poverty)

A. Sector Summary

The sector experienced losses estimated at IQD 3.5 trillion per year (US$ 3.0 billion), totaling IQD 10.4 trillion (US$ 8.9 billion) over the period of the conflict. The impact on livelihoods in the affected governorates was severe, which saw an increase in unemployment from 12.6 percent to 17.7 percent between 2014 and 2017, as well as increased underemployment from 5.9 percent to 9.7 percent. In total, the seven affected governorates recorded 314,000 newly unemployed persons and a further 224,000 individuals who had become newly underemployed. IDPs and IDP-hosting households have been hardest hit by loss of livelihoods and displacement. Food shock sreached 40 percent of IDPsinaffectedgovernorates and close to 20 percent of non-IDP households. Household assets have been significantly diminished, while multidimensional poverty has reached 23 percent amongst IDPs, while asset poverty has reached 70 percent. Consequently, the poverty rate in 2014 across the seven governorates was estimated to have climbed to 22.8 percent from 17.0 percent in 2012. Recovery needs are estimated at IQD 1.9 trillion (US$ 1.6 billion) in the first year and IQD 1.4 trillion (US$ 1.2 billion) in each subsequence year, resulting in an aggregate sector needs total of IQD 7.5 trillion (US$ 6.4 billion). Moreover, there is an urgent need for short-term cash support for many of the 929,000 people without employment, as well as longer term cash transfers for the 333,000 new poor households who are not covered by the current safety net.

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

Poverty and Livelihoods: Prior to the crisis, poverty was gradually declining; between 2007 and 2012, the national poverty rate fell from 22.4 percent to 18.9 percent. The slow rate of decline was due to the dominance of the oil sector in economic growth, which accounted for almost 60 percent of GDP but employed only 1 percent of the workforce. Between 2012 and the start of the 2014 conflict, labor market outcomes had been improving in Iraq, with unemployment falling to 12.6 percent from 16.9 percent, and underemployment from 8.4 to 5.9 percent.[15]

Social Protection: The pre-crisis cash transfer program in Iraq was inefficient and fragmented, providing cash transfers to 950,000 households, but with significant leakages.[16] A policy reform resulted in new social protection legislation, and the Minister of Labor and Social Affairs (MOLSA) agreed on a strategic road map for a comprehensive social protection system in Iraq. The new law made poverty the driving social assistance factor for eligibility, replacing the ineffective categorical targeting with a combination of proxy means-testing (PMT) and geographical targeting. It also placed emphasis on social workers to help identify the poor and provide case management. Poverty targeting has now been implemented and 1,300 social workers hired. The role of social worker, who, among other services, provide data collection on potential beneficiaries and case management, is critical in a delicate environment characterized by fragility and conflict such as Iraq.

15 Underemployment (involuntary part-time) means someone is working part-time but would work more hours if they could find more work. The average hours worked in 2017 when underemployed was 24 hours per week.
16 Iraq Household Socio-Economic Survey 2012.

C. Sectoral Damage and Loss Assessment

Livelihoods: Labor income is critical in Iraq especially for the poor, accounting for 60 percent on average of all household income.[17] Private sector employment was heavily affected by the crisis, but IDPs with public sector jobs continued to receive salaries and benefits. Recently collected household survey data provide initial estimates of effects, although these are preliminary and underestimated. Unemployment had fallen from 16.9 percent in 2012 across the seven affected governorates to 12.6 percent in 2014 pre-crisis, and underemployment from 8.4 percent to 5.9 percent. By late 2017, unemployment had reached 17.7 percent and underemployment 9.7 percent, with Anbar (33.6 and 9.8 percent respectively) and Diyala (20.7 and 16.2 percent) particularly affected. These impacts are underestimated as many neighborhoods in Anbar, Ninawa, and Salah Al-Deen could not be surveyed due to security concerns. Most likely, these neighborhoods have experienced increases in unemployment, underemployment, and other negative outcomes. There are distinct differences in labor market outcomes for the displaced versus non-displaced; IDP households are experiencing unemployment rates of 28.1 percent compared to 18.3 percent for non-displaced households in the seven governorates.

In total, these seven governorates saw 314,000 people newly unemployed and a further 224,000 people who had become newly underemployed. This represents a total loss to livelihood of IQD 3.5 billion annually (Table 12) from the conflict spread over all governorates, especially in Ninawa and Anbar.[18]

Table 12: *Loss—All Governorate Roll Up (in IQD billion)*

Loss of livelihoods due to increase in unemployment	2,565
Loss of livelihoods due to increase in underemployment	912
Total Loss	**3,477**

Table 13: *Governorate-Level Damage and Loss Cost (in IQD billion)*

Governorate	Loss Cost	Governorate	Loss Cost
Ninawa	811	*Baghdad*	231
Kirkuk	154	*Babel*	325
Diyala	480	*Salah Al-Deen*	256
Anbar	684	**Total Loss**	**3,477**

17 Iraq Poverty Assessment, Volume I, p. 3.22.

18 The 2012 average monthly wage of IQD 653,000 from the 2012 Iraq Household Socio-Economic Survey was inflated to 2014 prices using CPI inflation. This was applied to the increased number of unemployed, who are assumed to have lost the full wage. Half of this was applied to the underemployed, who work roughly half the time. The fall in full-time employment is about the same as the increase in underemployment, indicating that the newly underemployed used to be full-time, justifying a half wage loss estimate.

Social Protection: The number of social workers killed or displaced in the affected governorates is unknown. They represent the main sectoral assets, and any loss represents the impact on the delivery of the poverty-targeted cash transfer program, particularly with respect to identifying and verifying new applicants. Nonetheless, the Public Distribution System (PDS), a near-universal food rations program relied upon by most households, continues to function in all affected governorates, with at least 95 percent of households receiving rations in most governorates. However, this falls to 90 percent in Salah Al-Deen and 80 percent in Ninawa.

D. Assessment of Crisis Effects and Impact

IDPs and IDP-hosting households are far more likely to have suffered negative shocks, including forced displacement, violence, and insecurity, as well as damage to dwellings and assets. Most IDPs suffered from a loss of job or business, as well as a loss of rations. To cope with these shocks, many have turned to friends and family, receiving both cash and in-kind support, as well as from the government, international organizations, donors, charities, and nongovernmental organizations (NGOs). However, in spite of this support, a quarter of IDP households do not receive rations, a critical source of food. Not only were IDP households more likely to suffer from negative shocks, they were more likely to be affected and slower to recover. While only seventy-nine percent of residents were negatively affected by shocks, 97 percent of all IDP were negatively affected.[19] Fifty-nine percent of IDP households had not yet recovered from their shock, either partially or in full, compared to only 27 percent of residents.

As a consequence, the poverty rate in 2014 across the seven governorates was estimated to have climbed to 22.8 percent from 17.0 percent in 2012.[20] Although reductions in public transfers appear to have contributed to higher poverty, the most significant factor was the loss of labor income due to disruption in agricultural activities, interruption in the operation of businesses, and loss of jobs associated with forced displacement.

An asset ownership index has been constructed as a measure of household economic well-being.[21] By this measure, as with consumption poverty, asset poverty fell from 25.3 percent to 13.0 percent between 2012 and pre-crisis 2014, but rose to 28.0 percent in 2017. This was driven primarily by displacement. Only 24 percent of residents were asset poor in 2017, but 70 percent of IDPs were.

The frequency of food shocks in 2017 was considerably higher for IDPs than other types of households, with 40 percent of IDPs in the affected governorates suffering and 30 percent in non-affected areas to which they have fled suffering.[22] Only nine governorates throughout Iraq have food shocks including all seven affected governorates. One-third of Ninawa is currently suffering from food shocks.

19 Survey of Well-Being via Instant Frequent Tracking data and World Bank calculations.

20 Average regional consumption poverty rates were applied to governorate populations to get governorate poverty head counts. The head counts for the seven affected governorates were aggregated and compared to aggregate population to get the affected governorate poverty rate. The regional rates were from World Bank and the Government of Iraq and Kurdistan Region (2015) *Losing the Gains of the Past*. The "ISIS-affected" region in the report includes Anbar, Ninawa and Salah Al-Deen. Kirkuk and Diyala form the "rest-of-the-North;" Babel takes the "Centre" regional average; and Baghdad is its own region.

21 Principal Component Analysis was conducted on the pooled 2012, 2014, and 2017 datasets. The first component was kept as an asset index, then asset poverty was assigned for those households in the poorest 25 percent by asset index score.

22 Survey of Well-Being via Instant Frequent Tracking data and World Bank calculations on whether a household faces one of four food shocks.

A non-monetary poverty measure of household welfare, based on school enrollment, living conditions, and access to services was also constructed.[23] This measure of multidimensional poverty fell nationally between 2012 and 2014 from 25.9 percent to 16.8 percent, but progress stalled due to the crisis, declining only slightly to 14.8 percent, although survey restrictions excluded the worst affected neighborhoods and likely understated the 2017 estimate. Moreover, the aggregate results masked widely different outcomes for different households. Multidimensional poverty for residents (14.1 percent) was far lower than for the displaced (22.1 percent).

E. Sectoral Needs Assessment

Two forms of income support are urgently needed in the affected areas. First, the large increases estimated in poverty mean the cash transfer (CT) program needs to be greatly expanded to help support the newly poor. Second, the large increases in unemployment and underemployment mean a public works (PW) program is needed to both rebuild local infrastructure and provide short-term employment and income support.

Based on estimated increases in the number of households pushed into poverty,[24] preliminary estimates for governorates in the liberated zones indicate a very large need for CT. Before the crisis there were around 309,000 CT beneficiaries in the seven governorates.[25] By 2014 the number of poor households had risen to 642,000. This means that there are 333,000 additional households apart from existing beneficiaries in need of transfers. At a monthly transfer per household of IQD 350,000, this represents an annualized need of an additional IQD 1.4 trillion above existing CT spending, and a total of IQD 7.5 trillion over the next five years.

Rebuilding of local infrastructure through PW can provide employment to able, working age people. However, PW takes time to implement and there is a need for short-term income support. There are 514,000 nonpoor households with at least one unemployed worker, in addition to the newly poor estimates above (Salah Al-Deen already covers sufficient poor households with unemployed workers). Assuming a three-month CT of IQD 350,000 for these households waiting for PW to become operational, there would be an additional need of IQD 540 billion.

The PDS continues to signify an important food source. To meet the needs of the poor residents and IDPs the PDS, as well as humanitarian assistance, should be improved and enhanced. Enabling households and workers to recover their productive and income-generating activities and increasing the resilience of livelihoods to future shocks must be key components of the reconstruction and recovery process. IDP households mentioned their primary needs as food and employment rather than health care and shelter.[26] Nonetheless, some IDPs have been unable to collect PDS rations; while 97 percent of resident households receive PDS rations, only 74 percent of IDPs do.

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23 Child enrollment; the quality of a household's walls, floor, and ceiling for living conditions; and access to electricity and clean drinking water for services. Each of these categories is weighted equally at a third.

24 *Losing the Gains of the Past* (op.cit.).

25 In 2013 there were 541,000 beneficiaries in the seven governorates. Around 43 percent were removed once PMT poverty targeting was applied to the existing roster.

26 Iraq: Comprehensive Vulnerability and Food Security Analysis 2016 (Data collected April–May 2016) World Food Programme.

Table 14: *Governorate Prioritized and Sequenced Needs (in IQD billions)*[27]

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	*Transfer for the poor*	1,064.5	212.9	851.6
	Transfers for nonpoor with unemployed workers	37.5	37.5	—
	Total Anbar	**1,102**	**250.4**	**851.6**
Babel	*Transfer for the poor*	203.4	40.7	162.7
	Transfers for nonpoor with unemployed workers	90.8	90.8	—
	Total Babel	**294.2**	**131.5**	**162.7**
Baghdad	*Transfer for the poor*	639.4	127.9	511.5
	Transfers for nonpoor with unemployed workers	253.1	253.1	—
	Total Baghdad	**892.4**	**381**	**511.5**
Diyala	*Transfer for the poor*	256.1	51.2	204.9
	Transfers for nonpoor with unemployed workers	113	113	—
	Total Diyala	**369.1**	**164.2**	**204.9**
Kirkuk	*Transfer for the poor*	489.9	98	391.9
	Transfers for nonpoor with unemployed workers	21.3	21.3	—
	Total Kirkuk	**511.2**	**119.3**	**391.9**
Ninawa	*Transfer for the poor*	3,137.1	627.4	2,509.7
	Transfers for nonpoor with unemployed workers	25.5	25.5	—
	Total Ninawa	**3,162.5**	**652.9**	**2,509.7**
Salah Al-Deen	*Transfer for the poor*	1,200.9	240.2	960.7
	Transfers for nonpoor with unemployed workers	—	—	—
	Total Salah Al-Deen	**1,200.9**	**240.2**	**960.7**
Grand Total–All Governorates		**7,532.4**	**1,939.4**	**5,593**

27 *Note:* Cash transfers for the poor are annual and ongoing, representing 12 months of transfers; those for nonpoor households with unemployed workers are for three months only. All needs are above existing program costs.

F. Implementation Arrangements

MOLSA has progressed in the implementation of the Social Protection Strategic Roadmap. Complementing this work, the World Bank is supporting the design and financing of a Social Fund for Development (SFD) to support locally-driven initiatives to improve the living conditions and opportunities of the poor and vulnerable in Iraq. The emerging needs in the liberated zones pose challenges to the process. There is a need to move quickly into the liberated areas. There is also a need to provide for resilient social safety net systems, and the SFD will leverage this infrastructure for targeting (including utilizing social workers at the community level to identify needs). In addition, labor intensive subprojects under the SFD will utilize the workdays generated by the Emergency Social Stabilization & Resilience Project (ESSRP), coordinating across the two operations, particularly in the liberated areas, while also building sustainable livelihood opportunities through targeted microfinance programs. The Supreme Committee for Poverty Reduction Strategy (chaired by the Prime Minister) and the related technical committees will provide policy and operational oversight to strengthen this synergy. Activities and projects will specifically target vulnerable populations, particularly women and youth. MOLSA has a key safety net program in place serving the most vulnerable groups through cash transfers based on improved outreach and targeting. However, this program needs to be expanded to meet the much larger number of poor households in affected governorates documented in this section.

G. Recommendations and Limitations

Social protection, livelihoods, and poverty are soft sectors. There is no physical infrastructure to which damage can be assessed, and information on the impact on household welfare is limited. It has been fortunate that a governorate representative household survey (Survey of Well-Being via Instant Frequent Tracking) was in the field in late 2017, allowing initial estimates of the labor market and other welfare outcomes. Nonetheless, while the major cities in each governorate will significantly influence the governorate estimates, we cannot estimate city-level effects precisely. Moreover, losses in livelihoods rely upon assumptions based on prior employment status and earnings capacity, and to that extent, are approximate only. Estimates of poverty, and therefore cash transfer needs, are based on micro-simulations, as 2017 poverty rates will not be available until mid-2018. The final estimates are likely to vary from the simulation estimates.

The most important intervention in the short term is income support through cash transfer and public works programs. Cash transfers can be implemented quickly and effectively, while public works programs can also become active within the first year, both rebuilding local infrastructure and providing employment and income support. However, longer term livelihood recovery means rebuilding the physical, social, and economic infrastructure which underpin employment creation. Moreover, access to credit and skills development are also key interventions which can help rebuild livelihoods.

Social Sectors

Cultural Heritage and Tourism

The value of heritage assets stems from their authenticity and connections to the past, and if lost cannot be regained through modern reconstruction. This report distinguished four main typologies of cultural heritage assets: archaeological sites, historic religious and secular buildings, and museums/libraries. Contemporary religious buildings were included to emphasize social aspects that are important for daily life.

A) Cultural Heritage Sector and Contemporary Religious Buildings
Damage and loss calculation of cultural heritage is unique compared to other sectors, due to the non-monetarized value attached to cultural heritage assets.[28] Overall, the cultural heritage sector suffered nearly IQD 131.8 billion (US$ 113 million) in damages to its ancient archaeological sites, historic religious and secular buildings, and priceless museums and libraries. Also the destruction of contemporary religious buildings in Iraq was wide spread, affecting every governorate, city, and town. The damages total IQD 101 billion (US$ 86.6 million) for 283 buildings. On the other hand, losses to the sector were not quantified as losses to cultural services, production, and access cannot easily be monetized.

B) Tourism Sector
Damage to the hotels represented in this study would reach toward the IQD 409.7 billion mark (US$ 351.4 million).

The main limitations found during the assessment were the lack of information and data available, as well as problems regarding the translation of the provided information. Initially, the definition of the sector was interpreted too broadly; for instance the data focused on religious buildings without any information about the period of construction, characteristics, or other cultural values apart from religious services. Most of the archaeological sites were missing. Regarding the status of the structures, in many cases the information is vague or unknown.

The crisis has created an emergency situation at the global level, due to the universal value of Iraqi heritage. UNESCO is one of the main international organizations working in the protection of Iraqi heritage.[29] The deliberate destruction of cultural heritage is considered a war crime, as it is used as a war strategy to erase cultural identity.

28 For cultural heritage assets' damage figures in this assessment, the unit cost for the standard intervention of similar cultural heritage asset was used as a reference, as suggested by the Post-disaster Needs Assessment Guideline Volume B (Culture) (https://gfdrr.org/sites/gfdrr/files/WB_UNDP_PDNA_Culture_FINAL.pdf).
29 For instance, UNESCO launched a special issue of World Heritage Review on Iraq in 2015: http://whc.unesco.org/en/news/1304/; adopted unanimously a resolution on "Saving the cultural heritage of Iraq" in May 2015: http://whc.unesco.org/en/news/1287/; and called on the international community to help revive Iraq's cultural heritage in the wake of massive destruction: http://whc.unesco.org/en/news/1632/

In total, Cultural Heritage and Tourism damages were IQD 1 trillion (US$ 858 million), while sector losses were IQD 4.1 trillion (US$ 3.5 billion). For the governorate level, Infrastructure Reconstruction Cost is estimated at IQD 1.8 trillion (US$ 1.5 billion), and Service Delivery Restoration Cost at IQD 253.5 billion, totaling to IQD 2 trillion (US$ 1.7 billion).

A. Background and Analysis of Pre-Crisis Situation

A) Cultural Heritage Assets and Contemporary Religious Buildings

Iraq's cultural heritage is not only crucial for the country's identity and history; it represents universal values drawn from a key chapter of the human history. Iraq lies in the ancient land of Mesopotamia,[30] known as the Cradle of Civilization.[31] Archaeological sites such as Al-Hatra and Ashur, both recognized by UNESCO as World Heritage Sites,[32] damaged or destroyed during the conflict are an immeasurable loss for the entire world. Because of its long and rich history, Iraq's cultural heritage includes, in broad strokes: i) prehistoric and ancient cultural sites and objects, many still to be excavated, preserved in archaeological areas and museums, from different periods and civilizations; and ii) mediaeval and modern historic buildings integrated in current cities, from different periods, cultures and religions, which reflects Iraq's cultural richness. This report, based in a broader definition of culture, includes contemporary structures such as mosques which offer opportunities to practice traditional rituals and ceremonies important for cultural identity.

B) Tourism Assets

Regarding the tourism sector, this study approaches it from the analysis of hotels affected during the conflict, as well as using data from international tourism organizations. A total of 24 hotels were included in the assessment. According to World Tourism and Travel Council, in the baseline year of 2014, the direct contribution of tourism to Iraq's GDP was IQD 5.35 trillion and its total contribution to employment was 528,435 jobs. At its peak in 1995, tourism directly contributed to the GDP IQD 8.75 trillion and the total contribution to the economy in terms of jobs was 1.3 million. Recently, recovery of tourism between 2010–2014 indicates that religious tourism is the key niche representing growth in the sector. As the country stabilizes, it is expected that the tourism sector will prove its resiliency, most likely led by religious and business tourism as recovery efforts intensify.

B. Sectoral Damage and Loss Assessment

A) Cultural Heritage Assets and Contemporary Religious Buildings

1. Archaeological sites: It is estimated that there are 22 archaeological sites, of which three are destroyed and four are partially damaged. The status of eight sites is not known. It is estimated that the seven sites sustained IQD 4.6 billion worth of damage; however, there are as many archaeological sites whose situation is currently unknown therefore this amount is expected to increase or even double.

30 For further history of Iraq see: https://www.britannica.com/place/Mesopotamia-historical-region-Asia and: https://www.britannica.com/place/Iraq/History

31 http://iraqheritage.org/cradle.php

32 Iraq has four World Heritage Sites and eleven in the Tentative List: http://whc.unesco.org/en/statesparties/IQ/

2. Historic religious buildings: Damage to historic religious buildings varies depending upon the city and the typology. It is known that ISIS targeted specific buildings, converting some into mosques and using others for their military purposes. Damage to this category is estimated at IQD 56.2 billion.

- ***Historic mosques:*** A total of 41 mosques have been identified as historic, 22 have been reported as destroyed, 15 as partially damaged, and the remaining did not suffer damages or their status is unknown.
- ***Churches, monasteries, convents and shrines:*** Many churches and other non-Muslim temples have been reported destroyed or transformed into mosques by ISIS. From the data received, a total of 21 historic churches, 5 monasteries/convents and 25 shrines are included into this category.
- ***Other (synagogues and Yazidi temples):*** Only one synagogue was identified in the dataset which is located in the city of Al-Muqdadya (Ibid) with no damage reported. In Sinjar, six temples associated with the minority Yazidi population were identified, and four of them have been reported as destroyed.

3. Heritage buildings: Only 15 facilities have been identified under this category, mostly secular heritage buildings. Damage is estimated at IQD 15.1 billion. This reflects the necessity of further analysis and data collection.

4. Museums and libraries: The museum and the library of Mosul are the main two well-known facilities identified under this category, out of the five identified. The museum of Mosul is the second largest museum in the country and the central library of Mosul housed a large collection of irreplaceable artifacts and manuscripts. It is estimated that damage is about IQD 56.0 billion.

Impact on service delivery: For the facilities providing religious services, it is possible to ascertain whether religious services restarted after the conflict de-escalated. However, for other assets such as the archaeological sites it is more difficult to establish, as it was not possible to find information available on the number of visitors before the conflict. Presumably no sites are being studied or used as tourism venues yet; however, it is known that international agencies such as UNESCO are able to field teams to study the situation.

5. Contemporary religious buildings: A total of 520 buildings have been identified under this category, about half lacked data on the construction date, were marked as unknown or marked pending confirmation for future assessments. Estimated damage is IQD 101 billion.

Impact on service delivery: Many of the buildings identified were already conducting worship services, mainly through the Iraqi Sunni Endowment Diwan.[33] In some cases, the buildings were or are being reconstructed, while in others the communities are using alternative facilities.

33 The Sunni Endowment is a nonprofit organization created by the Ministry of Endowments and Religious Affairs of Iraq: http://sunniaffairs.gov.iq/en/#

Also, additional historical assets were identified by the Government of Iraq following the complete liberation of the areas from ISIS. According to the data provided, 8 additional archaeological sites, 28 historic religious buildings, 4 heritage buildings in the governorates of Ninawa, Salah Al-Deen, Anbar, Kirkuk, and Diyala could possibly have sustained damage, which would increase the cost of damage, loss, recovery and service delivery consequently. Since the information on construction year or damages for these assets is not available at this time, a further field study is recommended for accurate assessment.

B) Tourism Assets

6. Hotels: A total of 24 facilities were included into this category. The damage to the hotels represented in this study is estimated at IQD 409.7 billion.

Impact on service delivery: Of the known status of hotels in the areas studied about 50% are operating. The quality of services is however unknown. Currently, TripAdvisor tracks hotels only in the Erbil, and other mechanisms for estimating service delivery are unavailable. It is worth mentioning that as many hotels which are functioning in these areas, about nine or so, there are as many whose status is unknown.

City Level Analysis

Mosul's numerous important cultural heritage assets including the ancient city of Ninawa, the Al-Hadba Minaret and Al Nuree Mosque, St. Elijah's monastery, and the Mosul Museum, suffered extensive physical damage as ISIS aimed at destroying assets that were deemed incompatible with ISIS' interpretation of Islam or associated with other religions.

Quantification of Damage and Loss to Assets and Infrastructure

The estimation for total damages is IQD 1,000.2 billion.

Governorate-Level Extrapolation

At the governorate level (Table 16), Ninawa sustained the most substantial damage, the total of IQD 518.7 billion, largely due to the serious destruction of the cultural heritage assets in Mosul.

Table 15: *Governorate Damage Inventory—All City Roll Up (meters, cost in IQD billion)*

	Asset Types		Baseline	Total Damaged	Partially Damaged	Completely Destroyed
DAMAGE	*Archaeological site*		22	7	4	3
	Historic religious buildings	*Mosque*	41	37	15	22
		Church	21	16	8	8
		Convent/ Monastery	5	4	2	2
		Shrine	25	16	9	7
	Total		**92**	**73**	**34**	**39**
	Heritage buildings	*Small heritage building*	10	6	1	5
		Large heritage building	5	4	2	2
	Total		**15**	**10**	**3**	**7**
	Museums and libraries		5	5	3	2
	Hotels and Hostels	*Hotel*	20	11	7	4
		Hostel	4	0	0	0
	Total		**24**	**11**	**7**	**4**
	Contemporary religious buildings		520	283	183	100
	Total Damage		**678**	**389**	**234**	**155**
LOSS	*Business tourism spending*		*Spending on business travel within a country by residents and international visitors*			
	Leisure tourism		*Spending on leisure travel within a country by residents and international visitors*			

Table 16: *Cultural Heritage, Contemporary Religious Buildings and Tourism Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	262.3
Babel	13.8
Baghdad	92.2
Diyala	42.0
Kirkuk	50.2
Ninawa	518.7
Salah Al-Deen	20.9
Total	**1,000.2**

C. Assessment of Crisis Effects and Impact

1. Effects on service delivery

The crisis has created an emergency situation at the global level, due to the universal value of Iraqi heritage. UNESCO is one of the main international organizations working in the protection of Iraqi heritage.[34] The deliberate destruction of cultural heritage is considered a war crime, as it is used as a war strategy to erase cultural identity.

D. Sectoral Needs Assessment

For the governorate level, the total cost is estimated at IQD 2.0 trillion.

1. Infrastructure Reconstruction

Regarding reconstruction, in the case of cultural heritage is important to highlight that in some cases, reconstruction may not be possible or desirable. Therefore, it is crucial to develop field analysis and assessments to establish the conditions of each site, and deploy heritage specialists throughout the country.

Reconstruction of religious buildings offers an important opportunity to reestablish communities, build back the sense of national identity and begin the process of reconciliation. Active communities are already prioritizing their culture by continuing religious services even in partially functioning facilities; however, support for these efforts across the broad spectrum of religious expression will be essential to building up communities within a fragmented society. While communities may possess the necessary skills to rebuild their contemporary religious spaces, in the case of historic buildings, specialized expertise is necessary to analyze the structural integrity and propose protective measures until such time that resources can be deployed to fully rehabilitate the assets. Furthermore, reintegrating the heritage site into the fabric of the society is also a means to reestablishing identity, perhaps for marginalized groups associated with the asset, or regaining a prominence that serves as a reminder of shared history. Priority should be given to assets that can foster a sense of shared heritage and should involve communities once the basic protective measures are undertaken. For the tourism sector in the research, reconstruction efforts would mostly involve repairing or reconstructing damaged hotels/hostels. However, the status and the ownership of many are unknown, and it is essential to gather more accurate information about different tourism assets that exist in the affected areas.

2. Service Delivery Restoration

The most urgent priority is to create an inventory/database of the cultural heritage assets of the country, with detailed surveys that include: i) typology; ii) chronology; iii) attributes and values; iv) previous interventions; and v) current status. It is essential that the GoI and the State Bureau of Antiquities and Heritage work with governorate and local institutions to establish this inventory. In order to prioritize interventions, a values' assessment needs to be conducted. Taking into consideration the

34 For instance, UNESCO launched a Special Issue of World Heritage Review on Iraq in 2015: http://whc.unesco.org/en/news/1304/; adopted unanimously a resolution on "Saving the cultural heritage of Iraq" in May 2015: http://whc.unesco.org/en/news/1287/; and called on international community to help revive Iraq's cultural heritage in the wake of massive destruction: http://whc.unesco.org/en/news/1632/

characteristics of the Iraqi cultural heritage, two main aspects are especially relevant:

A) Universal value of archaeological sites and related antiquities;

B) Community use of heritage and religious sites.

Regarding the tourism sector, field surveys should be carried out in order to obtain data, such as the occupancy of bed capacity and the conditions.

3. Prioritized and Sequenced Needs Table
As discussed, the priority is to create a comprehensive database of the assets and to conduct expert field analysis across all cities in order to get an accurate assessment of the damages. Only then may reconstruction be carried out, and also protection measures can be prioritized based on their universal value, 'in danger' status, and the community use of the sites.

E. Implementation Arrangements

Collaboration is fundamental for the cultural heritage sector as it touches upon many aspects of daily life, including religious expression and social cohesion. Taking this broader approach requires that specialized agencies such as the State Board of Antiquity and Heritage (SBAH), the main authority in Iraq, reach out to other actors such as provincial and local governments and civil society that can play key roles in protecting and safeguarding heritage. As main line ministries begin the rebuilding process, it is imperative that clear roles and responsibilities, as well as guidelines regarding heritage, are established. This should include informal and formal linkages with agencies responsible for rebuilding housing, providing infrastructure, and protecting the environment to guard against unnecessary or inappropriate interventions in heritage assets. Finally, with the high stakes involved in the illicit trafficking of antiquities, international coordination is crucial to stymie this crisis within a crisis.

F. Recommendations and Limitations

The present study is preliminary and insufficient, examining only the nominal replacement loss of physical cultural and tourism resources in the sixteen cities affected by the conflict in Iraq, a country whose history is of universal value to the world. The present study was challenged by the lack of appropriate quantitative and qualitative data that is crucial to presenting a holistic understanding of the culture sector.

Initially, the definition of the sector was interpreted too broadly and the data received focused on religious buildings without any information about the period of construction, characteristics, or other cultural values apart from religious services. Most of the archaeological sites were missing, and the status of the structures in many cases is vague or unknown.

Regarding the potential interventions, the main recommendation will be to prioritize protection measures for the sites still in danger. Field surveys are essential to get a better assessment of the damages and would inform future decisions about whether reconstruction would be possible.

Following UNESCO guidance,[35] prevention and long-term engagement are essential to mitigate the impact of any crisis, requiring strong leadership, as well as national and local capacities; and preparedness of local professionals and communities is the best guarantee to keep cultural heritage safe when a crisis occurs.

Table 17: *Cultural Heritage, Contemporary Religious Buildings and Tourism Governorate-Level Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	*Infrastructure reconstruction*	465.4	232.7	232.7
	Service delivery restoration	66.5	13.3	53.2
	Total Anbar	**531.9**	**246**	**285.9**
Babel	*Infrastructure reconstruction*	24.6	12.3	12.3
	Service delivery restoration	3.5	0.7	2.8
	Total Babel	**28.1**	**13**	**15.1**
Baghdad	*Infrastructure reconstruction*	163.6	81.8	81.8
	Service delivery restoration	23.4	4.7	18.7
	Total Baghdad	**187**	**86.5**	**100.5**
Diyala	*Infrastructure reconstruction*	74.4	37.2	37.2
	Service delivery restoration	10.6	2.1	8.5
	Total Diyala	**85.1**	**39.3**	**45.7**
Kirkuk	*Infrastructure reconstruction*	89	44.5	44.5
	Service delivery restoration	12.7	2.5	10.2
	Total Kirkuk	**101.7**	**47.1**	**54.7**
Ninawa	*Infrastructure reconstruction*	920.2	460.1	460.1
	Service delivery restoration	131.5	26.3	105.2
	Total Ninawa	**1,051.7**	**486.4**	**565.3**
Salah Al-Deen	*Infrastructure reconstruction*	37.1	18.6	18.6
	Service delivery restoration	5.3	1.1	4.2
	Total Salah Al-Deen	**42.5**	**19.6**	**22.8**
Grand Total–All Governorates		**2,027.9**	**937.9**	**1,090**

35 http://whc.unesco.org/en/news/1176/

Business activities continue across Iraq despite shockwaves felt around the country (July 2013).
Photo credit: Paolo Paradiso (Shutterstock).

Productive Sectors

Agriculture

A. Background Information and Pre-Crisis Conditions

The conflict resulted in total damage IQD 2.4 trillion (US$ 2.1 billion), while aggregate losses total IQD 1.7 trillion (US$ 1.4 billion). These losses figure include output loss during conflict and occupation that resulted in depletion of farmers' working capital, and, while damages to fixed assets, such as machinery and greenhouses, as well as livestock assets, were included in the damage figure. The critical reconstruction needs from the public sector (partial replacement of damaged assets enough to facilitate the sector to bounce back) is estimated at IQD 2.8 trillion (US$ 2.4 billion). Besides, reconstruction needs from the private sector are estimated at IQD 1.1 trillion (US$ 896 million). Recovery needs for staffing and rebuilding institutional systems are estimated at IQD 122 billion (US$ 103 million). The most pressing constraints and requirement of the agricultural sector is restoring farm machineries and other input delivery systems (access to roads, market places, and irrigation systems) for farmers to resume their agricultural activities. The total sector recovery and reconstruction needs are IQD 4.0 trillion (US$ 3.4 billion).

About 30 percent of Iraqis live in rural areas, providing abundant labor supply for the agricultural sector. Almost a third of the country's total area is arable land, half of which is used for rain fed agriculture. The sector is one of the largest non-oil sectors of Iraq's economy (with 5% of total GDP) and the largest source of employment (approximately 30%), including for the poor segments of the population and for women. Female labor market participation in agriculture rose steadily from 30 to 50 percent between 1980 and 2010. The agriculture sector has been a leader in terms of the private sector, as Iraqi farms are mostly privately owned. However, public policies in the agricultural sector have been characterized by state control and subsidization of farm inputs (fertilizers, seeds, insecticides, farm equipment, and machinery) and of the prices of strategic crops. Cereal production—wheat, barely, rice, and corn— is the most important activity, in terms of both meeting local consumption needs and the size of cultivated land. Vegetable crops such as tomatoes, potatoes, and dates come second in their contribution to the GDP of Iraq. The key challenges of the agricultural sector include:

- Decades of conflict, isolation and destruction. Not only do such conflicts damage production and production capacity, they also increase perceived risks to investment in the sector;
- Limited rural financing for private sector development;
- Weak research and extension capacity and weak links to centers of excellence for food and agriculture;
- Poor agricultural technology due partly to Iraq's prolonged isolation from the developed world; and
- Climate change related reduction in water inflows and increased salinity.

There are six main farming sectors in Iraq's agriculture. According to pre-conflict data, small ruminants (sheep and goat) contribute a third of the total value of agricultural value. Almost a third of landholding were used for sheep and goat farming. Vegetable and cereal production are

the other key farming sectors, making up 24 and 18 percent of the total agricultural value during the pre-crisis period (Table 18).

Table 18: *Main Farm Types and Value of Output*

Main Output	Land Holdings		Average Output/Farm (US$)	Total Output	
	Number	Share of Total (%)		Value in US$	Share of Total (%)
Cattle	11,000	10	4,000	45	6
Sheep and goats	32,000	28	8,000	261	33
Cereals	15,000	14	10,000	146	18
Vegetables	21,000	19	9,000	192	24
Fruit	11,000	9	6,000	66	8
Poultry	1,500	1	46,000	70	9
Minor agriculture	21,000	19	600	12	2
Total	**113,000**	**100**	**—**	**791**	**100**

B. Sectoral Damage and Loss Assessment

Crop and livestock production has suffered significant damages and losses due to the conflict. The main losses and damages include those on agricultural machineries and tools; irrigation equipment and systems; agricultural inputs and input delivery systems; and livestock, among others. There were, for instance, only 20 percent of farmers who had access to irrigation by early this year compared to about 65 percent before the conflict (FAO 2017). Farmers lacked inputs, such as fertilizers, pesticides, and seeds, due to the suspension of government input provisions, import and transport regulations that prevent the use of inputs, and damage to transport and infrastructure. These damages to agricultural machineries and input delivery systems impaired agricultural production during the conflict period. For instance, the Regional Food Security Analysis Network Country (RFSAN 2016) reported that Iraqi agricultural production capacity has dropped by about 40 percent following the conflict. The loss of livestock reached up to 95 percent in some areas. Agriculture will start to pick up, it is a fast-growing sector, as the situation gets better (EIU 2017) and if the right investments are in place by the private and the public sectors.

The conflict in Anbar governorate led to a significant reduction in agricultural output due to displaced populations, looting and theft, and fatalities. Impacts on water infrastructure severely impacted the governorate's ability to maintain its agricultural sector. A limited number of agricultural subsectors have begun to improve in liberated areas of Anbar as of September 2017, particularly through repairs to water infrastructure along the Euphrates River. Agriculture is mostly rainfed in Diyala and Ninawa governorates. The livestock sector suffered a lot in the Diyala governorate, with a decline of as much as 50 percent since 2003. Despite the declaration of the governorate being liberated, the enduring presence of hostile forces, improvised explosive devices

(IEDs), and conflict continue to disrupt agricultural production in the governorate. Following the conflict in Ninawa governorate, agricultural output was drastically reduced, with a fall in grain sales of about 80 percent in 2015. About two-third of the farmers in this governorate were reported to flee away from their farmlands. The agriculture sector in Salah Al-Deen governorate relies heavily on irrigations systems, which are now in severe need of repair and reconstruction. Reports show that Salah Al-Deen has lost between 70–75 percent of its agricultural capability and production during the conflict period. The districts of Al-Alam, Dhulo-Eyah, and Albo-Ajeel have particularly suffered the heaviest losses of wheat, barley, and corn.

C. Quantification of Damage and Losses

The output loss during conflict and occupation resulted in depletion of farmers' working capital. The damages to fixed assets included damages to machineries and greenhouses as well as livestock assets and irrigation systems. This asset damage is estimated in order of IQD 2.4 trillion. Our calculations (Table 19) indicate that the total damages and losses cost a total of IQD 4.1 trillion Ninawa has suffered the largest damage and loss, estimated at IQD 1.4 trillion followed by Salah Al-Deen with IQD 1.1 trillion.

The conflict has adverse effects on the overall service delivery system in the country. Public services that were severely affected include irrigation systems, input (seeds and fertilizer) distribution, veterinary and advisory services, and market facilities such as roads.

D. Sectoral Needs Assessment

For the agricultural sector to recover and serve as a decent income sources of farmers in rural areas, the following measures need to be taken in different time frames:

- ***Short term (up to 1 year):*** The principle recovery focus for the first year include:
  a) "Primacy of transfer": This is specifically ensuring that communities and households to have access to the right inputs at the most appropriate time.
  b) Clearing appropriate infrastructure: Most of the clearance of mines, Unexploded ordnance (UXO) and booby traps will be focused on irrigation channels (and other conflict related assets).
  c) Reestablishing commercial value chains and markets, as well as basic agricultural technologies.
  d) Improving access to finance for farmers and for small and medium farm enterprises.

Table 19: *Estimation of Damages and Losses by Asset (in IQD billion)*

	Item	Damage	Destruction	Total Cost
DAMAGE	*Machinery*	62	627	689
	Greenhouses and buildings	2	11	13
	Livestock	103	1,355	1,458
	Plantations	66	145	212
	Forests	0.4	3	3
	Institutions	8	13	21
	Irrigation systems	1	4	5
	Production facilities	0.3	6	6
	Livestock facilities	0.4	17	18
	Total Damage	**243**	**2,180**	**2,425**
LOSS	*Land*			478
	Vegetables			300
	Fruits			206
	Livestock			421
	Inputs			63
	Total Loss			**1,656**
Total Damage and Loss				**4,081**

Note: These calculations assume zero output from crops or livestock that are completely destroyed but 50 percent output if partially damaged.

Table 20: *Governorate Level Estimation of Damages and Losses (in IQD billion)*

Governorate	Damage	Destruction	Loss	Total Cost
Anbar	57	458	213	728
Diyala	68	489	256	763
Ninawa	42	722	613	1,377
Salah Al-Deen	76	483	565	1,124
Babel	—	13	—	13
Baghdad	—	12	—	12
Kirkuk	—	5	10	15
Total	**243**	**2,181**	**1,657**	**—**
Total Damage and Loss				**4,081**

- ***Medium to long term (up to and beyond 5 years):*** The next 2–5 years will be focused on transition away from humanitarian response towards a return to normal market based agriculture. The key policy areas will be focused on:

  a) Pull financing mechanisms to draw Private Sector engagement

  b) Reestablishing investment in public goods such as research extension.

  c) Developing a coordinated approach to rural investment, which integrates energy, communications, and road infrastructure

The following quantification of recovery needs assumes reconstruction needs of 50-80 percent from the public sector (depending on the asset type), and the remaining covered by the private sector and farmers themselves. To account for inflation and insurance requirements, we have multiplied the public and private sector reconstruction needs by 1.75 and 1.20, respectively. The recovery needs, for staffing and institutions, is assumed to cost five percent of the total damage.

Table 21: *Estimated Reconstruction Needs for the Agricultural Sector (in IQD billion)*

Needs Category	Total (5 yrs)		Short Term (yr 1)		Medium Term (yrs 2–5)		Recovery needs
	Public	Private	Public	Private	Public	Private	
Agricultural machinery restoration	965	165	289	50	675	116	34
Greenhouses and buildings	11	8	3	2	8	5	1
Livestock replacement	1,530	700	459	210	1,071	490	73
Replanting trees and perennial crops	186	127	56	38	130	89	11
Forest recovery	3	2	1	1	2	1	—
Rebuilding institutions	29	5	9	1	20	3	1
Irrigation system restoration	73	47	22	14	51	33	—
Production facilities	8	1	2	—	6	1	—
Livestock facilities	25	4	8	1	18	3	1
Subtotal	**2,830**	**1,060**	**849**	**318**	**1,981**	**741**	**121**
Grand Total	**4,010**						

Productive Sectors

Water Resources

A. Sector Summary

The study provides a general perspective on the damage of water resources assets as of December 2017, in seven governorates (Anbar; Babel; Baghdad; Diyala; Salah Al-Deen; Kirkuk; Ninawa). See Table 22 for a detailed breakdown for baseline inventory by asset. One hundred and eighty-five facilities were identified ranging from dams and barrages, irrigation canals, and irrigation pumping stations. Of the 232 assets, a total of 75 percent has been completely destroyed. Hydraulic infrastructure has also impacted service delivery which reduced the operational times of these pumping stations. The total cost to the infrastructure element of the water resources sector is estimated based on the available information and considering an average cost estimate for construction as being reported for the seven governorate, to be around IQD 134 billion (US$ 115 million). It is worth noting that access to information on assets was limited. Once more information is available, a more accurate estimate of cost would need to be conducted. Several existing dams, barrages, regulators, and main pumping stations will need to be rehabilitated. The damages reflected under the dams' assets are related to regulating water structures off the major dams. Additional investigation and assessment on the ground will be needed to assess the damage status of the dams and the rehabilitation needs.

The cost estimate needs to be considered very carefully at this stage and should be revised once the investigation is undertaken on-site. The cost estimate excludes the cost of rehabilitation to the dams, barrages, and the cost of offices for the ministry as an additional on-ground assessment for each asset would be required to ensure an accurate cost estimate.

Today, Iraq faces numerous technical challenges regarding water management and control due to an increase in climatic variability as well as water scarcity, partly resulting from reduced water flows from neighboring countries. This situation is exacerbated by recent events, which include the destruction of barrages and dams and deferred maintenance in the areas now liberated from ISIS, and the earthquake of November 12, 2017, which raised concerns about the safety and management of Darbandikhan and Dokan dams.

The key components to interim operating solutions are: (i) assessment of the human capital available and necessary to restore functionality; (ii) the cost of operation and maintenance (O&M) costs for each water resources facility; (iii) the assessment of dam safety; and (iv) hydrologic studies to strengthen water resources management capacity. A rough cost estimate was considered using a multiplier that factors in inflation, security premiums, debris removal, build back better (BBB), and insurance premiums. The estimate indicated that reconstruction and recovery needs are to be over IQD 244.8 billion (US$ 207.1 million).

B. Background and Analysis of Pre-Crisis Conditions and Trends

Prior to the conflict, Iraq had a relatively abundant water supply compared to many other countries in the region. Yet, rapid population growth has quickly reduced the gap between demand and supply of water. The country is highly dependent on shared water resources; approximately 75 percent of the country's water resources originate outside the country. Furthermore, over half of Iraq's water resources are inflows from neighboring countries without well-established river basin agreements. Given the context, decreasing quantities are flowing into Iraq, and will continue to decrease even further along the Euphrates River. Under current conditions, it is estimated that the water used in irrigation in Iraq is approximately 50 billion cubic meters (BCM)/year. Due to the low overall irrigation efficiency, a large proportion of this water is returned to the rivers and only a portion of it is collected and disposed into the Tigris Euphrates Main Outfall Drain. Irrigation is important and essential to agricultural production in most of Iraq.

C. Sector Developmental Challenges

The Water Resources sector has several developmental challenges: (i) the sector's legal and institutional framework is complex with overlapping responsibilities; (ii) Iraq's groundwater governance is still perceived as an individual property and is exploited without consideration to its sustainability, leading to its overexploitation; (iii) access to irrigation water services and drainage is under pressure. Past trends suggest that even though absolute agricultural water withdrawals are high and increasing, the share of agricultural water withdrawals in total water withdrawals is declining; and (iv) salinity is a major threat. The water in the Tigris and Euphrates is becoming increasingly saline. Along with waterlogging, salinity is currently impacting agricultural production.

D. Aggregate Sector Analysis

Aggregate Physical Damage

Table 22 illustrates the breakdown of damages by asset. Overall, total damages to the water resource sector made up 94 percent of all facilities.

The assessment reports only damages of Ministry of Water Resources offices at the level of the governorate without complementary information related to its function needs. The level of damage to dams, the capacity of pumping stations, and the length of irrigation canals was not reported in the assessment. Hence, it is a major source of uncertainty moving forward.

Governorate-Level Analysis of Physical Damage

Table 23 summarizes the damages assessed at the level of each governorate.

Table 22: *Aggregate Physical Damage by Asset*[36]

	Asset Type	Baseline	Total Damaged	Partially Damaged	Completely Destroyed
DAMAGE	*Dams*	7	6	3	3
	River embankments	10	9	6	3
	Primary barrages	67	67	11	56
	Bridges	37	37	1	36
	Main canals	42	42	20	22
	Irrigation pumping stations	47	47	9	38
	Irrigation canals	5	5	1	4
	Drainage structures	1	0	0	0
	Ministry of Water Resources office	16	12	1	11
	Total	**232**	**225**	**52**	**173**

Figure 5: *Percentage of Damage by Governorate*

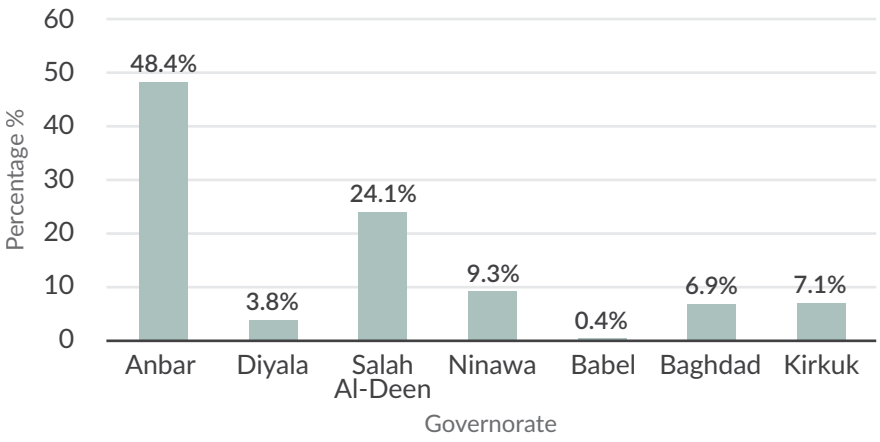


Table 23: *Governorate Inventory Facility Damages*

	Anbar	*Babel*	*Baghdad*	*Diyala*	*Salah Al-Deen*	*Kirkuk*	*Ninawa*
Baseline	109	1	15	13	54	17	23
Destroyed	102	0	11	4	33	15	8
Partially damaged	5	1	4	5	21	2	14
No damage	2	0	0	4	0	0	0

36 Related to small regulating water structures off the major dams.

E. Quantification of Damage and Loss to Assets and Infrastructure

The study provides a partial perspective on the damage sustained by water resources infrastructure. It is worth noting that due to the current situation in the country, information on assets was limited. Once more information is available, a more accurate estimate of cost would need to be conducted after a ground assessment.

Table 23 shows the total damage inventory consolidated for all the governorates. The main damage reported in Table 23 is as follows: 97 percent of the total assessed assets had received damages, whereas 75 percent were completely destroyed and 22 percent partially damaged. It is important to note that the estimated average unit costs for all assets except river embankments were calculated using median costs. For river embankments, the GoI cost estimate was used. Furthermore, it is important to note that the estimated average cost for the irrigation pumping station is the total cost of rehabilitating the entire station and not just the pump itself. These estimations should be considered carefully as more on-ground assessment for each asset would be required to better assess the damage that each asset did receive and better assess the cost.

The total cost of the infrastructure element of the Water Resources sector for all seven governorates was estimated based on the available information at around IQD 134 billion (US$ 115 million). The cost estimate excludes the cost of rehabilitation to the dams, barrages, and the cost of offices for the ministry as an additional technical assessment would be required to ensure an accurate assessment. Several existing dams, barrages, regulators, and main pumping stations will need to be rehabilitated. Damage estimates were calculated using estimates of the full replacement costs. As for losses, all major losses were captured in the agricultural sector, including economic losses. Other losses were accounted for in the environmental sector such as water contamination. However, for workforce requirements and loss in revenue, we do not have sufficient data at this time to be able to calculate the loss per governorate.

Effects on service delivery

- ***Limited functionality and infrastructure stress is a problem.*** Population shifts due to internally displaced peoples have placed additional stress on the water resource facilities during the crisis.
- ***Most of the irrigation and drainage is gravity schemes; only 30% is pumped.*** The conflict had a profound impact on the availability of water supplied to the farmers due to frequent power outages that shut down water pumping stations as well as direct damage to water canals.

F. Sectoral Needs Assessment

A rough cost estimate indicates that reconstruction and recovery needs are estimated to be over IQD 244.84 billion.

There is a need to develop Emergency Operation activities/projects to support the government in the reconstruction of damaged infrastructure and the restoration of public service delivery in the seven governorates. Interim operational solutions and their associated costs are not included in the estimates for infrastructure rehabilitation but would require funding for a transition period while the norms (or reforms) of government subsidy and cost recovery are reestablished.

The key components to interim operating solutions are: (i) the assessment of human capital both available and necessary to restore functionality; (ii) the cost of the operation and maintenance (O&M) of each water resources facility; (iii) the assessment of dam safety; (iv) the hydrologic studies to strengthen water resource management capacity; (v) on-site structural inspections of dams proximate to explosions for safety risks;; and (vi) hydrologic studies to strengthen water resources management capacity. There is a need to review and assess the principles and design of institutional arrangements. This review would ensure that the water resource offices in the governorates have the systems and capacity to carry out the functions assigned to them. Table 24 shows the distribution of the needs costs over the next five years for the proposed activities/needs.

Implementation arrangements

The need to review and assess the principles and the design of institutional arrangements remains. This review would ensure that the water resources offices in the governorates have the systems and capacity to carry out the functions assigned to them. Further, the differing needs and demands of women and men will be assessed and will be taken into account, and mechanisms to allow for women's participation in both institutional and infrastructure-related reconstruction efforts would be encouraged.

Main recommendations for future recovery plans

In the short-term, there is a need to undertake on-the-ground assessments of the major damages, followed by an emergency repair of all major infrastructure. The rehabilitation of large infrastructure is considered only for the medium-term, while in the short-term emergency repairs can be made. Some recommendations for future recovery plans include:

- The rehabilitation of dams and barrages and main irrigation and drainage pumping stations.
- The rehabilitation of irrigation and drainage systems to restore agricultural in the governorate.
- The rehabilitation of existing wells and water monitoring.
- Support to agricultural transformation through modernizing irrigation, including the introduction of pressurized irrigation throughout the country.
- More on-the-ground surveys need to be conducted for all seven governorates in order to assess if the return of the IDPs to their place of origin will be impacted by the improvement of water resources services in the short-term through emergency reconstruction projects.

Table 24: *Governorate Prioritized and Sequenced Needs (in IQD billions)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	*Infrastructure reconstruction*	115.2	80.7	34.6
	Service delivery restoration	3.3	1	2.3
	Total Anbar	**118.5**	**81.6**	**36.9**
Babel	*Infrastructure reconstruction*	0.9	0.6	0.3
	Service delivery restoration	—	—	—
	Total Babel	**0.9**	**0.6**	**0.3**
Baghdad	*Infrastructure reconstruction*	16.5	11.5	4.9
	Service delivery restoration	0.5	0.1	0.3
	Total Baghdad	**16.9**	**11.7**	**5.3**
Diyala	*Infrastructure reconstruction*	9	6.3	2.7
	Service delivery restoration	0.3	0.1	0.2
	Total Diyala	**9.2**	**6.4**	**2.9**
Kirkuk	*Infrastructure reconstruction*	16.9	11.8	5.1
	Service delivery restoration	0.5	0.1	0.3
	Total Kirkuk	**17.4**	**12**	**5.4**
Ninawa	*Infrastructure reconstruction*	22.2	15.5	6.6
	Service delivery restoration	0.6	0.2	0.4
	Total Ninawa	**22.8**	**15.7**	**7.1**
Salah Al-Deen	*Infrastructure reconstruction*	57.4	40.2	17.2
	Service delivery restoration	1.6	0.5	1.1
	Total Salah Al-Deen	**59.1**	**40.7**	**18.4**
Grand Total–All Governorates		**244.8**	**168.6**	**76.2**

Productive Sectors

Industry and Commerce

A. Sector Summary

Across all facility types, almost 4.2 million m^2 were partially damaged, and almost 9.1 million m^2 was destroyed.[37] The total cost of building reconstruction for assessed facilities in these governorates (extrapolated from the material costs and total m^2 of damages) was IQD 6.0 trillion (US$ 5.1 billion). Total sector losses are IQD 3.3 trillion (US$ 2.8 billion). It is estimated that 80% of these losses were incurred by facilities involved in the manufacture of construction materials, or involved in the agribusiness sector (including fertilizer factories, but excluding storage facilities). The remaining damage was incurred by general factories and market facilities.

Both private and publicly owned firms in conflict-affected areas have been destroyed or bankrupted. Surviving firms' balance sheets have been put under severe stress, limiting their ability to invest and grow, and to act as engines of job creation. Value chains have been disrupted through the destruction or damage to connective infrastructure, inability to access key inputs, and the severing of business links with firms located in affected areas.

Iraq has historically been reliant on imports for a large proportion of its construction materials, and with major facilities out of action this will worsen just as reconstruction ramps up. The biggest challenge in the short term will be getting those facilities that can contribute directly to the reconstruction effort (i.e. those manufacturing construction materials such as concrete, glass, bricks etc.) back up and running, and returning basic market facilities to a serviceable state to allow the general populace to engage in basic commerce activities.

In the short term, the lack of materials, facilities, market, and overall economic structure will play a role in delaying the recovery of the IDP communities and the sustainable flow of private sector jobs. Therefore, most jobs are more likely to be short lived, donor funded public works. The paramount need to facilitate private sector jobs to boost household earnings will come in play in the near future as the IDP return and adapt to the new conditions and redirect the country back to normality. Understanding both the IDP and the host communities' dynamics and skillset will allow for better alignment and re-placement that tackle the root causes of fragility and conflict.

It is estimated that the total cost of damage repair and recovery needs for the industry and commerce facilities assessed was IQD 12.5 trillion (US$ 10.6 billion). The needs figures include the repair and replacement cost of damages and the service delivery restoration cost. The Anbar governorate was by far the hardest hit, accounting for just over two-thirds of total needs identified, including major damage to phosphate and concrete facilities.

37 Available data for industry and commerce allowed a partial assessment of seven governorates, as well as a deeper dive on significant factories and market infrastructure in the key cities of Mosul, Al-Falluja, Al-Ramadi, and Beygee. No assessment has been made of damage and losses incurred by the small and medium enterprise (SME) sector. The assessment has used a construction cost per square meter, built up from the cost of relevant construction inputs, which is then applied to area-based damage estimates for all facilities.

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

Most of Iraq's manufacturing activity has been closely connected to the oil industry, including refining, and the manufacture of chemicals and fertilizers. Other manufacturing activities include food processing, textiles, leather goods, cement and other building materials, tobacco, paper, electronics, wood, and plastics. State domination extends to the role of state owned enterprises (SOEs) in the economy, including many producers of construction inputs that will be important for the broader reconstruction effort. Many SOEs operate unprofitably in areas usually considered the domain of the private sector, and under conditions that routinely violate competitive neutrality principals. This assessment covers over 460 'industry and commerce' assets,[38] and around three quarters of these were industrial in nature. Of the industrial facilities in turn, almost 40 percent were involved in construction or the manufacture of construction inputs, and 10 percent in fertilizer production or agricultural processing. Around 30 market sites of varying size and usage were also assessed.

Table 25: *Damage Inventory—All Governorate Roll Up (no. of facilities, cost in IQD billion)*

	Asset Type	Baseline	Total Damaged		Partially Damaged		Completely Destroyed	
		No.	No.	Square Meter	No.	Square Meter	No.	Square Meter
DAMAGE	*Agribusiness*	69	69	4,166,942	17	201,506	52	3,965,436
	Construction	120	117	6,757,426	63	3,389,130	54	3,368,296
	Factory, general	49	49	1,415,217	17	173,986	32	1,241,231
	Markets and buildings	74	58	868,219	13	465,219	45	403,000
	Storage	60	60	161,228	14	0	46	161,228
	Total Damage	**372**	**353**	**13,369,032**	**124**	**4,229,841**	**229**	**9,139,191**

Even pre-crisis, the opening of the economy to trade post-2003 and the subsequent rise in the flow of imported goods without complementary sectoral reform and reduction in the overmanning of many SOEs led to the closure of many factories. Adding the impact of the crisis, many surviving firms are in a precarious state given strained balance sheets, aging equipment, and outdated processes. Supply difficulties for key business inputs such as electricity and water have also had a significant negative impact on industrial activities. Corruption, red tape, and bureaucratic inefficiency, and preferential competitive arrangements for SOEs also act as a drag on recovery.

38 Fifty-one of these assets were assessed via satellite-based means, while the remainder were via government survey teams.

Table 26: *National Economic Loss (manufacturing firms, foregone value addition, IQD billion current prices)*[39]

	Year	2014	2015	2016	Total
LOSS	*Small firms*	92.8	291.3	207.3	591.4
	Medium firms	51.9	73.4	57.3	182.7
	Large firms	877.6	600	1,049.6	2,527.2
Total Loss					**3,301.3**

C. Sectoral Damage and Loss Assessment

Total damage to the industry and commerce facilities assessed was IQD 6.0 trillion. Total sector losses are IQD 3.3 trillion. A large share of this damage was contributed by the phosphate plant in Anbar, and four large concrete plants in Anbar and Ninawa. Analysis of that subset of the data with specific city linkages shows Al-Falluja as having the highest cost of reconstruction from an industry and commerce perspective.

Reconstructing the construction sector at a cost of IQD 2.7 trillion will comprise almost half of all reconstruction costs. The agribusiness (including fertilizer) sector with IQD 1.7 tillion will present the next largest sectoral reconstruction cost–major damage and losses to the Anbar phosphate facility are a key driver of this.

Anbar was the hardest hit governorate by far from an industry and commerce perspective, with a total cost to reconstruct of IQD 3.3 trillion. Ninawa and Salah Al-Deen also have significant recovery needs.

Table 27: *Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	3,252.5
Babel	243.5
Baghdad	449.4
Diyala	51
Kirkuk	7.6
Ninawa	1,292.1
Salah Al-Deen	659.2
Total	**5,955.3**

39 For most facilities, it was not possible to determine the timing of crisis impacts, periods of reduced activity, closure etc. The heterogeneous nature of the assets also adds to the difficulty of inferring conclusions about overall losses. As a proxy, manufacturing firm census data from the Central Statistics Office was used to look at changes in the level of value-addition of these firms through the period in question. While some attribution issues exist (e.g. effect of oil price reductions through the period on the non-oil economy would also contribute to lower value addition, while missing data for several conflict-hit governorates would tend to raise it), comparing actual outcomes to a counterfactual scenario based on pre-crisis projections of non-oil growth rates from the IMF shines a light on the impact of the crisis for manufacturers, with estimated losses of foregone value addition through the three-year period 2014-16.

D. Assessment of Crisis Effects and Impact

In terms of direct effects, many firms (both private and publicly owned) in conflict-affected areas have been destroyed or bankrupted; others have seen business premises damaged, inventory lost, employees killed and displaced, and customers evaporate. Surviving firms' (and sole traders/ entrepreneurs) balance sheets have been put under severe stress, limiting their ability to invest and grow, and to act as engines of job creation. Key business inputs traditionally provided by the public sector (e.g. electricity, water, and transportation) have been destroyed or damaged in several areas raising the costs of production, and in some areas preventing it entirely for many firms. Indirect effects have also been serious and widespread. Many businesses outside the affected areas have incurred significant downturns in business through loss of demand. Value chains have been disrupted through the destruction or damage to connective infrastructure, inability to access key inputs, and the severing of business links with firms located in affected areas.

E. Sectoral Needs Assessment

Concerning priorities for reconstruction of public infrastructure, market and storage facilities should be prioritized along with the efficient transport and storage of bulk foodstuffs to areas of need. In terms of *priorities* for private assets, facilities involved in both the production of materials needed in construction process (concrete, bricks, glass etc.) should be prioritized, and agribusiness facilities involved in the processing of foodstuffs should be prioritized. Sectoral reconstruction costs are shown in Table 28. Total sector reconstruction and recovery needs are IQD 12.5 trillion (US$ 10.6 billion).

F. Implementation Arrangements

Given the private and public nature of industry and commerce activities, implementation will need to take place through both public and private channels. Options to support private sector financing to get surviving firms back on their feet include matching grants to address balance sheet stress for micro and small enterprises; establishment of a guarantee-backed special purpose vehicle to access capital markets with windows to underpin lines of credit for medium and larger firms needing to rehabilitate or replace their capital assets and inventory; SME finance facility; payment guarantees to facilitate tendering by firms; export credit guarantees; and partial risk guarantees to support new foreign direct investment (FDI). Options to support financing of government assets necessary to support private sector activity include the special purpose vehicle outlined above could establish a window to finance public industry and commerce infrastructure such as rehabilitation of government assets and market infrastructure, a window to refinance, and clear arrears to the private sector. Lastly, there is a paramount need to facilitate the growth of private sector businesses and jobs by maximizing local involvement in servicing major sources of local demand - reconstruction and food production.

G. Recommendations and Limitations

In terms of prioritization, prioritizing short-term interventions is advisable. This includes market facilities needed to underpin the conduct of commerce by the general population (publicly financed), factories involved in the manufacture of construction inputs, and agribusiness factories

producing food for local consumption (guarantee supported finance facility). Interventions should prioritize reconstructing facilities linked directly to reconstruction, food, and the conducting of basic commerce in a way that accounts for differentiated constraints and impacts for men and women. This may include targeted measures to ensure women participate in the agribusiness value chain or systematically supporting industries that women are more likely to work in (e.g., home-based income generating activities). In terms of firm-level support, in the first instance, priority should be accorded to extending liquidity and capacity building support to firms in the construction and agribusiness value chains, and reforming procurement processes, before broadening out to encompass the reconstruction of other private and public sector facilities, as well as complimentary investment climate reforms.

Table 28: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Infrastructure reconstruction	5,691.8	1,138.4	4,553.5
	Service delivery restoration	1,138.4	227.7	910.7
	Total Anbar	**6,830.2**	**1,366**	**5,464.2**
Babel	Infrastructure reconstruction	426.2	85.2	340.9
	Service delivery restoration	85.2	17	68.2
	Total Babel	**511.4**	**102.3**	**409.1**
Baghdad	Infrastructure reconstruction	786.4	157.3	629.1
	Service delivery restoration	157.3	31.5	125.8
	Total Baghdad	**943.7**	**188.7**	**754.9**
Diyala	Infrastructure reconstruction	89.3	17.9	71.5
	Service delivery restoration	17.9	3.6	14.3
	Total Diyala	**107.2**	**21.4**	**85.8**
Kirkuk	Infrastructure reconstruction	13.3	2.7	10.6
	Service delivery restoration	2.7	0.5	2.1
	Total Kirkuk	**16**	**3.2**	**12.8**
Ninawa	Infrastructure reconstruction	2,261.2	452.7	1,809
	Service delivery restoration	452.2	90.4	361.8
	Total Ninawa	**2,713.5**	**542.7**	**2,170.8**
Salah Al-Deen	Infrastructure reconstruction	1,153.5	230.7	922.8
	Service delivery restoration	230.7	46.1	184.6
	Total Salah Al-Deen	**1,384.2**	**276.8**	**1,107.4**
Grand Total–All Governorates		**12,506.1**	**2,501.2**	**10,004.9**

Productive Sectors

Finance and Markets

The financial sector of Iraq has a number of shortcomings that date back to before the conflict. The financial sector is dominated by the banking sector, particularly the state-owned banks (SOBs), which account for 89 percent of total banking assets, 86 percent of deposits, and 80 percent of total credits. The two largest SOBs, Rafidain and Rasheed (R&R) suffer from poor systems and controls and weak financial management. Overall credit intermediation is at a very low level, with credit to the private sector (about half of total credit) at only 9 percent of gross domestic product (GDP) at the end of 2016. The capital market is nascent and has not played a meaningful role in financing the real economy. The microfinance sector is one of the smallest and least developed in the Middle East and North Africa (MENA) region. Financial access is among the lowest in MENA, and households and micro- and small-sized enterprises mostly rely on informal means for saving and borrowing. Women have significantly lower access to accounts at formal institutions as compared to men (7 percent and 15 percent respectively in 2014). The economy remains largely cash based despite having elements of modern payment systems.

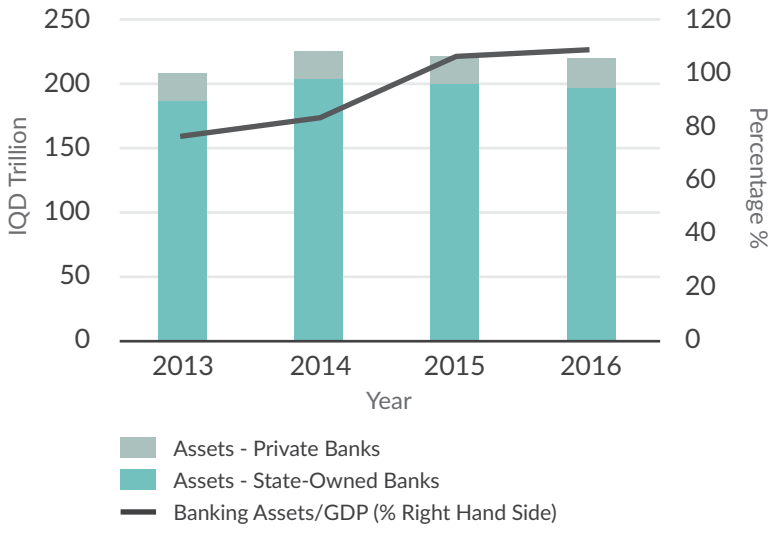
Institutional weaknesses and capacity constraints are important factors underlying the lack of financial development. In addition to weak banking infrastructure, a history of political instability, and conflicts, financial sector failures, currency devaluation, and a lack of policy effectiveness have contributed to the low trust in the financial sector. An unfavorable business environment, in particular in governance, credit infrastructure, enforcement of contract, and judicial effectiveness, have also hampered banking sector activities. Deficiencies in Anti-Money Laundering and Counter Financing of Terrorism (AML/CFT) compliance represent a serious impediment to financial development and economic recovery. The Central Bank of Iraq (CBI) continues to face legal impediments to effectively supervise the SOBs, as well as capacity constraints in its operations and implementation of regulations. Sectoral professional capacity is also low.

The financial sector of Iraq has been operating in a challenging macroeconomic and operational environment since 2014 due to the double shock of the oil price drop and armed conflict. Between 2013 and 2016, nominal GDP of Iraq declined from IQD 274 trillion to IQD 197 trillion. Real GDP grew during this period due to price deflation, but real non-oil GDP declined for three consecutive years by a cumulative of 20 percent.[40] The government's oil revenue, which accounts for around 90 percent of total revenue, went down from 38 percent of GDP in 2013 to 23 percent of GDP in 2016. Decline in revenue, coupled with high military and humanitarian spending, posed challenges in providing public services and resulted in a steep increase in fiscal deficit, from 5.8 percent to 14.1 percent of GDP between 2013 and 2016. Current account position also drastically worsened from a surplus of 1.1 percent of GDP to a deficit of 8.7 percent of GDP during the same period.

40 Statistics here and in the remainder of the paragraph are from the IMF staff report on the 2017 Article IV consultation with Iraq.

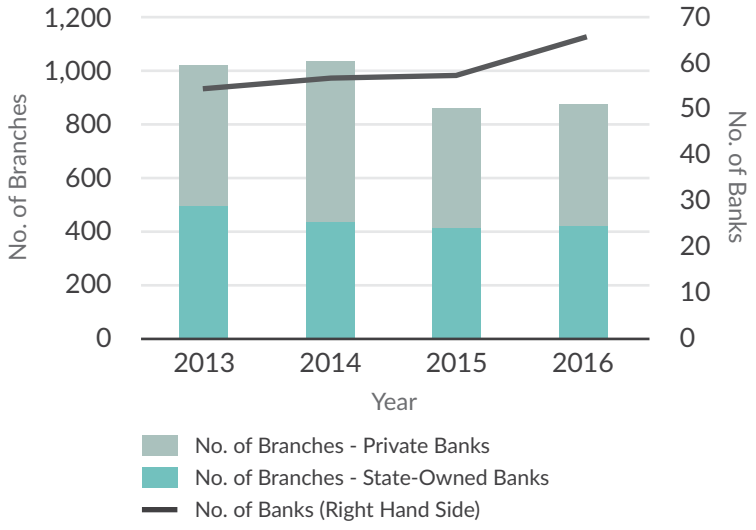
For the banking sector as a whole, total assets grew slightly in 2014 and have since remained flat, while there has been a significant decline in the number of bank branches. Banking assets amounted to IQD 221 trillion in 2016 compared to IQD 209 trillion in 2013 (Figure 6). The increase in banking assets as a percentage of GDP is largely attributed to the decline in nominal GDP during the period. The number of bank branches declined by 15 percent, from 1,014 to 868, despite the licensing of several new banks during the period (Figure 7). Branch number decreases are mainly due to conflict-related security issues.

Figure 6: *Trend in Banking Assets*



Source: CBI statistical bulletins.

Figure 7: *Number of Bank Branches*



Source: CBI statistical bulletins.

Military conflict had a direct impact on one central bank branch located in Mosul, and a significant number of bank branches. The central bank branch in Mosul was destroyed, with an estimated damage of IQD 20 billion. Central bank infrastructure elsewhere remained largely intact as the headquarters (in Baghdad) and other branches (in Basrah, Erbil, Slymanyah) of CBI were not affected. For the seven governorates under assessment, 121 bank branches (of which 84 branches belong to SOBs, and 37, to private banks) in Ninawa, Anbar, Kirkuk, Salah Al-Deen, and parts of Diyala were affected by ISIS occupation. The total damage is estimated at IQD 41 billion. ISIS also seized cash from CBI and bank branches amounting to IQD 971 billion, of which IQD 685 billion (including IQD 587 billion in local currency and US$ 84 million in foreign exchange) was taken from the CBI branch in Mosul. Total Finance and Markets sector damage was IQD 61 billion (US$ 52 million), while total losses equaled IQD 11.8 trillion (US$ 10.1 billion).

The extent of credit impairment in the banking sector, especially for SOBs, is hard to ascertain given data constraints, but it significantly outweighed physical damage. Credit quality of the banking sector deteriorated as the double shock of declining oil prices and the conflict and subsequent economic disruption put pressures on both government finances and private sector activities. The single largest item among all losses was the estimated additional provision needed to cover credit impairment of the SOBs (notably R&R), in the amount of IQD 9.6 trillion,[41] and equivalent to over four times of stated total capital and reserves, which would have been depleted if accumulated losses were recognized. For private banks, additional provision to cover incremental nonperforming loans during the period of the conflict was estimated at IQD 1.1 trillion, which appeared manageable compared to IQD 9.5 trillion in capital and reserves.

The microfinance sector was also affected to some extent. Out of the 12 nongovernment organization (NGO) microfinance institutions (MFIs) that had existed in the country before the conflict, four that were based in conflict-affected areas went out of operation, affecting a total portfolio of IQD 25 billion, compared to IQD 168 billion in total portfolio for the remaining eight MFIs as of 2015 (Table 29). Two other MFIs with a total portfolio of US$ 10 million suffered small impact. The portfolio quality of the MFIs in operation deteriorated, but the overall level of non-performing loans remained relatively low as of 2015 nonperforming loans (NPLs) 30 days went up to 6–7 percent, compared to 2.7 percent at end-2012.[42]

41 This large figure includes credit impairment due to the conflict and associated economic disruption, as well as legacy issues related to quasi-fiscal operations and poor financial management of the SOBs prior to the conflict. This represents estimated total losses incurred but not provisioned for. The impact of the conflict cannot be separately estimated as credible information on credit quality before and after the conflict is not available due to serious weaknesses in the systems and controls of the SOBs, in particular, R&R.

42 The Legal and Regulatory Framework for Microfinance in Iraq. World Bank and The Consultative Group to Assist the Poor, 2015.

Table 29: *Damage Inventory—All Governorate Roll Up (no. of facilities, cost in IQD billion)*

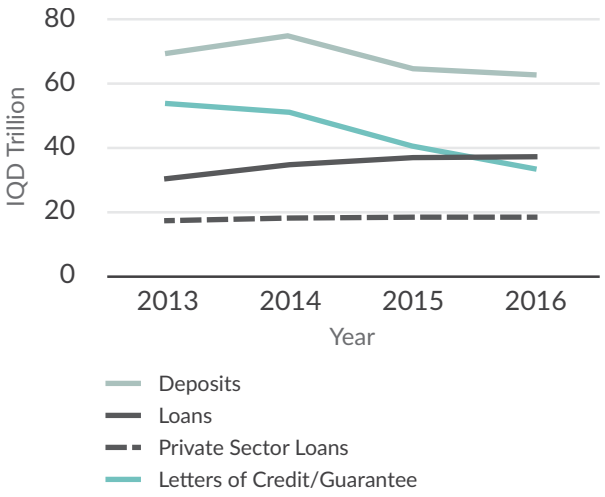
	Bank Type	Asset	Baseline	Total Damaged	Partially Damaged	Completely Destroyed	Total Cost
DAMAGE	*Central bank*	*Mosul branch*	1	1	0	1	20
	Commercial bank	*SOBs*	84	64	41	23	28.2
		Private banks	37	28	18	10	12.4
	Total Damage		**122**	**93**	**59**	**34**	**60.5**
LOSS	*Public*	*SOBs loans (estimated at 50% NPL x 80% provision coverage—3% of total loans as existing provision)*					9,649
		Cash seized by ISIS					684.9
	Private	*Private bank loans (Private banks incremental NPLs x 80%)*					1,111
		Cash seized by ISIS					285.8
		Portfolio loss—MFIs					24.8
	Total Loss						**11,755.8**
Total Effect (damage and loss)							**11,816.3**

Longer term impact on the efficiency of the financial system and access to finance is significant, although hard to quantify. Damaged banking infrastructure, displacement, loss of financial and physical assets, and increased operational risks have further reduced access to finance. The stock of banking loans increased between 2013 and 2016, but was largely attributed to the increase of loans from SOBs to the central government and public institutions, while deposits and letters of credit/guarantee both declined significantly (Figure 8). SOBs have turned to directly finance the budgetary deficit (due to increased military spending and humanitarian assistance), with the CBI providing refinancing through its discount window (Figure 9). One hundred sixty-five money exchange offices, and the above-mentioned 121 bank branches located in the areas under ISIS control were cut off from the payment systems, as the CBI took measures to stop financial flows to fund ISIS operations. Lack of access to the financial systems further entrenched a cash-based economy, which may continue to affect the functioning of the financial system and recovery efforts. The closure of MFIs, despite their small portfolio size, may have disproportionately affected households and microenterprises that were among the most financially constrained.

The conflict also had a significant impact on several critical economic sectors, which will require post-financial support. The conflict destroyed or damaged infrastructures and housing units covering a vast territory; this will require large amounts of financing from both public and private sources. The agricultural sector was also heavily affected as ISIS confiscated agricultural machinery and produce in occupied areas, while unexploded mines in the fields and farm compounds damaged by airstrikes reduced available farmland. This disproportionally affected women, as historically a considerably larger share of working women are found in agriculture compared to men.[43] Households and micro, small, and medium enterprises will need financing support both for short-term relief and to build sustainable livelihood in the longer term.

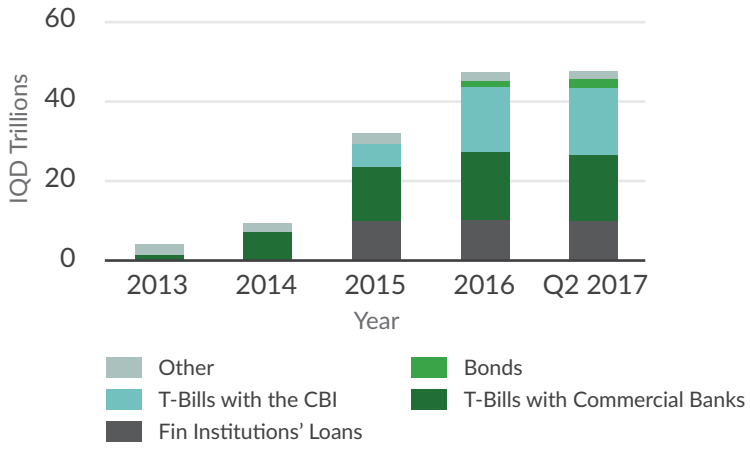
43 The share of working women and men in agriculture was 51 and 17 percent, respectively, in 2008.

Figure 8: *Trends in Deposits and Credit*



Source: CBI.

Figure 9: *Financing Sources of Internal Public Debt*



Source: CBI statistical bulletins.

Short-term priorities for the financial sector should focus on the immediate need to restore the basic functions of the banking and payment systems, and to facilitate aid efforts. The reconstruction and rehabilitation of banking infrastructure is ongoing, and the government has signaled a strong commitment to payment system reform. A useful initiative could be undertaken to develop mobile/e-payment technology to deliver cash assistance to IDPs. Mobile/e-payment technologies can improve the speed, efficiency, and security in cash transfers for short-term relief, and also offer opportunities to develop a range of payments, savings, and loan products to deepen financial inclusion in the long term.

The financial sector also plays an important role in the medium- and long-term recovery. Medium-term priorities include banking sector reform, in particular the financial and operational restructuring of R&R, and developing specialized finance to support critical areas for economic recovery and development (such as infrastructure, housing, and agriculture). Another medium-term priority is microfinancing to facilitate the transition from aid for income generating activities toward microfinancing to build sustainable livelihoods. Ensuring that women and men are able to benefit equally from different financial services and instruments is important as women play a key role in contributing to the economic growth and sustainable livelihoods of their families and their communities. These recovery efforts will need to be supplemented with reforms to improve financial infrastructure (e.g., secured transaction and insolvency frameworks, and credit registries) and enhance financial sector oversight. AML/CFT compliance is an area that requires continued attention in order to improve access to global payment systems and facilitate financial flows to support recovery. In the long term, developing a balanced, sophisticated, and sustainable financial sector to support the economy will require continued efforts to improve the business environment, develop markets, and enhance human capacity, with technical assistance and capacity building supported by local partners and the international community.

The total cost for reconstruction and recovery needs is estimated at IQD 1.2 trillion in the short term, and IQD 9.8 trillion in the medium term (Table 30). In aggregate, total sector needs are IQD 10.9 trillion (US$ 9.3 billion).

Special attention should be given to the needs of women in post-conflict recovery efforts, to ensure equitable access to relief and recovery assistance in the short term, and improve gender equality in the long term. Women have special needs during post-conflict recovery due to changed family structure (e.g., increase in women-headed households). They tend to have lower access to finance due to a variety of social and financial factors, including a lower level of formal employment, income, education, and access to technology, and lack of collateral and credit history. At the same time, women's economic activity generally expands out of necessity during conflict, and the reconstruction efforts offer an opportunity to build on this to promote and facilitate women's economic empowerment. Various legal and regulatory reforms and capacity building activities, for instance, a new financial inclusion strategy incorporating gender-focused interventions and tiered Know Your Customer (KYC) rules, taking into consideration gender differences in risk-taking behavior and addressing gender disparity in the legal and regulatory frameworks, can help improve women's access to finance, as well as their participation in the sector.

Table 30: *Governorate Public/Private Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Public/Private	Type	Total	Short Term (yr 1)	Medium Term (yrs 2–5)
Public	*Central Bank infrastructure*	Infrastructure reconstruction	35	24.5	10.5
		Service delivery restoration	4	0.8	3.2
		Subtotal	39	25.3	13.7
	SOBs —infrastructure	Infrastructure reconstruction	49.3	34.5	14.8
		Service delivery restoration	5.6	1.1	4.5
		Subtotal	54.9	35.6	19.3
	SOBs—additional provisions for credit losses	Infrastructure reconstruction	9,648.8	964.9	8,683.9
	Financial sector reforms and capacity building	Service delivery restoration	20	2	18
	Public Total		**9,762.7**	**1,027.8**	**8,734.9**
Private	*Private banks—infrastructure*	Infrastructure reconstruction	21.6	15.1	6.5
		Service delivery restoration	2.5	0.5	2
		Subtotal	24.1	15.6	8.5
	Private banks —additional provisions for credit losses	Service delivery restoration	1,111.4	111.1	1,000.3
	Microfinance recovery (incl. cost of financial losses and capacity building)	Service delivery restoration	29.8	3	26.9
	Professional capacity building (banking, accounting, auditing, etc.)	Service delivery restoration	10	2	8
	Private Total		**1,175.4**	**131.8**	**1,043.6**
Grand Total–All Governorates			**10,938.1**	**1,159.6**	**9,778.5**

Note: Microfinance sector recovery includes costs to cover financial losses (IQD 25 billion), as well as capacity building needs in the sector (IQD 5 billion).

A defunct train sits under a destroyed roof in Iraq. Conflict-induced damage to transportation infrastructure has hindered the movement of people, goods, and the delivery of services. REFAATO first photo exhibition. Photo credit: Ali Sahi.

Infrastructure Sectors

Power

A. Sector Summary

Overall physical damage and loss figures

The Power sector is one of the worst damaged sectors in terms of damage cost at IQD 8.2 trillion (US$ 7 billion). As of 2017, most of the power systems assets are either partly functioning or not functioning, with residents in 9 major cities out of the 7 governorates assessed for the purposes of this DNA without any form of access to public electricity service, 8 out of the 17 power plants in the assessed governorates have been completely destroyed. The remaining 9 power plants are either operating at lower generation capacity or are not functioning at all, and will require repairs to return to full operational status. As a result of this extensive infrastructure damage, evidence suggests most public network power availability has been significantly diminished in the majority of the governorates assessed. Rehabilitation work on the Power sector is ongoing, but public electricity, upon which many other services rely, remains unreliable. In addition to costs resulting from physical damages, the lack of electricity supply has broader economic implications arising from the substantially high cost of alternative options. These loss figures attempt to capture the daily losses using US$ 40/KWh as an average cost of unsupplied energy supplied by the private generators in Iraq, which gives an estimate of IQD 8.1 trillion (US$ 6.9 billion).

Overall Impact on service delivery (functionality)

Iraq's Power sector has sustained significant damage as a result of conflict conditions from the Islamic state's capture and occupation. This has resulted in the deterioration of public electricity supply in most conflict affected parts of the country. Further, the limited accessibility has constrained efforts to rehabilitate the electricity supply infrastructure at the city- and governorate-level. In some cities, electricity shortages due to conflict induced damage has had adverse impacts on the functionality and recovery of key social services such as health, education, water and sanitation, and the telecommunications sectors.

Key sector constraints and challenges

The conflict has significantly worsened the electricity supply situation from an already low level of reliability prior to the ISIS occupation. In addition to crises-related damage to key infrastructure, dilapidated assets, chronic fuel shortages, lack of appropriate maintenance and operation, a volatile security situation, all severely constrain the restoration of the electricity services from nonavailability to an acceptable level of quality of service. The violence and insecurity has only exacerbated these issues, restricting the ability of technicians to conduct routine maintenance, and ultimately making it difficult to achieve a stable supply of electricity for Iraqi citizens. To compensate for frequent public power supply shortfalls, residents have had to buy their own small generators or have had to get a supply from private operated generators, whose operation imposes high costs, and produces considerable noise and air pollution. Due to the lack of adequate generation and associated transmission and distribution networks, privately owned generators have become an important source of electricity. However, this imposes high costs to the residents as the private generators charge about US$ 40/KWh to residential consumers.

Needs figures

The provision of adequate electricity supply and restoration of power system operations must be an integral component of the planning and implementation process. The total value of needs is estimated at IQD 10.8 trillion (US$ 9.1 billion) in this regard.

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

Prior to the conflict with ISIS, Iraq's electricity sector suffered from a series of simultaneous and compounding challenges. Due to years of sanctions and past conflicts, necessary investments for reconstruction, rehabilitation, and expansion of transmission and distribution infrastructure to match growing demand were inadequate, leading to a dilapidated network and poor electricity supply reliability. In 1990, before the Gulf War, total installed generating capacity was 9.50GW with a peak demand of about 5.1GW. About 87 percent of the populace had access to electricity.[44] The sector was subsequently severely damaged following the Iraq War, with generating capacity in the range of 3.6 to 4.5GW, against a peak demand of 9.9GW in 2006. Only around 80 percent of Iraqis had access to the public electricity grid, and the power supply in 2006 met only about 50 percent of the demand.[45] Over a decade later, though the situation continues to improve, poor supply reliability due to frequent load shedding and unplanned power outages continue, with the supply from the national grid available for only a few hours per day.

C. Sectoral Damage and Loss Assessment

This remote damage assessment provides an in-depth analysis of conflict impacts on 10 types of urban power system assets in seven governorates. For a more comprehensive assessment, more data would have to have been incorporated.

Aggregate impact on service delivery

The assessment suggests that currently 6 out of the 16 assessed cities are without access to public electricity service, and 4 cities continue to experience relatively low levels of public network power access, varying by neighborhood. Al-Jalawla, As-Sa'adiya, Heet, Al-Muqdadya (Ibid), and Qarah Tabbah are the only cities that receive public electricity from the network for at least a few hours a day, on average. In all other cities, electricity access to the public network was limited or not available compared to pre-crisis levels of local electricity availability due to conflict-induced damage to power generation, transmission, and distribution infrastructure that would typically serve these cities. Furthermore, persistent issues such as fuel shortages, lack of appropriate operation and maintenance, and dangerous work environments for municipal electricity technicians continue to impede public network functionality, with severe cross-sectoral impacts. Reportedly, low levels of public network electricity access have had adverse impacts on the functioning and recovery of the health, water and sanitation, education, and telecommunications sectors.

44 World Bank. 2016. *Iraq–Emergency Electricity Reconstruction Project.* Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/460111468197953935/Iraq-Emergency-Electricity-Reconstruction-Project

45 World Bank. 2016. *Iraq–Emergency Electricity Reconstruction Project.* Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/460111468197953935/Iraq-Emergency-Electricity-Reconstruction-Project

Overall, this assessment indicates that over 55 percent of critical infrastructure, including power plants, transmission and distribution networks and associated substations (excluding transmission network towers) were partially damaged, and a further 33% were completely destroyed. Seventeen power plants were destroyed or sustained partial damage as a result of intensive ground fighting, artillery shelling, aerial bombardment, and looting. In addition, 14 percent of transmission network towers have been destroyed and need to be reinstalled. Infrastructure damage has been extensive in many governorates, with access to the public electricity network in associated cities significantly low or nonexistent. In Al-Falluja (Anbar governorate), for example, an assessment of damages to the public power grid concluded that 85 percent of the city's public electricity infrastructure sustained damages during the period of ISIS occupation.

Quantification of Damage and Loss to Assets and Infrastructure

Table 31: *Damage Inventory—All Governorate Roll Up (no. of facilities)*

	Asset Types	Baseline	Total Damaged	Partially Damaged	Completely Destroyed
DAMAGE	*Power plant*	17	17	9	8
	Substation (distribution)	115	92	45	47
	Substation (transmission)	49	43	20	23
	Substation (power generation)	8	6	5	1
	Tower	1,810	186	—	186
	Mobile plants	9	9	5	4
	Networks	34	34	5	29
	Kiosk sub-plants	2	2	—	2
	Feeders	43	43	6	37
	Admin office	19	8	8	—
	Total Assets	**2,106**	**440**	**103**	**337**

Governorate-Level Extrapolation

Table 32: *Governorate-Level Damage and Loss Cost (in IQD billion)*

Governorate	Damage Cost	Loss Cost
Anbar	95.8	—
Babel	96.1	204.3
Baghdad	374.7	643.5
Diyala	38.5	755.8
Kirkuk	1,109.8	252.1
Ninawa	956.2	2,911.9
Salah Al-Deen	5,501.6	3,327.8
Total	**8,172.6**	**8,095.3**

D. Assessment of Crisis Effects and Impact

The assessment suggests that currently six cities are without access to public electricity service, and four cities continue to experience relatively low levels of public network power access, varying by neighborhood. Al-Jalawla, As-Sa'adiyya, Heet, Muqdadiyya, and Qarah Tabbah are the only cities that receive public electricity from the network for at least a few hours a day, on average. In all other cities, electricity access to the public network was limited or not available compared to pre-crisis levels of local electricity availability due to conflict-induced damage to power generation, transmission, and distribution infrastructure that would typically serve these cities. Furthermore, persistent issues such as fuel shortages, lack of appropriate operation and maintenance, and dangerous work environments for municipal electricity technicians continue to impede public network functionality, with severe cross-sectoral impacts. Reportedly, low levels of public network electricity access have had adverse impacts on the functioning and recovery of the health, water and sanitation, education, and telecommunications sectors.

E. Sectoral Needs Assessment

Infrastructure reconstruction and service delivery restoration

Cost estimates incorporate a premium of 30% above the cost of damages to infrastructure to account for variable costs such as added security costs, constant risk of insurgent attacks, inflationary effects, technology improvements, labor supply and disruptions to logistics networks. The immediate priorities for the recovery of the electricity sector include the rapid restoration and rehabilitation of critical electricity and fuel supply infrastructure to restore electricity services.

Prioritized and sequenced needs

In the short–medium term, rehabilitation and expansion of power plants, transmission, and distribution infrastructure is needed to restore electricity services to be able to provide basic social services and reinvigorate economic activity and job creation. In the medium term, it will be critical to expand and upgrade generation and transmission, and distribute infrastructure, as well as increase power system efficiency.

Table 33: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Infrastructure reconstruction and service delivery restoration	126.3	63.1	63.1
Babel	Infrastructure reconstruction and service delivery restoration	126.6	63.3	63.3
Baghdad	Infrastructure reconstruction and service delivery restoration	493.8	246.9	246.9
Diyala	Infrastructure reconstruction and service delivery restoration	50.7	25.4	25.4
Kirkuk	Infrastructure reconstruction and service delivery restoration	1,462.5	731.2	731.2
Ninawa	Infrastructure reconstruction and service delivery restoration	1,260.1	630	630
Salah Al-Deen	Infrastructure reconstruction and service delivery restoration	7,250.2	3,625.1	3,625.1
Grand Total–All Governorates		**10,770.2**	**5,385.1**	**5,385.1**

F. Recommendations and Limitations

Overview and main concerns

Inadequate electricity is a top concern, impacting daily life of the people and the country's economic development and private sector led job creation. In the immediate/short term, the government's priority is on improving delivery of services to mitigate the effects of citizen's dissatisfaction, unmet expectations, and widespread internal displacement with increasing social tensions following the security crisis. For the electricity sector, to meet these objectives and expectations requires a multipronged approach to have adequate power generation capacity, reduce losses in the transmission and distribution system, and the sector's fiscal sustainability. The sector's performance, in the medium to long term, will greatly depend on its ability to generate sufficient revenues to meet its financing needs.

Recommendations for future recovery plans

Short term (up to1 year)

Rehabilitate dilapidated electricity infrastructure. There is urgent need to restore electricity services, especially in the recently liberated areas, and rehabilitate the dilapidated infrastructure following years of neglect and sanctions to increase supply availability and quality in other parts of the country.

Add new generation capacity. In addition to continued investments in transmission and distribution infrastructure, new power generation capacity is of crucial importance. Iraq's Integrated National Energy Strategy (INES) recognizes the need to address the significant economic cost of lost load and improve levels of supply before taking higher order issues such as efficiency reliability and accountability, including through private sector engagement. In short to medium terms these urgent supply gaps could be bridged by distributed modular generation units. In the long term, the infrastructure damage caused by conflict also represents an opportunity for electricity sector to leapfrog the energy transformation curve by employing renewable generation options in the network. However, this will require significant political will and higher upfront investment cost.

Medium term (up to 3 years)
Network reinforcement and expansions. As electricity supply becomes more reliable, demand is likely to increase. To keep pace with growing demand, it will be critical to expand and upgrade the generation, transmission, and distribution infrastructure, and increase power system efficiency.

Operations efficiency. Improve supply reliability and reduce losses. In order to increase private sector participation in the electricity sector and achieve the sector objectives, the Ministry of Electricity must improve the performance of the sector and meet minimum levels of commercial performance.

Long term (up to and beyond 5 years)
Sector reforms, performance improvement and fiscal sustainability. The need for funding beyond available public resources, will require that government sector reforms are undertaken. The GoI should take steps to operationalize the new electricity law that provides for the restructuring of the Ministry of Electricity as part of a revised legal framework for the sector.

Regional power grid integration. As Iraq acquires self-sufficiency in power, it should develop a strategy for international power exchange, either as a net exporter or as part of a regional grid for reserve sharing and load balancing. Iraq's location provides a strategic position for potential wheeling of power from the Middle East to Europe.

Infrastructure Sectors

Oil and Gas

A. Sector Summary

Sector damage is calculated to be approximately IQD 5 trillion (US$ 4.3 billion). It is estimated that 85 percent of the physical damages and 90 percent of the total losses attributable to the sector occurred in the Salah Al-Deen governorate at the Beygee refinery complex which was devastated by the conflict. The remaining damages occurred throughout the region in oil field operations, petroleum pipelines, and motor fuel and LPG distribution facilities. Additionally, several warehouses and office buildings were destroyed. In most cases these damages were complete, but isolated, and restoration is possible on an ad hoc basis. Losses to the sector as a result of the conflict are estimated at IQD 25.7 trillion (US$ 22 billion).

The output of the Beygee refinery was very important to the region and country as a whole. The refinery provided over one-third of Iraq's motor fuels. Iraq's remaining refineries lack the processing sophistication to upgrade gasolines or efficiently remove sulfur from diesel fuels. As a result of the refinery outage, the country continues to suffer from lack of supply and substandard quality products for vehicular use. The refinery also supplied fuel to a 1,320 megawatt power generation plant, and feedstock to a 50,000 tonnes per annum petrochemical detergent manufacturing facility. The refinery's demise has led to the closure of these facilities. The biggest restoration challenge in the short term will be funding, and in the long term, the reestablishment of staffing and support companies with respect to the return to operations of the Beygee refinery. Remaining sector damages can be repaired/replaced on an ad hoc basis as capacity permits.

It is estimated that the repair and replacement cost for damages sustained in the Oil and Gas sector is approximately IQD 8.5 trillion (US$ 7.2 billion), inclusive of service delivery restoration costs. The primary concentration of restitution should be centered on the reestablishment of the producing capacity in a phased approach at the Beygee refinery complex.

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

The Beygee refinery facilities was Iraq's largest and most complex refinery (310,000 barrels per day), and represented approximately 75 percent of the North Refineries Company (NRC) refining capacity. The refinery was equipped to process Iraq's heavier and sour crude oils and contained significant catalytic reforming capacity to upgrade lower octane naphtha to better performing, higher octane motor gasolines. The refinery was also equipped with a liquid petroleum gas (LPG) recovery unit. The refinery would be considered to have firm financial viability by international standards. The complex was bordered on the west by the major highway system running between Baghdad and Mosul, and had access to the Tigress River on its eastern edge. The refinery was serviced by several pipelines to move crude in and products out of the facilities. The refinery also had a large tank farm (over 300 tanks of various sizes) which stored crude oil, intermediate, and finished products.

The remainder of the sector within the assessment area was composed of approximately 20 oil and gas producing properties; an interconnecting network of underground pipelines; 6 additional refineries of very low processing capacity and sophistication; and approximately 47 facilities for the distribution of refined products and LPG. Prior to the conflict, the area's oil and gas infrastructure was highly developed and efficiently managed by State Owned Enterprises (SOEs). The North Oil Company (NOC) was responsible for the management of the upstream component of the sector (exploration and production of oil and gas). NOC had a workforce of approximately 10,000 employees and was headquartered in Kirkuk.

The Oil Pipelines Company (OPC) was primarily responsible for the crude oil, refined products, and LPG pipelines operating in the region. OPC supplied crude oil to the NRC's facilities and operated refined product pipelines to distribute finished products to motor fuel distribution outlets. OPC also operated natural gas pipelines connecting northern and southern gas production to power generation facilities. The NRC operated seven refineries in the area including the Beygee complex, and four very small refineries in Kirkuk, Haditha, and Mosul (2). NRC had employed about 9,000 employees throughout it's areas of operation. The North Gas Company (NGC) operated a processing plant in Kirkuk which separated LPG from natural gas produced in association with the crude oil produced in NOC fields. LPG was transported by truck or pipe from the plant to state-owned LPG bottling facilities for ultimate distribution to residential and commercial customers. NGC had approximately 1,600 employees in 2007.

The operation of the sector was considered to have been performing competitively. Most of the equipment and operating practices were established using international standards at a period when international oil companies were permitted to operate in Iraq. Management and operation capacities were very high, although the physical systems and controls were never upgraded to modern platforms, and some segments of the pipeline were operating below capacity.

The sector's challenges are threefold: (1) SOEs lack funding to modernize or expand operations; (2) management and operational capacity have significantly diminished due to aging of the workforce and displacement of workers; and (3) absence of transparent, internationally benchmarked legal, regulatory, and commercial frameworks to support private sector investment.

C. Sectoral Damage and Loss Assessment

Approximately 90 percent of the damage is associated with the refining subsector, specifically at Beygee in the Salah Al-Deen governate.

The greatest impact of the sector damage was experienced in the city of Beygee in the Salah Al-Deen governate. Aerial assessment of the facilities indicates that 78 percent of the major features identified were either partially or completely destroyed. At its peak, the refinery employed about 10,000 full-time employees locally, justified a number of associated jobs throughout the NRC, and supported thousands more within adjacent power and petrochemical facilities. Other sector impacts resulted from reduced supply and delivery systems of high quality vehicular and heating fuels. This disruption has led to higher costs and bottlenecks in the overall commercial value chain in the region.

Total damages are estimated to be IQD 5.0 trillion. Additional annual losses are calculated to be IQD 8.6 trillion. A summary of the damages and losses are summarized below (Table 34) and grouped by governorate (Table 35). The majority of costs are associated with the damages to refineries (including pipelines and storage facilities supporting these refineries) and cost of importation of replacement products.

Table 34: *Damage Inventory—All City Roll Up (no. of facilities, cost in IQD billion)*

	Asset Types	Baseline	Total Damaged	Partially Damaged	Completely Destroyed
DAMAGE	*Crude oil refineries*	7	6	3	3
	Oil and gas field facilities	18	15	4	11
	Oil and gas pipelines	4	4	0	4
	Gas and oil distribution	51	28	4	24
	Total	**80**	**53**	**11**	**42**
LOSS	*Refinery products*	Production of motor fuels, electric generation fuels, and petrochemical feedstock (annual cost)			
	Crude oil production	Estimate of lost oil production revenue from **Naft Khaja** field in Diyala governorate (annual cost)			
	Direct and indirect wages	Refinery employment and NRC support positions lost, indirect labor, and refinery support (annual cost)			
	Oil and gas distribution costs	Additional costs of trucking fuels due to loss of pipeline capacity and distribution centers (annual cost)			

At the governate level, Salah Al-Deen suffered the vast majority of physical damage and loss. These are associated with the destruction of the Beygee refinery complex. Kirkuk suffered the least amount of loss in the assessment area. Petroleum sector losses in the remaining governorates tend to be isolated and associated with the delivery of petroleum products to residential and commercial consumers.

Table 35: *Governorate-Level Damage and Loss Cost (in IQD billion)*

Governorate	Damage Cost	Loss Cost
Anbar	137.6	1,920
Diyala	43.1	174
Kirkuk	1.2	—
Ninawa	114.3	1,080
Salah Al-Deen	4,673.3	22,500
Total	**4,969.5**	**25, 674**

Smoke fills the air as an oil refinery burns during the conflict. REFAATO first photo exhibition. Photo credit: Ali Al-Fahdaoui.

D. Assessment of Crisis Effects and Impact

In addition to the loss of livelihood for citizens living in the areas of assessment (primarily Beygee city), the crisis has led to widespread shortages of refined product and electricity. Beygee refinery produced approximately one-third of the country's motor fuel needs, which now must be imported into Iraq's southern ports and transported over long distances by roadway throughout the country. This is expensive and disruptive to the operation of the country's commercial value chain.

E. Sectoral Needs Assessment

It is estimated that the repair and replacement cost for damages sustained in the Oil and Gas sector is approximately IQD 8.5 trillion over the next five years, inclusive of service restoration costs. The primary concentration of restitution should be centered on the reestablishment of productive refining capacity at the Beygee refinery complex. The remaining damages can be repaired/replaced on an as needed and as capable basis. The recruitment of reconstruction workers and skilled operators and managers to restore operations at the Beygee refinery will be problematic, as most of the local population is now displaced, and much of the city's residential properties remain uninhabitable. Refinery reconstruction must be coordinated with programs to reestablish

electric power, social services (education, sanitation, medical, etc.), and housing restoration efforts for the region. The Salah Al-Deen government and the Ministry of Oil (specifically the NRC), will be the principle counterparties to aid agencies and perhaps private sector investors. These government institutions will require hired specialists and ongoing capacity building to manage these relationships. The availability of labor, transportation, and electric power is not believed to be a hindrance with regard to the repair of isolated damages sustained in the remaining cities and governorates. A significant effort should be made to restore operations at the Beygee refinery, starting with the least damaged first. Coincidentally, storage facilities and pipelines associated with the refinery complex must be repaired and replaced in a phased approach to match the refining capacity as it is restored.

The remainder of the sector damages include, fully or partially destroyed facilities to distribute vehicular fuel and LPG, offices and warehouse buildings, oil and gas pipelines outside of the Beygee governorate, and a few oil production facilities. The location of much of this damage has not been specified and often resides outside of city limits. It is assumed that the damaged and destroyed assets could be fully rehabilitated within 24 months.

Table 36: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)	Long Term (Beyond yrs 5+)
Anbar	*Infrastructure reconstruction*	244.7	106.4	138.3	—
	Service delivery restoration	36.7	16	20.7	—
	Total Anbar	**281.4**	**122.3**	**159**	**—**
Diyala	*Infrastructure reconstruction*	76.8	—	76.8	—
	Service delivery restoration	11.5	—	11.5	—
	Total Diyala	**88.4**	**—**	**88.4**	**—**
Ninawa	*Infrastructure reconstruction*	203.3	85.1	118.2	—
	Service delivery restoration	30.5	12.8	17.7	—
	Total Ninawa	**233.8**	**97.9**	**135.9**	**—**
Salah Al-Deen	*Infrastructure reconstruction*	7,197.2	591	6,606.2	1,063.8
	Service delivery restoration	719.7	59.1	660.6	106.4
	Total Salah Al-Deen	**7,916.9**	**650.1**	**7,266.8**	**1,170.2**
Grand Total–All Governorates		**8,520.4**	**870.3**	**7,650.1**	**1,170.2**

F. Recommendations and Limitations

The primary limitation to the assessment of the Oil and Gas sector occurs in the evaluation of damages to the Beygee refinery complex. Aerial bombardment and subsequent looting of equipment are known to have caused extensive damage to major pieces of equipment and operating systems. However, a very thorough inspection of the plants is required to accurately determine the extent of damage and the degree to which certain, very expensive processes can be repaired rather than replaced.

There are options to replace the lost refining capacity at other refineries in Iraq (Baghdad and Basrah). The Baghdad refinery is very old and inefficient and resides within the greater Baghdad city limits with limited expansion capability. The Basrah plant is a sister plant to the Baghdad facility. Although it has more options for expansion, it resides very far from the population centers in middle and northern Iraq. Both alternatives also fail to reestablish household livelihoods and basic goods and services for the families affected in the DNA area.

Funding for the reestablishment of refining operations may come from the private sector through the establishment of Joint Venture companies. The NRC would contribute land and reusable equipment to retain a minority interest in a new refinery funded by experienced private sector investors/operators. There are many examples and commercial models of these arrangements throughout the international refining community.

G. Recommendations for Future Recovery Plans

Oil and Gas sector recovery plans must be closely coordinated between state-owned enterprises and other elements of the energy and industrial sectors, particularly as it pertains to the reestablishment of service at the Beygee power station and other electric generation facilities formerly fueled by NRC production. The elements of the sector's recovery plans should include:

- Detailed assessment of physical damage to operational equipment and processes.
- Detailed assessment of salvage value of Beygee refinery complex.
- Action plan, including a detailed investment estimate for the re-establishment of partial operations within the Beygee complex.
- Strategic assessment of funding options including the establishment of a public-private joint operating company anchored by existing Beygee refinery assets.
- Strategic plan for the reestablishment of crude oil and refined products pipeline service into and out of the Beygee refinery complex. Such plans should include plans to modernize the pipelines' operating and control system.

Infrastructure Sectors

Information and Communications Technologies

A. Sector Summary

Based on the analysis of the available data, around 39 percent of the mobile towers, base stations, and shelters were partially destroyed and 8 percent destroyed in the main governorates affected by conflict. The total cost of damage to the mobile network in the seven governorates is estimated at IQD 83 billion (US$ 71 million). These networks are privately owned and therefore these damages are incurred by the private sector. Regarding the fixed network, data collected shows that 103 fixed network facilities were destroyed and 21 were partially destroyed. The level of damage is by far the greatest in the governorate of Ninawa which amounts to 68 percent of the total cost of damage. The total cost of damage to the fixed network is estimated at IQD 383.3 billion (US$ 328.7 million).Total damage to the sector equaled IQD 466 billion (US$ 400 million). Losses to the sector as a result of the conflict are estimated at IQD 1.5 trillion (US$ 1.3 billion).

In many of the areas affected by the conflict, mobile towers were destroyed or were inaccessible for repairs and maintenance. The lack of electricity, fuel supply, and transportation has also affected tower operation and therefore mobile connectivity. Similarly, cuts and destruction to the fixed network assets resulted in intermittent Internet access and a complete shutdown in some areas. All these factors raised the cost of maintenance and operations and thus affected the provision of communications.

The remains of a deserted street after being destroyed due to the conflict. REFAATO first photo exhibition. Photo credit: Karim Kashekh.

Key constraints going forward include the lack of a robust legal, policy, and regulatory framework that would be necessary, particularly to build back the national fiber backbone infrastructure (wholesale segment of the market) which is state owned and would benefit from private participation. Furthermore, a new network of communications infrastructure and service providers has emerged servicing the ISIS for its own communication needs and social media reports examined under this assessment have revealed some concerns over possible emergence of unlicensed operators in ISIS-held areas. There will be a need to address such unlicensed operators that are currently outside the formal legal and regulatory framework.

It is estimated that the repair and replacement cost for damages sustained by the mobile network operators (all are private operators) is approximately IQD 100 billion (US$ 85 million), inclusive of service delivery restoration costs. In terms of the state-owned fixed backbone network, it is estimated that a total of IQD 660.5 billion (US$ 558.8 million) will be needed to build a state-of-the-art and robust fixed network in the affected areas. Total sector needs were IQD 761 billion (US$ 644 million). The reconstruction needs for the intercity fiber network was not possible to assess in this report.

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

Prior to the recent conflict, overall uptake of mobile phone services in Iraq was in line with other countries in the region; however, the market had struggled to increase subscriptions to data- or Internet-enabled mobile services. At the end of 2013, there was a little over 16 million unique mobile phone users[46] or 46.8 percent of Iraq's population. Of this, only 2.9 million or 8.6 percent of the population subscribed to data-enabled mobile services.

The mobile market is fully liberalized with three national mobile operators and competitive market forces helping to increase access to communications services across the country. Zain Iraq, an Iraq-Kuwait joint venture company, and Asiacell, a subsidiary of Qatar's Ooredoo, have the largest market shares, 36.7 percent and 34.7 percent, respectively.

The story is different for Iraq's high-speed or broadband Internet fixed infrastructure which is limited, hindering overall digital development of the country. It is estimated that there are less than a million subscriptions to high-speed Internet in Iraq. This is about 17 percent household penetration, below the regional average of 37 percent.[47] The robustness of a country's communications infrastructure relies on the robustness of the backbone infrastructure. There is a public monopoly over the fixed network or backbone infrastructure. One reason for the slow growth in the sector is the monopoly status of the state-owned Iraq Telecommunications and Post Company (ITPC) over fixed line assets at the domestic and international levels.

46 Unique mobile subscriber indicates a unique user who can have multiple connections including multiple subscriber identity module cards. In 2013, it was estimated that there were 1.95 subscriber identity modules per unique user.
47 Telegeography.

Iraq currently does not have the key elements of a policy and regulatory framework for the telecommunications sector. There is currently no telecommunications law nor the necessary regulatory framework for the telecom sector, which has obstructed the country from keeping up with technological advancements, particularly for high speed or broadband services.

C. Sectoral Damage Assessment

1. Aggregate sectoral analysis

While the total cost of damage to the mobile network in these four governorates is estimated at IQD 83 billion, the total cost of damage to the fixed network is estimated at IQD 383.3 billion (Table 39). Total governorate-level damage was IQD 465.8 billion (see Table 39). Overall losses are significant, particularly when examining the potential economic losses of the operator, which indicates substantial hindrance in service delivery. The main losses incurred by the private mobile network operators in the affected areas were the result of lost revenues from subscribers in areas where coverage was affected and an overall decrease in usage levels and purchasing power occurred.

2. City-level analysis

Despite the insecurity, the state-owned operator, the ITPC, and the three national private mobile operators[48] continued to make efforts to rebuild their networks in some cities—particularly in Al-Falluja, Mosul and Al-Ramadi—even during ongoing conflict. Although with some limitations, all three mobile operators in Iraq and the state-owned fixed infrastructure telecommunications operators are continuing to provide services.

3. Quantification of damage and loss to assets and infrastructure

Table 37: *Damage Inventory (all damage cost per asset and based on governorate level analysis)*

Asset Types	Baseline	Total Damaged	Partially Damaged	Completely Destroyed	Ownership
Mobile assets: towers and base stations	970	509	429	80	Private
Mobile assets: base stations on building	1,176	679	569	110	Private
Mobile assets: shelters and power	2,146	1,188	998	190	Private
Fixed assets: network facilities, central offices, fixed network switches	—	124	21	103	Public
Total Damage	**4,292**	**2,500**	**2,017**	**483**	

Table 38: *Loss Inventory (all loss cost per factor, nationwide)*

	Loss Factors	Total Losses (million IQD)	Ownership
LOSS	*Estimation of higher production costs ($) (during the conflict 2014–2016)*	156.3	Private
	Revenue losses for private owned utilities ($) (during conflict 2014–2016)	1,386.3	Private
	Revenue losses for government owned utilities ($)	n/a	Public
	Total Losses	**1,542.6**	

48 The three national mobile operators are Zain Iraq, Asiacell, and Korek Telecom.

4. Governorate-level extrapolation

Based on the analysis of the available data, around 39 percent of the mobile towers, base stations, and shelters were partially destroyed, and 8 percent were destroyed in the main governorates affected by conflict which is the focus of this DNA. Regarding the fixed network, data from the government of Iraq shows that 103 fixed network facilities were destroyed and 21 were partially destroyed. The level of damage is by the far the greatest in the governorate of Ninawa which amounts to 68 percent of the total cost of damage.

Table 39: *Governorate-Level Damage Costs*

Governorate	Damage cost by ownership (IQD billion)		Total Cost
	Private Sector	Public Sector	
Anbar	34.2	56.5	90.7
Babel	—	11	11
Baghdad	—	—	—
Diyala	1.6	3.9	5.5
Kirkuk	3	9.2	12.1
Ninawa	29.6	288	317.6
Salah Al-Deen	14.2	14.7	28.9
Total Damage	**82.6**	**383.3**	**465.8**

D. Assessment of Crisis Effects and Impact

The recent conflict has taken a significant toll on Iraq's telecommunications networks. In many of the areas affected by the conflict, mobile towers were destroyed or were inaccessible for repairs and maintenance. The lack of electricity, fuel supply, and transportation has also affected tower operation and therefore mobile connectivity. Similarly, cuts and destruction to the fixed network assets resulted in intermittent Internet access and a complete shutdown in some areas. All these factors raised the cost of maintenance and operations and thus affected the provision of communications.

E. Sectoral Needs Assessment

The monetary value of reconstruction needs for mobile networks is based on the monetary value of physical damage, which is estimated at IQD 83 billion. It is estimated that half of the reconstruction should occur during the first year (short term), and the other half should occur during the following years (medium term). As such, the reconstruction needs for mobile operators is estimated at IQD 50.2 billion in the first year and the same cost for the medium term of two to five years. The mobile operators started reconstructing in phases and as soon as areas and assets became accessible.

Damages to the fixed network inside the major governorate are estimated at around IQD 383.3 billion. Given the complexity and the cost of deploying fiber networks and the upgrade of the network elements in dense areas, it is estimated that 30 percent of the fixed network can be reconstructed in the first year and 70 percent in the two to five years that follow. Thus, it is estimated that IQD 660.5 billion will be needed to build a state-of-the-art and robust fixed network. Total sector needs were IQD 761 billion (US$ 644 million).

Once the mobile networks are restored, the private mobile operators would be able to provide services almost immediately. As the three private operators operate across the country, this would mean people gaining back communications services would be able to communicate throughout the country as well as internationally. The mobile operators are, however, reliant on the fixed backbone network that is owned and managed by the state-owned ITPC. This backbone is the core infrastructure that carries traffic between cities and regions. Hence, any delay in restoring the fixed network could impact the provision of services over the mobile networks in locations where the fixed infrastructure is severely damaged.

Table 40: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Total (over 5 yrs)		Short Term (yr 1)		Medium Term (yrs 2–5)	
	Private	Public	Private	Public	Private	Public
Anbar	41.6	97.4	20.8	29.2	20.8	68.2
Babel	—	19	—	5.7	—	13.3
Baghdad	—	—	—	—	—	—
Diyala	2	6.7	1	2	1	4.7
Kirkuk	3.6	15.8	1.8	4.7	1.8	11
Ninawa	36	496.4	18	148.9	18	347.5
Salah Al-Deen	17.3	25.3	8.7	7.6	8.7	17.7
Total Needs	**100.5**	**660.5**	**50.2**	**198.1**	**50.2**	**462.3**
	761		**248.3**		**513.5**	

F. Implementation Arrangements

While the reconstruction of the mobile networks is assumed to be funded and managed by the private sector, the reconstruction of the fixed network can also leverage private investment in different forms of public-private partnerships (PPPs). After securing an enabling environment, the government can collaborate with the private sector to rebuild critical infrastructure that would not be otherwise profitable or attractive for private sector investment.

G. Recommendations

It is important to note that this assessment, due to its remote nature, focuses on mobile networks which include visible mobile towers or masts and does not examine damage to the national fiber backbone infrastructure, as both underground and aerial fiber networks are difficult to capture through satellite imagery. However, governmental data point to significant damages to the national fiber network which is an essential facility that carries Internet bandwidth across the country and to which mobile networks hop onto.

The key objective for future recovery should be equitable coverage and inclusive service provision. Access to mobile phone service, in particular, becomes critical in crisis situations where information regarding airstrikes, medical assistance, food and water supplies, and keeping in touch with family members becomes a life or death situation. Future recovery plans should take into consideration provision of communications as a service required by all—individuals, the private sector, government agencies, and humanitarian agencies.

When reconstruction efforts begin, it will be important to plan for laying fiber-optic cables along any new linear infrastructure—roads, power grids, and railroads, etc. About 75 percent of the cost of laying fiber is in works and digging the trenches for the ducts. Such extensive digging has a significant impact on the environment. Hence the 'dig once' policy would follow the global trend in which fiber ducts are built alongside construction of electricity grids and highways, among other utility infrastructure. It will therefore be both cost efficient and least detrimental to the environment to promote the deployment of fiber via linear infrastructure for electricity grids and roads/highways. Thus, from the government perspective, reconstruction efforts could also focus on:

Short term (up to 1 year)

1. Remove the restrictions on the private operators to build, own, and operate domestic and international fiber infrastructure.
2. Enact the telecom legislation that lays the grounds for increasing competition and private sector participation, and provides legal and regulatory certainty for local and international investors.
3. Develop a government plan to use digital technology in the recovery and peace building effort, particularly in bigger cities such as Mosul, leveraging on the digital applications to improve service delivery in areas under reconstruction, increase citizen participation in the reconstruction effort and in policy making, and increase transparency of government funding and investment.

Medium term (up to 5 years)

1. Develop and implement a public-private partnership (PPP) in the rebuilding of critical fiber infrastructure: backbone intercity infrastructure, backhaul, and access in main cities.
2. Develop and enact regulatory tools, chief among them spectrum management and reallocation, regulations of dominant operators, infrastructure sharing and a unified licensing regime.

Infrastructure Sectors

Transport

A. Sector Summary

The total damage costs for the seven Iraqi governorates in the Transport sector is IQD 3.3 trillion (US$ 2.8 billion), and the total loss is IQD 315 billion (US$ 270 million). The Transport sector, consisting of roads, airports, bridges, and railways, has suffered significantly as a result of the conflict, impairing the mobility and transportation of people, goods, and services. Key sectoral challenges that need to be addressed include: the restoration of normalcy of transportation institutions and authorities; a clear identification of sector priorities; and the Transport sector overreliance on the road network for transportation. The total needs costs for the seven governorates is IQD 4.7 trillion (US$ 4.0 billion).

B. Background and Analysis of Pre-Crisis Conditions

After decades of instability, Iraq continues to suffer from weak institutions and underdeveloped infrastructure—roads and transport are no exception. Over the last few decades, transport infrastructures, roads, airports, and railways lack capital investments to maintain performance standards. Building the country's infrastructure, supporting institutions, and restoring peace and security throughout the country are major challenges facing Iraq currently. Supporting the Transport sector in Iraq is important for increasing social cohesion and unity, as well as national and regional integration.

Roads: Iraq's road network is relatively developed in terms of efficiency and capacity. However, most of the road network suffers from extensive deterioration and damages due to decades of war and instability, as well as the lack of routine and periodic maintenance. This has led to deterioration of the road network's efficiency, and road network capacity has been compounded by loss of and damage to road infrastructure. In addition, overreliance on the road network for transport has put further pressure on the quality and performance of the road network.

Railway: Iraqi Republic Railways Company (IRR) is the national railway operator. Iraq's railway is 1,905 kilometers of standard gauge and much of the rail network was built in the 1960s. The network runs along the following lines:

- Rabiya–Mosul–Beygee–Baghdad–Basrah, with a branch from Shouaiba Junction (near Basrah) to the ports of Khor AzZubair and Umm Qasr (the section between Baghdad–Mosul being dulled);
- Baghdad–Al-Ramadi–Haqlaniya–Al-Qaim–Husayba, with a branch from Al-Qaim to Akashat; and
- Haqlaniya–Beygee–Kirkuk.

Air Transport: Iraq has 116 airports, in which 6 are international airports (Baghdad, Mosul, Basrah, Erbil, Sulaymaniyah, and Najaf).

C. Sectoral Damage and Loss Assessment

1. Aggregate Sector Analysis

As a result of the conflict, the Iraqi Transport sector has sustained much damage. The following city road networks sustained the highest damages:

1. ***High Damage:*** Beygee (71.14 percent), Sinjar (66.98 percent), Heet (58.42 percent), and Mosul (42.79 percent with damages averaging 66 percent of their total road network damaged,
2. ***Moderate Damage:*** Al-Jalawla (36.46 percent), Tal Afar, (35.90 percent), Al-Ba'aj (34.49 percent), Al-Shirqat (29.58 percent), and Bakhdida, (28.45 percent) with damages averaging 33 percent of their total road network damaged,
3. ***Low Damage:*** Qarah Tabbah (22.00 percent), Al-Falluja (20.94 percent), Al-Muqdadya (Ibid) (14.15 percent), Tel Keppe (13.87 percent), As-Sa'adiyya (10.53 percent), Al-Hatra, (9.19 percent), and Al-Ramadi (7.78 percent) sustained relatively lower damages, averaging 14 percent of the total road network damaged.

Other Transportation sector assets, bridges, railways, and airports also have sustained significant damage. Notably, in Mosul, all five Tigris River bridges are reportedly destroyed. As of July 2017, imagery analysis indicated that the Mosul airport was completely destroyed. The Mosul rail station, in addition, is damaged and not functioning, although the facility displayed damage and was only partially functioning prior to recent conflict. Widespread damage has been reported to bridge infrastructure in the majority of the cities included in the DNA.

2. Quantification of Damage and Loss to Assets and Infrastructure

Table 41: *Damage Inventory—All District Roll Up (meters, cost in IQD billion)*

	Asset Types	Baseline	Total Damaged
DAMAGE	*Primary*	233,600.27	57,298.5
	Secondary	473,647.7	117,819.57
	Tertiary	590,230.91	206,670.75
	Residential	4,396,770.28	1,762,518.49
	Service	126,118.77	32,026.64
	Track	70,778.59	10,105.81
	Trunk	243,395.24	75,888.93
	Unclassified	241,012.15	38,964.86
	Bridge	—	5,792
	Airport (number)	—	1
	Railway station (number)	—	3

3. Governorate-Level Extrapolation

Table 42: *Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	1,106.9
Babel	32.6
Baghdad	217.2
Diyala	129.9
Kirkuk	323
Ninawa	1,220.2
Salah Al-Deen	227.6
Total	**3,257.4**

D. Impact on Service Delivery

The findings of this assessment illustrate the challenges that physical damage and the deterioration of service delivery will present as the conflict is reduced to the level that allows for the development and economic revival in these regions. Given the level of destruction to infrastructure, public services, and private properties, the recovery efforts will have to respond to new social and economic shifts of the conflict-affected regions in Iraq.

The Transport sector, roads, airports, and railway, have suffered from destruction caused by the conflict. Many roads and bridges have been completely or partially destroyed. This has caused major disruption to access and mobility. In war impacted cities, people were trapped in their homes and shelters without access to food, water, medicine, and jobs. Imports and exports have also been affected by impaired transport infrastructure.

E. Sectoral Needs Assessment

GoI should mobilize resources to start reconstruction of war impacted governorates and cities as early as possible. Equally important is the need to restore the institutional and technical capacity to meet the growing challenges to restore the sector's functionality. This will require mobilizing not only financial resources, but also putting in place medium- and long-term master plans to reconstruct and rehabilitate the sector.

Given the impact of the war, GoI should implement emergency rehabilitation strategy to restore the sector's service delivery. The aim is to improve the condition of the transport asset and infrastructure by rehabilitating highly damaged segments of the country's roads, bridges, railways, and airports. The strategy should also aim to restore the technical and institutional capacity to manage and maintain the Transport subsectors. Ultimately this strategy will contribute to the country's economic and social recovery and job creation. More specifically, the strategy should:

- Rehabilitate airports, railway links, and existing roads and programs for periodic road maintenance;
- Increase the current transportation network's efficiency and capacity;
- Enhance the efficiency and performance of the Transportation sector's institutions;
- Promote transport by railroads, and protect the national road network from damage; and
- Strengthen the private sector's role in transportation.

1. Needs Assessment Recovery and Reconstruction Needs

Table 43: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Infrastructure reconstruction	1,514.8	454.4	1,060.4
	Service delivery restoration	75.7	22.7	53.0
	Total Anbar	**1,590.6**	**477.2**	**1,113.4**
Babel	Infrastructure reconstruction	44.6	13.4	31.2
	Service delivery restoration	2.2	0.7	1.6
	Total Babel	**46.8**	**14.1**	**32.8**
Baghdad	Infrastructure reconstruction	297.2	89.2	208.0
	Service delivery restoration	14.9	4.5	10.4
	Total Baghdad	**312.1**	**93.6**	**218.4**
Diyala	Infrastructure reconstruction	177.7	53.3	124.4
	Service delivery restoration	8.9	2.7	6.2
	Total Diyala	**186.6**	**56.0**	**130.6**
Kirkuk	Infrastructure reconstruction	442.0	132.6	309.4
	Service delivery restoration	22.1	6.6	15.5
	Total Kirkuk	**464.1**	**139.2**	**324.9**
Ninawa	Infrastructure reconstruction	1,669.9	501.0	1,168.9
	Service delivery restoration	83.5	25.0	58.4
	Total Ninawa	**1,753.4**	**526.0**	**1,227.4**
Salah Al-Deen	Infrastructure reconstruction	311.5	93.4	218.0
	Service delivery restoration	15.6	4.7	10.9
	Total Salah Al-Deen	**327.0**	**98.1**	**228.9**
Grand Total–All Governorates		**4,680.7**	**1,404.2**	**3,276.5**

F. Implementation Arrangements

To organize recovery efforts oriented toward community priorities, local authorities in the 16 assessed cities must play a role to allow for mobility and access for much needed access to markets and services. For interurban roads, the normal functioning of the Ministry of Transport (MoT) needs to be reestablished. This will require the rehabilitation of buildings that have been damaged due to the conflict, and new contracts must be procured under emergency procedures. Large-scale funding must be mobilized to pay for the rehabilitation of roads and bridges, and on the technical side, a significant number of capable local road contractors and consultants need to be mobilized. The capacity of national engineering consulting firms may be insufficient to handle the large volume of design and supervision activities. The same argument could be made for other transport infrastructure, airports, and railways. In this regard, the GoI should consider, to the extent possible under the technical, institutional, and legal frameworks, mobilizing private sector financing under public-private partnership arrangements to restore service delivery, as well as facility operation and maintenance.

G. Recommendation and Limitations

There are several institutional, technical, and financial challenges that need to be addressed to restore service delivery in the road and Transport sector in Iraq.

- Institutionally, the normal functioning of the transport institutions and authorities need to be addressed.
- On the technical side, the role of local contractors and engineers needs to be addressed in the context of implementation and supervision of the repair and maintenance, rehabilitation, and reconstruction works.
- On the financial side, as there is a lack of investment to maintain and rehabilitate the road network, seeking long-term assistance from the World Bank and other donors would help to secure the cost of reconstruction in post-conflict Iraq.
- Clear identification of the sector's priorities need to be established by the central and regional authorities.
- Given the scope of the damages across the country and sectors, funding sources need to be mobilized quickly.
- Overreliance on the road network has applied pressure on the network and contributed to its deterioration.
- Truck overloading and lack of axle weight control lead to rapid deterioration of the road network.

Conclusion

Iraq is facing many challenges in post-conflict reconstruction. The main challenges that need to be addressed are:

1. The availability of funds to finance the reconstruction effort, prioritizing within and among various sectors.
2. Securing more funds than estimated under the DNA, as the reconstruction effort will take more than 5 years.
3. Taking practical steps to start procuring the most needed interventions within and among sectors, including the detailed design and environmental and social impact assessment.
4. Establishing the legal and institutional requirements necessary to establish PPPs in the Transport sector.

Infrastructure Sectors

Water, Sanitation, and Hygiene (WASH)

A. Sector Summary

The cost of damage to the WASH sector is estimated to be IQD 1.6 trillion (US$ 1.4 billion). Most damage has been sustained in Baghdad, Salah ad-Din, and Kirkuk, while the remaining damage has occurred throughout the region's most urbanized areas. In addition, the water tariff collection has stopped in all governorates due to the conflict, and government offices have been damaged.

Across all governorates, the percentage of households that had access to water has varied from 40 to 60 percent. However, in cities like Al-Ramadi, Beygee, Bakhdida, Al-Ba'aj, and Al-Hatra, 20 percent or less of households have access to water, causing households to depend on water trucks for clean water. Currently, the WASH sector services are in worse condition than water resources services. There are no sewage networks, pumping stations, or wastewater treatment plants in any of the small cities such as Al-Ba'aj, Tal Afar, Bakhdida, or Heet. The only existing system consists of a few lines of storm water networks and storm water pumping stations that cover parts of the above mentioned small cities. However, in the larger cities such as Mosul, Al-Ramadi, and Al-Falluja, there are sewage systems in place that consist of sewage networks, pumping stations, and treatment plants. Nonetheless, the system does not cover all the city districts. Overall, WASH services cover only 28 percent of the large cities.

The biggest challenge in this sector is the rehabilitation of the water systems that have been deteriorating over a long period of time. In addition, the sector will require an update of the systems of governance on both national and subnational levels, concomitantly with the reconstruction of assets. The cost estimated for the repair and reconstruction of WASH infrastructure is IQD 2.9 trillion (US$ 2.4 billion), which includes an estimation of staffing, equipment, and policy reforms. Primary efforts should be concentrated around the resumption of clean water provision and sanitation services.

B. Background and Analysis of Pre-Crisis

While the sector is centralized, its management spreads across 11 ministries, including the Ministry of Water Resources and the Ministry of Construction and Housing. These ministries operate and interact in an ad hoc and informal manner in the absence of an official water law that allows for the establishment of formal coordination mechanisms. In 2012, a significant part of the population had access to piped water supply. Even though access was high, the quality of services provided was perceived to be low. Thus, households incurred coping costs in the form of investments in roof tanks, booster pumps, and treatment of drinking water (including but not limited to the purchase of bottled water and desalinated water). Similarly, access to safe sanitation was virtually universal, with a significant part of the population having access to safe sanitation as defined by the Joint Monitoring Program. Yet, the collection of wastewater was much less developed, with around a quarter of the population having access to a piped sewage network, and with a change in recent years moving away from higher levels of service to lower levels of service mostly funded by users themselves.

Inventory of infrastructure assets

The assessment provides a general perspective on the damage to the WASH sector as of December 2017 in 31 districts, which included Mosul, Al-Falluja, Al-Jalawla, Al-Ramadi, Sinjar, Tal Afar, and many more. It also included three additional governorates: Babel, Baghdad, and Kirkuk. When assessing these 31 districts and three governorates, a total of 1,488 WASH sector facilities were identified.

Table 44: *Damage Inventory—All City Roll Up (no. of facilities, cost in IQD billion)*

	Asset Type	Baseline	Total Damaged	Partially Damaged	Completely Destroyed
DAMAGE	*Well*	84	47	32	15
	Water tower/tank	296	271	124	147
	Water treatment plant	110	96	42	54
	Water desalination plant	20	20	3	17
	Sewage treatment plant	4	2	2	0
	Sewage pumping station	8	8	7	1
	Pumping station	89	38	23	15
	Storage reservoir	7	7	2	5
	Water/sanitation office	13	13	10	3
	Equipment and machinery	641	641	103	538
	Network and transmission lines	13	13	7	6
	Water distribution networks	42	42	14	28
	Large facility vehicles	15	15	0	15
	Small facility vehicles	146	146	0	146
	Total Damage	**1,488**	**1,359**	**369**	**990**

Status of service delivery and institutional capacity

The quality of water and sanitation services provided to consumers is declining as is reflected in declines in service levels (i.e., less people depend on piped water as a source of drinking water) and service quality (as measured in the frequency of water supply interruptions, and water quality perceptions). In 2000, almost 77 percent of the population used piped water for drinking while another 7 percent depended on other improved sources. By 2011, only 66 percent of the households used piped water for drinking, 3 percent used other improved sources, and another 25 percent were now using other drinking water services, including reverse osmosis or desalinated water (13 percent) and bottled water (11 percent).

Sector developmental challenges

Iraq's WASH sector performance has been hampered by several challenges. Managerial challenges include a lack of performance standards and management autonomy, civil service laws that protect poor staff performance, low administrative skills, and weak accountability mechanisms. Technical and financial challenges include a low-skilled labor force and the weak enforcement of tariffs. Establishment of an electronic billing system would improve the ratio of water collection and wastewater billing and reduce the allocation amount through the government's annual budget and house connection policies. Institutional and policy challenges include inconsistencies in institutional roles and responsibilities, a lack of strategic direction, and a lack of formal coordination mechanisms, which may in part be attributable to the absence of a comprehensive water law. Impaired service delivery is common, including intermittent water supply services, low water pressure, and significant network losses due to aged infrastructure.

Aggregate sector analysis

Aggregate physical damage

Overall, a total of 1,488 facilities were identified in the 31 most damaged cities in Anbar, Diyala, Ninawa, and Salah Al-Deen, and across Babel, Baghdad, and Kirkuk. Of these facilities, it has been reported that 1,359 were completed destroyed and 369 were partially damaged.

Figure 10 illustrates the percentage of damage by each governorate. Ninawa has the highest damage percentage, followed by Anbar, and Kirkuk. Table 45 showcases the governorate-level extrapolation, which factors in rural service/asset distribution percentage.

Figure 10: *Percentage of Damage by Governorate*

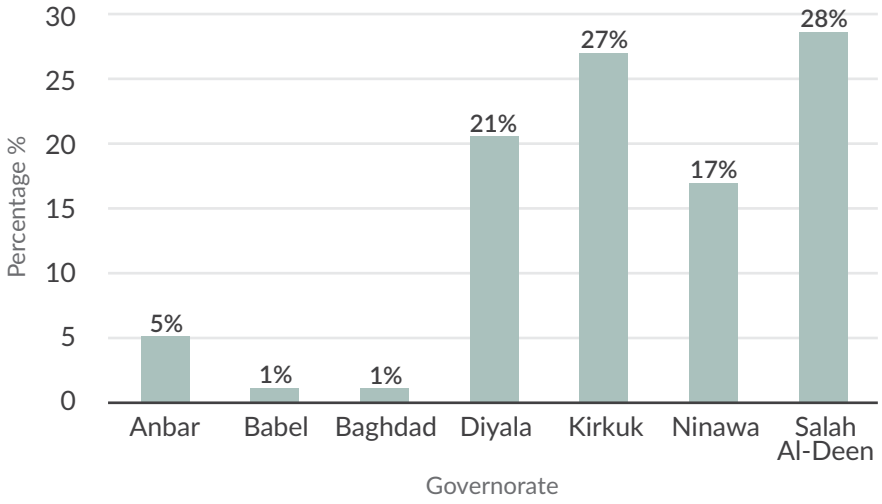


Table 45: *Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	75.8
Babel	22
Baghdad	16.8
Diyala	329.1
Kirkuk	432.3
Ninawa	270.8
Salah Al-Deen	456.7
Total	**1,603.5**

Quantification of damage and loss to assets and infrastructure

The assessment provides a partial perspective on the damage sustained by water resources infrastructure. It is worth noting that due to the current situation in the country, the information on assets was limited. Once more information is available, a more accurate estimate of cost would need to be conducted after a detailed ground assessment. Table 44 illustrates the inventory facilities damages. Table 45 summarizes the damage costs assessed at the level of each governorate.

The total cost to the infrastructure element of the WASH sector for all seven governorates is estimated based on the available information and using an average cost estimate for construction as being reported for the seven governorates to be IQD 2.9 trillion. It is worth noting that the information on assets was limited, and once more information is available, a more accurate estimate of cost would need to be conducted. The cost estimate excludes the cost of offices for the ministry, and an additional on-ground assessment for each asset would be required to ensure an accurate cost estimate.

All major losses were captured in the agricultural sector, including economic losses. Other losses were accounted for in the environmental sector, such as water contamination. However, for the workforce requirements and loss in revenue, sufficient data are not available at this time to be able to calculate the loss per governorate.

Effects on service delivery

Due to the limited provision of electricity, there has been an overall reduction in WASH facilities' functionality, which has resulted in only partial operations of water treatment plants or water compact units. Attributable to the partial functionality of the facilities, there has been a decrease in the quantity and quality of clean water production. In addition, the conditions of these partially functioning facilities were directly affected by the conflict, or because of poor operation and maintenance. As a result of the conflict, water and wastewater authorities lost most of the important maps and schematics regarding the water distribution networks, sewage networks, and transmission lines. key to the operations and maintenance of the water supply and sanitation facilities have been lost due to the crisis.

C. Sectoral Needs Assessment

A rough cost estimate using current construction costs, including inflation, security premiums, rubble removal, and build back better, etc., indicates the reconstruction and recovery need to be approximately IQD 2.9 trillion.

The most important step at this stage is to develop an accurate and detailed assessment for all the existing facilities of the water supply and sanitation systems to identify the cost of reconstruction, and to figure out the cost of an extension or upgrading of these facilities to cover the short- and medium-term demand. Further, the different needs and demands of women and men need to be considered, and mechanisms to allow for women's participation in both institutional and infrastructure-related reconstruction efforts need to be facilitated. To better identify the short-, medium-, and long-term interventions needs, Table 46 shows the distribution of the needs costs over the next five years for the proposed activities/needs.

Table 46: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Infrastructure reconstruction	132.6	92.9	39.8
	Service delivery restoration	3.8	2.7	1.1
	Total Anbar	**136.4**	**95.5**	**40.9**
Babel	Infrastructure reconstruction	38.5	26.9	11.5
	Service delivery restoration	1.1	0.8	0.3
	Total Babel	**39.6**	**27.7**	**11.9**
Baghdad	Infrastructure reconstruction	29.4	20.6	8.8
	Service delivery restoration	0.8	0.6	0.3
	Total Baghdad	**30.2**	**21.2**	**9.1**
Diyala	Infrastructure reconstruction	576	403.2	172.8
	Service delivery restoration	16.5	11.5	4.9
	Total Diyala	**592.4**	**414.7**	**177.7**
Kirkuk	Infrastructure reconstruction	756.6	529.6	227
	Service delivery restoration	21.6	15.1	6.5
	Total Kirkuk	**778.2**	**544.7**	**233.5**
Ninawa	Infrastructure reconstruction	473.9	331.7	142.2
	Service delivery restoration	13.5	9.5	4.1
	Total Ninawa	**487.4**	**341.2**	**146.2**
Salah Al-Deen	Infrastructure reconstruction	799.2	559.5	239.8
	Service delivery restoration	22.8	16	6.9
	Total Salah Al-Deen	**822.1**	**575.4**	**246.6**
Grand Total–All Governorates		**2,886.3**	**2,020.4**	**865.9**

D. Main Recommendations for Future Recovery Plans

Some short-term, medium-term, and long-term recommendations for future recovery plans include:

For short-term:

(i) Launch of the detailed damage assessment; (ii) Prepare detailed designs for rehabilitation works, ensuring the participation of women and women's organizations in any consultations and technical meetings, and; (iii) Start rehabilitation work for the facilities that are less than 40 percent damaged, promoting the hiring of women in technical and management level positions.

For medium-term:

(i) Prepare detailed designs for reconstruction of facilities with more than 40 percent damage; (ii) Start the reconstruction of facilities with more than 40 percent damage; (iii) Replace destroyed WASH equipment (water, wastewater, and municipal); (iv) Involve the private sector in the construction, operation, and maintenance of facilities, and; (v) Study the need to establish a water security plan for those areas taking into consideration the impact of climate changes, flooding, or crises.

For long-term:

(i) Prepare a master plan for water and sanitation, with the representation of women and women's organizations in consultations and technical meetings; and (ii) Construct a strategic treatment plant and distribution network for new communities according to the normal rate of population growth.

A woman carries a water vessel in Khanke refugee camp (August 2014).
Photo credit: Answer5 (Shutterstock).

Infrastructure Sectors

Municipal Services

A. Sector Summary

Municipal services[49] are critical services that facilitate citizen's safety, sanitation, and access to economic opportunities. Thirty-six percent of all municipal assets[50] in Anbar, Diyala, and Ninawa governorates have been partially damaged or completely destroyed. An equivalent of IQD 102.3 billion (US$ 87.8 million)[51] is estimated as the total damage cost of municipal assets in these governorates. Among the three governorates, the highest damage cost is perceived in Anbar governorate where 21 percent of municipal assets were either partially damaged or completely destroyed with a total damage cost of IQD 54.6 billion (US$ 46.8 million). In Ninawa, 38 percent of municipal assets have retained damage with a damage cost of IQD 46.3 billion (US$ 39.70 million), while in Diyala 35 percent of municipal assets retained damage with an estimated cost of IQD 1.5 billion (US$ 1.3 million).

Total recovery needs are equal to IQD 148.7 billion (US$ 125.8 million). These include a total of IQD 139 billion (US$ 117.6 million) for infrastructure construction and a total of IQD 9.6 billion (US$ 8.2 million) for service delivery restoration[52] of Municipal Services sector in Anbar, Diyala, and Ninawa governorates. Short-term (1 year) recovery needs are estimated to be IQD 15.1 billion (US$ 12.8 million) and include recovery of street lighting and community markets to ensure the safety of citizens as well as to facilitate resumption of their livelihoods and strengthen social cohesion through public spaces. Medium- to long-term (2–5 years) recovery needs are estimated at IQD 133.6 billion (US$ 113 million) and include the recovery of community facilities, entertainment facilities, libraries, public affordable housing, parks/playgrounds, public parking lots, slaughterhouses, and others to increase the livability of neighborhoods, thus contributing to social cohesion and reconciliation. Among the most affected areas by the crisis, Mosul, the second largest city in Iraq in terms of population, provides a great opportunity to resettle a large number of involuntarily displaced people. The city shows the highest damage figures, and thus has to be prioritized in the effort to restore municipal services and reconstruct municipal facilities.

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49 As per the Iraqi Law of Municipalities Administration 165 and its amendments, key municipal services include: (1) preparing masterplans to forecast and guide urban growth and demands in a phased and budgeted approach, and preparing detailed sectoral plans that assign land-use, infrastructure and public utilities and facilities spatial requirements and distribution, (2) implementing solid waste collection and removal activities, (3) lighting right-of-ways, (4) constructing rain and waste water tanks and passages, (5) paving streets, (6) establishing slaughterhouses, (7) arranging community markets, parks, public venues, libraries and entertainment facilities, and (8) arranging and allocating cemeteries, among other services.

50 Assessment covered street lighting units in addition to a total of 73 assets: 7 parks/playgrounds, 25 community markets, 14 community facilities (such as conference halls), 3 entertainment facilities owned by municipalities, 3 libraries, 4 affordable housing projects provided by municipalities for public, 10 public parking lots, 5 slaughterhouses, 1 municipal asphalt production facility and 1 geographic information system (GIS) database in Anbar, Diyala and Ninawa governorates. Percentage of damage represents number of damaged assets divided by baseline numbers.

51 Damage cost based on 2014-unit cost. IQD to US$ exchange rate was taken for 2014 at (1166.0).

52 This is limited to operation and maintenance of recovered infrastructure due to lack of data related to other municipal services.

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

The 2014 baseline data provided by the GoI[53] show that municipalities within Anbar, Diyala and Ninawa governorates owned a total of 73 functioning assets providing services for the public, with a total pre-crisis cost of IQD 107.3 billion. To supplement the lack of city-level data, an assessment of city-level street lighting was conducted using inferred estimates of affected street lighting units (street lamps) within zones of collateral damage for 14 cities[54] in Anbar, Diyala and and Ninawa governorates. This assessment showed the existence of 54,855 street lighting units, with a total pre-crisis cost of IQD 27.2 billion,[55] with about 51 percent of this pre-crisis cost coming from Mosul.

Key Challenges Currently Facing Municipal Services Sector

Security and safety challenges—persistent threat of violence, remaining explosives and contaminated sites are mandating numerous precautions in order to ensure safety and security of municipal staff. The major issue in this case is the unexploded ordnance, land mine contamination and booby-traps, that are still spread in many areas, especially in Ninawa governorate, and particularly in Mosul.

Accessibility challenges—significant damage levels of the street and circulation networks have made accessibility a major challenge. Moreover, the massive amounts of rubble in most areas are creating barriers to access for municipal services.

Operational challenges—provision of electricity and water services have shown drastic deterioration mainly due to destruction caused by the crisis, which in turn have affected the overall municipal operations and performance in service delivery.

Scarce municipal resources—destruction of municipal assets affected most municipal vehicles, equipment and machinery, increasing significantly the deficit in their availability for service delivery. [56] Services like waste collection, for example, rely heavily on the machinery and vehicles owned by municipalities. Restoring such services would require overcoming such deficits.

Weakened institutional capacity—considering the inherent weak institutional capacity of municipalities from even before the crisis, it is imperative that the initial recovery efforts be well prioritized spatially, and across sectors, in order not to further stain municipal institutional capacity. Recovery efforts should include capacity strengthening in the medium to long term.

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53 Extracted from municipal assets listed under Ministry of Construction, Housing, Public Work and Municipalities in the 'governmental buildings' data sheet made available by GoI for the purpose of this DNA. 'Other' refers to municipal asphalt production facilities and GIS database.

54 Al-Falluja, Heet and Al-Ramadi from Anbar governorate. Al-Jalawla, As-Sa'adiyya, Al-Muqdadya (Ibid), and Qarah Tabbah from Diyala governorate. Beygee, Bakhdida, Al-Hatra, Mosul, Sinjar, Tal Afar, and Tel Keppe from Ninawa governorate.

55 An average baseline cost of street lighting units was calculated from estimates obtained from two local suppliers (Al Hadara Al Arabia Contracting & Trading Company and Asbar Building Solutions and General Trading, both based in Baghdad) who conducted street lighting projects prior to the crisis. Estimates were obtained for main street lighting units and local street lighting units. Hence, average pre-crisis 2014 baseline unit cost was assumed to be $425/unit, including installation cost.

56 Figures gathered from 2011 showed that equipment and machinery were already insufficient in the three governorates with varying percentages reaching their highest in Ninawa.

Municipal infrastructure—municipal infrastructures such as landfill sites, equipment, and machinery were already deficient as of 2011. In Ninawa, for example, deficiency in machinery and equipment needed for waste management was reported at 27percent.[57] The destruction to limited municipal infrastructure incurred poses a challenge for municipalities, making it necessary to prioritize repair and restoration of key infrastructure.

Spontaneous and ad-hoc approach—current adopted approaches to recovery are focusing on addressing immediate needs, which may compromise sustainable long-term solutions if no sufficient and proper planning takes place. Most of the masterplans of the affected cities were outdated before the crisis and did not contain strategic and integrated approaches necessary to manage rapid urban growth. Therefore, it is critical to support municipalities not only to identify immediate priorities, but to start planning spatially and strategically for the recovery effort in order to guarantee its sustainability.

C. Sectoral Damage and Loss Assessment

Municipal services[58] are critical services that facilitate citizen's safety, sanitation, and access to economic opportunities. Thirty-six percent of all municipal assets[59] in Anbar, Diyala, and Ninawa governorates have retained damage, either partially or completely. An equivalent to IQD 102.3 billion[60] is estimated as the total damage cost of municipal assets in these governorates. Among the three governorates, the highest damage cost is perceived in Anbar governorate where 21 percent of municipal assets were either partially damaged or completely destroyed with a total damage cost of IQD 54.6 billion. In Ninawa, 38 percent of municipal assets have retained damage with a damage cost of IQD 46.3 billion, while in Diyala 35 percent of municipal assets retained damage with an estimate cost of IQD 1.5 billion.

57 Environmental Survey in Iraq 2010, Ministry of Planning/Central Organization for Statistics and Information.

58 As per the Iraqi Law of Municipalities Administration 165 and its amendments, key municipal services include: (1) preparing masterplans to forecast and guide urban growth and demands in a phased and budgeted approach, and preparing detailed sectoral plans that assign land use, infrastructure, and public utilities and facilities spatial requirements and distribution, (2) implementing solid waste collection and removal activities, (3) lighting right-of-ways, (4) constructing rain and wastewater tanks and passages, (5) paving streets, (6) establishing slaughterhouses, (7) arranging community markets, parks, public venues, libraries, and entertainment facilities, and (8) arranging and allocating cemeteries, among other services.

59 Assessment covered street lighting units in addition to a total of 73 assets: 7 parks/playgrounds, 25 community markets, 14 community facilities (such as conference halls), 3 entertainment facilities owned by municipalities, 3 libraries, 4 affordable housing projects provided by municipalities for public, 10 public parking lots, 5 slaughterhouses, 1 municipal asphalt production facility and 1 GIS database in Anbar, Diyala, and Ninawa governorates. Percentage of damage represents number of damaged assets divided by baseline numbers.

60 Damage cost based on 2014-unit cost. IQD to US$ exchange rate was taken for 2014 at (1166.0).

Table 47: *Damage Inventory*—All Governorate Roll Up (in IQD billion)*[61]

	Asset Types	Baseline	Partially Damaged	Completely Destroyed
DAMAGE	*Community facility*	14	6	8
	Community market	25	4	21
	Entertainment	3	2	1
	Library	3	2	1
	Affordable housing[62]	4	0	4
	Parks/playgrounds	7	4	3
	Public parking[63]	10	0	10
	Slaughterhouse	5	1	4
	Other	2	0	2
	Street lighting	54,855	—	19,467

*Data for municipal services like water, sanitation are covered in respective sectors.

Table 48: *Governorate-Level Damage Cost (in IQD billion)*

Governorate	Damage Cost
Anbar	54.58
Diyala	1.46
Ninawa	46.29

D. Needs Assessment

Total recovery needs for the Municipal Services sector are equal to IQD 148.7 billion. These include a total of IQD 139 billion for infrastructure construction and a total of IQD 9.7 billion for service delivery restoration[64] of the Municipal Services sector in Anbar, Diyala, and Ninawa governorates. Recovery needs are highest in Anbar governorate, reaching a total of IQD 85.6 billion, followed by Ninawa where a total of IQD 60.4 billion is needed, and then by Diyala where a total of IQD 2.7 billion is needed for recovery of the Municipal Services sector.

Short-term (1 year) recovery needs are estimated to be IQD 15.1 billion and include recovery of street lighting and community markets, to ensure the safety of citizens as well as to facilitate resumption of their livelihoods and strengthen social cohesion through public spaces. Medium-

61 No data or information was available on municipal revenue, staffing, and rubble removal at any level, so municipal services sector losses could not be measured.
62 Low cost affordable housing projects (apartment buildings) in Anbar governorate. Cost obtained from data provided by GoI.
63 Include five parking lots dedicated for municipal owned vehicles in addition to five parking lots for public use; cost obtained from GoI data.
64 This is limited to operation and maintenance of recovered infrastructure due to lack of data related to other municipal services.

to long-term (2–5 years) recovery needs are estimated at IQD 133.6 billion, and include recovery of community facilities, entertainment facilities, libraries, public affordable housing, parks/playgrounds, public parking lots, slaughterhouses, and others to increase the livability of neighborhoods, thus contributing to social cohesion and reconciliation.

Among the most affected areas by the crisis, Mosul, the second largest city in Iraq in terms of population, provides a great opportunity to resettle a large number of involuntarily displaced people. The city shows the highest damage figures, and thus has to be prioritized in the effort to restore municipal services and reconstruct municipal facilities.

Table 49: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Infrastructure reconstruction	80.8	4.5	76.3
	Service delivery restoration	4.7	0.9	3.8
	Total Anbar	**85.6**	**5.4**	**80.1**
Diyala	Infrastructure reconstruction	1.5	0.8	0.6
	Service delivery restoration	1.2	0.2	1.0
	Total Diyala	**2.7**	**1.1**	**1.6**
Ninawa	Infrastructure reconstruction	56.8	7.9	48.9
	Service delivery restoration	3.7	0.7	2.9
	Total Ninawa	**60.4**	**8.6**	**51.8**
Grand Total–All Governorates		**148.7**	**15.1**	**133.6**

Brief Overview of Potential Interventions[65]

Short term (up to 1 year)

(1) Perform rapid situation analysis to identify key interventions at the city level, and neighborhood level, and guide and support efforts to conduct immediate activities such as improvements to street access and safety including rubble, debris, and waste removal, as well as street lighting and refurbishments activities. (2) Prepare guidelines (plans) for urban infrastructure and city management, with special focus on rebuilding neighborhoods (within cities by owners and the private sector), and municipal waste management plans.

65 Cost of these interventions is not covered in the needs assessment.

Medium term (up to 3 years)

(3) Implement urban infrastructure and city management plans to improve access to urban infrastructure and rebuild cities by owners and the private sector. (4) Design and implement capacity building programs for municipal staff on urban management and service delivery, participatory spatial planning and resilience.

Long term (up to and beyond 5 years)

(5) Implement municipal finance programs which include preparing an asset management plan for municipal assets to oversee and enhance financial performance and return on municipal assets, in addition to identifying priority areas of improvement. (6) Implement a municipal services strengthening program to enhance services provision.

Children from Mosul relocated to a camp in Kirkuk during the conflict (February 2017).
Photo credit: Eng. Bilal Izaddin (Shutterstock).

Cross-cutting Sectors

Governance

A. Sector Summary

Governance is the main driver of Iraq's many ongoing challenges and the key to recovery. It reflects the nature of the existing social contract and directly shapes fiscal sustainability, job creation, public services, private sector development, and other areas critical to Iraq's long-term development and stability.

It is essential to strengthen public institutions and a new social contract based on participation, inclusiveness, and accountability embedded into reconstruction and recovery design. Restoring trust in the government and improving state legitimacy should be key priorities. For this, the reconstruction and recovery process will need to be based on principles of inclusion, transparency, and equity to ensure fairness, economic equality, and civic inclusive participation.

Another public priority should be repair of the destroyed buildings (governorate and municipality buildings, police stations, fire stations, civil defense, courthouses, etc.), as they represent the face of government and are critical to enforce the law in those affected areas. Bringing back those buildings to normal functioning will help the government in building and stabilizing security, bringing trust, and renewing the social contract with its citizen in the liberated areas. The 522 buildings under the government's administrative and security buildings that have been completely destroyed or partially damaged in the affected districts, as well as those damaged or destroyed at the municipal level, need to be urgently restored. Total damage to the sector is equivalent to IQD 868 billion (US$ 745 million). Sector losses as a result of the conflict are estimated at IQD 1.2 trillion (US$ 993 million). The total cost of infrastructure reconstruction is estimated at IQD 1.5 trillion (US$ 1.3 billion), with a total cost for service delivery rehabilitation of IQD 79.3 billion (US$ 67.1 million) equaling a grand total for reconstruction and recovery of IQD 1.6 trillion (US$ 1.4 billion).

B. Background and Analysis of Pre-Crisis (Baseline) Conditions and Trends

About 348 buildings have been destroyed and 174 partially damaged under the government's administrative and security buildings/infrastructure. While some facilities may be open, the population may not be able to easily access them due to damaged roadways or lack of available public light at night leading to these facilities. However, it is fundamental to start the reconstruction of the buildings listed under the Governance sector to bring the face of the government back to these cities and establish a sense of stability and security. It is very critical and urgent to repair and support the governance functions.

Reconstruction and recovery efforts in Iraq are plagued by weak governance institutions and a breakdown in the social contract between citizens and the state. Lessons from the review of the International Reconstruction Fund Facility for Iraq (IRFFI) indicate that despite large inflows of external resources, the reconstruction and recovery process in Iraq has been extremely challenging. Key underlying constraints cited for this include: weak institutional capacity, widespread

corruption exacerbated by weak law and order, severe security risks for the implementation of projects, lack of inclusion of citizens, and a focus on short-term humanitarian assistance with a limited focus on building a sustainable state in the long term. These governance failures have contributed to undermining the social contract between citizens and the state.

C. Sectoral Damage and Loss Assessment (including cost)

The 522 buildings in the affected districts need to be urgently restored. According to the information gathered on the 34 districts, and to estimates through extrapolation for the remaining 15 districts in the seven governorates, the total cost of damage to the Governance sector amounts IQD 868 billion.

For this DNA, the satellite imagery and social media covered the physical local government institutions and related service delivery facilities in 11 cities (Al-Jalawla, Al-Shirqat, As-Sa'adiyya, Beygee, Al-Falluja, Al-Hatra, Heet, Mosul, Al-Muqdadya (Ibid), Al-Ramadi, and Al-Ba'aj). In addition, ground data was received for 34 districts in 7 governorates. For the rest of the 15 districts, the calculation of damage/loss/needs costs were extrapolated from the other districts to be included at the governorate level. Table 50 shows governorate-level damage and loss with costs extrapolated from the other districts.

Table 50: *Governorate-Level Damage* and Loss Cost (in IQD billion)*

Governorate	Damage Cost	Loss Cost
Anbar	224.1	329.8
Babel	17.0	21.5
Baghdad	30.8	45.7
Diyala	71.6	135.2
Kirkuk	53.0	74.7
Ninawa	275.1	486.6
Salah Al-Deen	196.5	303.5
Total	**868.2**	**1397**

**Damage cost does not include cost of demolition and rubble removal, temporary rental of premises, premium security, and insurance on inflation.*

D. Assessment of Crisis Effects and Impact

The ability of the government to function effectively has been severely affected by the physical damage to government infrastructure, and the loss and damage to furniture, equipment, and vehicles in public buildings/facilities, both at the governorate level and municipal level. There have been major damages to the administrative buildings affecting their day-to-day operations. The nonfunctionality of the Governance sector significantly affects and compromises the services delivered by other sectors as well. Partially damaged or destroyed courthouses lead to a radical rise

in the crime rate and impacts the community's access to justice. When fire stations, police stations, and civil defense are greatly affected, the state's ability to respond to citizens' needs and restore security and stability are significantly reduced.

E. Sectoral Needs Assessment (including cost estimates)

In addition to the cost of reconstruction, vehicles, furniture, and necessary office equipment, there are essential staffing and training needs that are vital factors in the recovery phase. This will include retraining the public official staff that has been under the control of ISIS for the last couple of years, and the need to recruit additional staff to restore the security and enforce the law in those affected areas.

Service delivery restoration in the governance sector, including human resources/staffing for the affected governmental buildings is estimated at IQD 79.3 billion.The grand total needs estimate, including service delivery and infrastructure reconstruction for the governance sector is IQD 1.6 trillion. As highlighted in Table 51, the needs are present for each governorate.

Table 51: *Governorate Prioritized and Sequenced Needs (in IQD billion)*

Governorate	Type	Total (over 5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Infrastructure reconstruction	397.5	278.3	119.3
	Service delivery restoration	11	7.7	3.3
	Total Anbar	**408.5**	**286**	**122.6**
Babel	Infrastructure reconstruction	30.2	21.2	9.1
	Service delivery restoration	3.1	2.1	0.9
	Total Babel	**33.3**	**23.3**	**10**
Baghdad	Infrastructure reconstruction	54.7	38.3	16.4
	Service delivery restoration	1.7	1.2	0.5
	Total Baghdad	**56.4**	**39.5**	**16.9**
Diyala	Infrastructure reconstruction	127.1	88.9	38.1
	Service delivery restoration	12	8.4	3.6
	Total Diyala	**139**	**97.3**	**41.7**
Kirkuk	Infrastructure reconstruction	93.9	65.8	28.2
	Service delivery restoration	3.7	2.6	1.1
	Total Kirkuk	**97.6**	**68.3**	**29.3**
Ninawa	Infrastructure reconstruction	488	341.6	146.4
	Service delivery restoration	5.1	3.6	1.5
	Total Ninawa	**493.1**	**345.2**	**147.9**
Salah Al-Deen	Infrastructure reconstruction	348.7	244.1	104.6
	Service delivery restoration	42.8	30	12.8
	Total Salah Al-Deen	**391.5**	**274**	**117.4**
Grand Total–All Governorates		**1,619.4**	**1,133.6**	**485.8**

F. Implementation Arrangements

The structures and buildings covered under the Governance sector involve multiple counterparts such as police stations and fire departments that are owned by the Ministry of Interior, post offices owned by the Ministry of Communication, courthouses owned by the Ministry of Justice, and provincial administration buildings owned by the governorates. The implementation arrangements should be based on buildings' ownership with coordination mechanism at the federal level and governorate level. Each ministry is encouraged to establish a team of engineers, fiduciary, safeguards, and communication staff.

At the governorate level, a team needs to be established to coordinate the planning and monitor progress on the ground. This team will include a local project coordinator, monitoring and evaluation specialist(s), management specialist(s), and specialist engineers assigned based on governorates subprojects. It is very important during the implementation to maintain a continuous, systematic, and scheduled process of tracking the implementation of the projects and activities through various stages of the project cycle. At the national level, the Reconstruction Fund for Areas Affected by Terroristic Organizations (REFAATO) will be responsible for coordination with the Prime Minister's Office, the Ministry of Planning, the Ministry of Finance, and any international donor/cooperation.

In the reconstruction of programs and emergency operations, value for money, economy and efficiency, equal opportunity and fairness, transparency (including the access to information and citizen engagement principles and practices), integrity, and accountability will need to be applied with heightened emphasis on efficiency and promotion of the economic and social development of the local community.

G. Recommendations and Limitations

For the recovery in Iraq, it is crucial that governance facilities be reconstructed and reequipped to bring the face of the governments to those affected areas and to enforce the law. It is essential that the strengthening of the governments' institutions and the creation of a new social contract based on participation, inclusiveness, and accountability is embedded into the reconstruction and recovery design.

The strengthening participation and the voice of citizens at the national and local levels during the reconstruction process can help appease sectarian tensions. This can be done by focusing on community development, restoring basic civil liberties, and including Iraqi firms competitively in the reconstruction effort. This will generate jobs locally and boost the private sector, thereby building citizen confidence in the government.

Strengthening public sector institutions will be critical for sustainable recovery. Key interventions include: building public sector capacity by reinstating transparency and meritocratic recruitment and providing training; increasing transparency in the use of oil wealth by implementing recommendations made in the Extractive Industries Transparency Initiative report; strengthening

public financial management and public investment management processes to ensure allocation efficiency and effectiveness, and to improve transparency of budget information; and strengthening institutions of accountability.

Strengthening the rule of law and its implementation to prevent corruption, coming out of the cycle of conflict and fragility, and enhancing transparency and accountability within all state institutions will require political commitment and substantially higher allocation of human and financial resources. A structural reform of the security sector is needed for Iraq to come out of the conflict and violence situation.

A comprehensive security sector reform assessment has not been included in the DNA. Such reforms would normally include the rationalization of the various informal militias and armed groups in line with the consolidation of Iraqi military forces, which invlove any measures for right-sizing, such as pensions, creation of a reserve, and demobilization. Other measures may also include an increase in the recruitment of national and local police, and training and additional infrastructure, along with a strategy to enhance judicial, legal aid and correction services. Such measures carry enormous costs and will need to be analyzed separately with the appropriate line ministries.

Cross-cutting Sectors

Environment and Forestry

A. Sector Summary

Damage to the sector is estimated at a total of IQD 85 billion (US$ 73 million). Sectoral losses as a result of the conflict are estimated at IQD 3.5 trillion (US$ 3 billion). This assessment estimates that up to 47 percent of natural forests may have been destroyed and more than 2 million ha contaminated by land mines and hazardous chemicals. Additionally, the attacks on oil and sulphur refineries have created major environmental hazards in Salah Al-Deen and Ninawa. A disproportionately high impact is felt on the most vulnerable members of society who are more reliant on natural resources to sustain their livelihoods. These groups include the estimated 3 million IDPs, women, female-headed households, and the youth. Without urgent intervention and incorporation of restoration of these assets into the overall recovery and reconstruction strategy, it is likely that the impacts will be felt for generations to come. Baseline numbers and post-conflict data are missing; therefore, many assumptions have been made that need to be addressed based on robust data collection. Additionally, funding, staffing, and an ex-ante approach to environment and natural resources rehabilitation will be the major challenges to this sector. Restoration of the damaged ENR assets will require funding of IQD 6.5 trillion (US$ 5.5 billion). This amount includes infrastructure reconstruction, capacity restoration, and environmental rehabilitation (ecosystem rehabilitation, clean up, and remediation, etc.).

B. Background Conditions and Pre-Conflict Baseline

Forty-two percent of the total area of Iraq is desert, with forests and prairies making up about 12 percent of the country. Although annual rainfall can reach 1,000 mm in the northern areas, most of the country is arid or semi-arid with rainfall of 100–200 mm. While oil makes up the largest share of natural capital and contributes approximately 58 percent to GDP, cropland, pastureland, forests (timber and non-timber resources), and protected areas do make a limited but important contribution. Prior to the conflict, key natural resources of Iraq (water, air, and land) were already in a degraded state, and in 2008 it was estimated that the cost of environmental degradation was 6.4% of GDP, or IQD 6.5 trillion. Key challenges within the ENR sector include:(i) Conflict pollution, related to widespread contamination of land by military wastes, land mines and hazardous chemicals; (ii) Oil pollution due to obsolete infrastructure occasioned by neglect due to multiple conflicts, a weak regulatory system, and weak capacity within the industry regarding hazardous chemical management; (iii) Management of natural resource scarcity including illegal and/or uncontrolled use of natural resources and poor farming practices resulting in widespread ecosystem degradation; and (iv) Climate change and desertification which exacerbates the ecological impacts of an already harsh climate characterised by low rainfall and high summer temperatures, with differentiated impacts on men and women, IDPs, and vulnerable populations.

C. Sectoral Damage and Loss Assessment

The conflict, characterised by employment of tactics involving deliberate pollution of air, land, and water on an unprecedented scale, has had a devastating and potentially long-lasting impact on the ENR assets of Iraq, and consequently, the safety, health, and livelihoods of communities. Of particular significance is the disproportionately high impact on the most vulnerable members of society who are more reliant on natural resources to sustain their livelihoods. These groups include the estimated 3 million IDPs, women, female-headed households, and the youth. Without urgent intervention and incorporation of restoration of these assets into the overall restoration strategy, it is likely that the impacts will be felt for generations to come.

Key to the socioeconomic development of the country is the potential extent of contamination of soil by chemicals and land mines, which impact significantly the desire of IDPs to return to their homes. Although the true extent of conflict-related contamination of land is yet to be confirmed, it is estimated that 2,371,350 ha of high-use land have been rendered unusable due to land mines, and that at least a further 10,569 ha have been lost due to pollution by hydrocarbons and other chemicals. Thirty-six sites considered to present a very high (6 in total) or high (30 in total) risk of environmental contamination due to the recent conflict have already been identified. The highest concentrations of hazardous sites are located in and around Mosul city, Qayarrah (south of Mosul), Al-Ramadi, Beygee, and Al-Falluja. Of particular concern is the hydrocarbon contamination associated with the 18 destroyed oil wells at Qayarrah (June 2016) estimated at 2,700 ha, and the Mishraq Sulphur Complex. High levels of pollution are also expected in areas of artisanal oil refining activities (particularly around Tal Afar, Al-Shirqat and Al Haditah) or where there has been destruction of electrical distribution infrastructure, storage of military scrap, manufacture of explosives, and use of asbestos.

Many of the returning IDPs and vulnerable citizens who rely on land and natural resources for their livelihoods will have no option but to continue accessing polluted areas despite significant threats to their safety and health associated with land mines and hazardous chemicals. Such activities may lead to fatalities or disabling injuries, thereby increasing the number of highly vulnerable individuals within communities, and potentially placing an additional burden on social welfare and health care systems that are already strained.

The setting alight of large industrial facilities and oil wells contributed to worsening air pollution. A specific example includes the oil well fires at Qayarrah that resulted in large plumes of black smoke and burning of approximately 30,000–35,000 tonnes of sulphur at the Mishraq Complex (45 km south of Mosul). This resulted in a 200 km-long plume of sulphur dioxide and sulphur trioxide. The Ministry of Environment (MoEn) and World Health Organization reported treating over 1,500 people for suffocation symptoms linked to this sulphur plume.

A combined total of approximately 688 ha of woodland was destroyed in Salah Al-Deen, Diyala, and Anbar, and it is estimated that total forest loss may have been as high as 387,750 ha. Considering that forests cover only approximately 2 percent of the land area of the country, a loss of this ENR asset and associated goods and services on this scale is considered significant.

Environmental management capacity at the national and governorate level has also been damaged as a result of damage to several facilities used by the MoEn including administration buildings, laboratories, and remote environmental monitoring stations. Although yet to be confirmed, disruption of these services is expected to be greatest in areas of most intense conflict. It is known that services in Ninawa were disrupted by dismissal of 140 staff and damage to the offices. The MoEH's environmental laboratory in Anbar was also partially damaged as a result of the conflict, and at least one remote sensing station (water) in Dayala was completely destroyed.

D. Quantification of Damage and Losses

Quantification of damages and losses to ENR assets was based, as far as possible, on actual data from the individual governorates. However, due to gaps in data, it was necessary to make significant assumptions based on likely scenarios of findings from similar assessments. Despite the actual physical damage to environmental assets, the approach to estimation of the economic value of conflict on natural resources is the same as that applied to other similar assessments where economic values of disaster effects have been reported in terms of losses. The economic value is based on the value of the flows of environmental services and it would be double counting to reflect both damages and losses.

Table 52: *Estimation of National ENR Conflict Damage and Losses (no. of facilities, cost in IQD billion)*

	Type	Asset Types	Total Damaged	Partially Damaged	Completely Destroyed	Total Cost
DAMAGE	*Environmental infrastructure*	*Administration office*	21	21	—	1.8
		Laboratory	7	7	—	57.1
	Environmental monitoring	*Monitoring station*	21	—	21	26
	Total Damage		**49**	**28**	**21**	**84.9**
LOSS	*Forests*					232.6
	Game (hunting) and critical habitat					300
	Land (chemical pollution)					4
	Land (land mines)					903
	Air quality					1,850.4
	National additional forest loss (est):					232.4
	Total Loss					**3,522.3**
Total Effect (damage and loss)						**3,607.3**

No estimate of the loss associated with conflict-related pollution of water resources was included in this assessment as this will be covered by other sector analyses. However, the damage to water pollution monitoring capabilities was included under the "Environmental Monitoring" category.

Table 53: *Governorate Needs (in IQD billion)*

Governorate	Type	Total (5 yrs)	Short Term (yr 1)	Medium Term (yrs 2–5)
Anbar	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	461.8	0.6	461.2
	Total Anbar	**475.8**	**2.1**	**473.7**
Babel	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	300.3	0.4	299.9
	Total Babel	**314.2**	**1.9**	**312.3**
Baghdad	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	34.4	0.0	34.3
	Total Baghdad	**48.3**	**1.5**	**46.8**
Diyala	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	887.6	1.2	886.4
	Total Diyala	**901.5**	**2.7**	**898.9**
Kirkuk	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	337.6	0.4	337.2
	Total Kirkuk	**351.6**	**1.9**	**349.7**
Ninawa	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	1,922.4	2.5	1,919.9
	Total Ninawa	**1,936.4**	**4.0**	**1,932.3**
Salah ad-Din	Env infrastructure reconstruction	9.8	1.2	8.6
	Env capacity restoration	4.2	0.3	3.9
	Environmental restoration	2,456.3	3.2	2,453.0
	Total Salah Al-Deen	**2,470.2**	**4.7**	**2,465.5**
Grand Total–All Governorates		**6,498.1**	**18.9**	**6,479.1**

E. Sectoral Needs Analysis

Recommendations related to the restoration of ENR assets have taken into consideration current information gaps as well as key criteria such as whether the activity (a) builds people's (especially returning IDPs and women) confidence, (b) reduces environmental risks to people's health/safety, (c) targets and helps the most vulnerable (elderly, women, youth, children, people with disabilities), (d) contributes to livelihood restoration with differentiated strategies for men and women, and (e) takes into account potential GoI and private sector (especially oil industry) financial resources.

Short term (up to1 year)

- ***Rapid situation analysis to identify the major environmental pollution hotspots,*** especially areas subject to direct targeting in the recent conflict where releases and dumping of military and hazardous materials into the environment may have occurred, including assessment of damage to industrial facilities and risk of release of hazardous wastes that may threaten human health/safety and mobility.

- ***Measure and assess levels of damage and pollution at the identified hotspots*** and plan corresponding rehabilitation and cleanup actions. Because of direct targeting and weaponization of facilities in the recent conflict, returning communities, IDPs, and other citizens will have legitimate fears about environmental threats to human health/safety such as presence of mines, unexploded ordnance, hazardous materials, soil and water contamination, and air pollution, etc. Hence objective and reliable information will help in communicating with the communities where the risk is low, and will help in targeting cleanup and rehabilitation where the risk is high.

Medium term (up to 3 years)

- ***Establish a national register of prioritized contaminated hotspots*** to be used by the GoI during the recovery and reconstruction process in order to minimize environmental and health/safety risks that could arise from uninformed disturbance of such sites.

- ***Preliminary containment:*** Based on the outcome of the prioritized hotspots, sites should be identified where pollution/hazardous materials pose a high and immediate risk to communities and key resources (e.g., water). Additionally, measures such as temporary containment, restriction of community access, closure, and/or cleanup should be implemented prior to securing longer term solutions. Such activities should include robust community awareness campaigns with targeted approaches for different segments of the population (women, youth, and disabled, etc.) so as to limit negative impacts on communities.

- ***Capacity and institutional rebuilding and strengthening at governorate and national levels.*** Initiate a coordinated capacity enhancement program to ensure homegrown ability to implement and monitor programs aimed at managing pollution (air, water, and land), ecosystem degradation, and climate risks in order to enhance the environmental living conditions for the citizens of Iraq. This would include strengthening regulatory and enforcement systems, installation of air quality monitoring stations in targeted urban areas, training of proper disposal of hazardous wastes, and training of public and private sector oil industry specialists to deal with oil pollution management, etc.

Long term (up to and beyond 5 years)

- ***Cleanup, rehabilitation, and management:*** Building on the initial containment of pollutants at high-risk sites, this activity will involve progressive cleanup and remediation of priority environmental pollution hotspots, starting with those with the highest risk ratings. These would predominantly be located in or near high population centers or close to critical resources such as water (rivers, lakes, marshlands, and oases), croplands, and grazing areas. The objective would be to protect human and animal health and enhance recovery of community livelihoods.

- ***Initiate community-based natural resource management*** and climate resilient activities executed through a set of community livelihood strengthening interventions such as cash-for-work programs to engage local youth/women/communities in environmental restoration and enhancement efforts including on-farm forestry/agroforestry, afforestation, rangeland rehabilitation, expansion of green belts around cities (to minimize dust storms and enhance microclimate), and rainwater harvesting. Creating safe spaces to engage women in the prioritization and planning of these activities through dedicated participation mechanisms would be critical. Rangeland restoration could involve multiple approaches from minimal intervention strategies (i.e., self-recovery) through to active processes where community groups may be assisted through provision of seeds and veterinary extension services. Consideration should also be given to the establishment of tree nurseries to supply restoration projects with multiple-use and drought tolerant trees such as olives and date palms.

The most significant proportion of the restoration costs (Table 53) are associated with implementation of a phased and risk-based approach to reducing levels of contamination and restoring forests. A key activity is the development of a comprehensive register of contaminated sites that includes environmental sampling and an assessment of the risks to local communities. Also included is the temporary containment of hazardous materials where the risk posed to communities is high, initiation of remediation of land polluted by chemicals, and woodland rehabilitation. The costs of de-mining have not been included.

Rubble is strewn across a destroyed marketplace in Iraq. REFAATO first photo exhibition. Photo credit: Karim Kashekh.

IV. MACROECONOMIC IMPACT ASSESSMENT

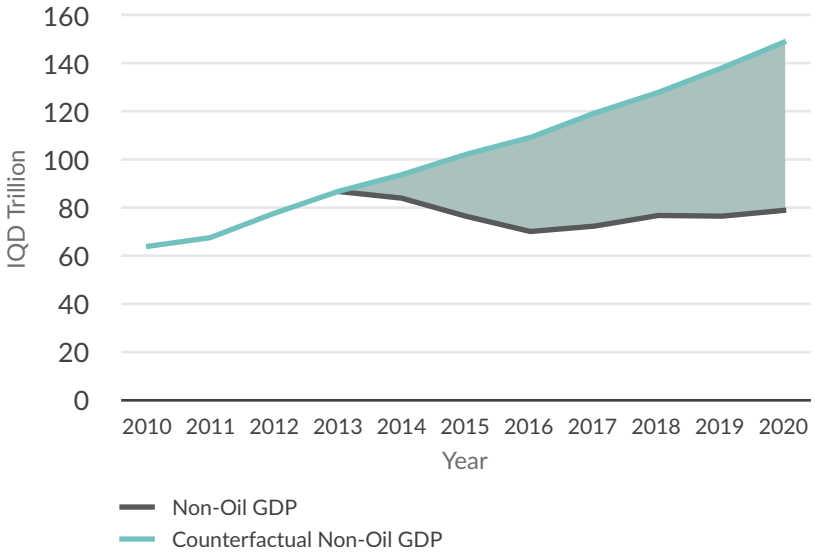
1. The Larger Context

Iraq has been in and out of conflict for the last three decades. The most recent conflict against the Islamic State of Iraq and Syria (ISIS) since 2014 has led to the death of thousands and over 3 million IDPs and 6.2 million people in need of targeted humanitarian assistance. The immediate concern is to restore the productive means of livelihood for millions of people in agriculture, services and industry; and broaden the revenue base of the state and continue the fiscal adjustment process supported by the WBG and IMF to ensure sustainability and increase resilience toward shocks.

Total damage to existing stocks of assets has been estimated at IQD 53.3 trillion (US$ 45.7 billion). Economic losses are enormous. Iraq's conflict has caused a three-year recession of non-oil GDP. By 2017, the cumulative real losses to non-oil GDP due to conflict stood at IQD 124 trillion (US$ 107 billion), equivalent to 72 percent of 2013 GDP (Figure 11) and 142 percent of 2013 non-oil GDP, assuming the non-oil economy would have continued to grow at the pre-conflict rate of 8 percent. The conflict has only marginally affected oil production, which has continued to grow.

Reconstruction spending is estimated to be in the order of magnitude of a cumulative US$ 100 billion over a 10-year period. If augmented by deep structural reforms that strengthen governance and the provision of public services, improved macroeconomic and natural resource wealth management, stronger ability of the Iraqis to reach their potential, and work in productive jobs, this will lay the foundations for lasting peace, justice, and opportunity for all.

Figure 11: *Non-Oil GDP Losses*



2. Growth Prospects

The ISIS war and the protracted reduction in oil prices have resulted in a 21.6 percent contraction of the non-oil economy since mid-2014, with non-oil growth expected to return positive in 2017. Thanks to the government's effort to increase oil production and exports, in 2015, overall GDP growth reached 4.8 percent and in 2016, returned to a robust 11 percent growth. However, Iraq's high dependence on oil implies that the economy is expected to contract by 0.8 percent in 2017 due to a reduction in oil production, following an agreement by OPEC and non-OPEC oil producers to cut oil production until end-2018. Non-oil growth has been negative since 2014, but an improved security situation and the initial reconstruction effort is expected to sustain non-oil growth at 4.4 percent in 2017, driven by construction and services, and a pickup in private consumption and investments.

In 2013, average growth for the 2014–2017 period was estimated to be at 8.6 percent, but after experiencing the double shocks of oil price crash and conflict, actual growth in this period has been only 4 percent (Table 54). Lower oil prices by between one-third to one-half of mid-2014 levels have also resulted in a worsened fiscal balance (deficit of about 9 percent of GDP), higher government debt by US$ 90 billion compared to projections, and a worsened external balance. Gross reserves have also worsened by US$ 40 billion compared to pre-conflict/oil shock projections.

Iraq's overall growth is expected to be higher in 2018 thanks to a more favorable security environment, and thanks to higher than expected oil prices, Iraq can increase buffers and reduce indebtedness faster under the program of fiscal consolidation. Overall GDP growth is projected to remain positive in 2018, and while oil production cuts will remain in place until end-2018, the non-oil economy is projected to continue growing after having bottomed out in 2016 with a cumulative contraction of 20 percent since 2013. A more favorable security environment should contribute

to increased economic activity. Iraq's oil export prices are projected to continue recovering to US $48.8 billion in 2018 and to remain in the 47–49 range until 2020.[66] The fiscal deficit is expected to improve, sustained by continuing fiscal consolidation of non-oil primary current expenditure. Also, the current account deficit is projected to benefit from the fiscal adjustment and increase with oil export volumes and higher oil prices. Public debt is expected to decrease to 60 percent of GDP in 2017, after peaking at 64 percent in 2016. Fiscal consolidation will help protect social spending at around 22 percent of non-oil expenditure. Average inflation is projected to remain at 2 percent over the projection period thanks to the pegged exchange rate regime which anchors monetary policy.

The reconstruction would only partly offset the economic and social losses suffered by Iraq. Estimates of the growth effects of a credible path of public and private investments indicates how fast the reconstruction would bring non-oil GDP to its pre-conflict 2013 level.[67] A reconstruction path to a pre-conflict level of non-oil GDP would include higher public and private investment. Post-conflict total gross capital formation grows gradually as a share of GDP and in a back loaded fashion, which is consistent with the absence of a prolonged post-conflict boom, following a short-lived immediate recovery.[68] Investments in infrastructure tend to ramp up and peak 6 years after the end of a conflict.[69] Past levels of FDI inflows indicate that Iraq can attract large amounts of foreign capital that can provide the country with access to capital, skills, technology, and international business networks not available domestically. Since 2004, Iraq had experienced a tenfold increase in FDI inflows, which stood at over $5 billion in 2013.[70] Most FDIs were directed to the oil sector and provided financing also for construction and agriculture.

Thanks to higher growth, the non-oil economy will reach 2013 levels by 2019 if both higher public and private investments are realized. It will take one year longer if there is no scale up of private investment (Figure 12). Compared to the baseline macroeconomic outlook, the reconstruction scenario assumes that from 2019, GoI will be able to gradually increase non-oil public investment by US$ 10 billion.[71] This is a conservative estimate that would result in a reconstruction phase longer than 10 years. It is assumed that public investment for reconstruction is entirely externally financed, at terms comparable to those of the current Iraq's external public debt portfolio and with a magnitude adequate to an initially limited absorption capacity and consistent with debt sustainability.[72] Increased security and public investment would also contribute to the return of private investment to the pre-conflict level of US$ 5 billion a year by 2019.

66 Consistent with the simple average oil futures prices of Brent, West Texas Intermediate, and Dubai and assuming a $5 discount for Iraqi oil export prices, corresponding to the average discount since mid-2015.
67 Simulations have been conducted by using the Macro-Fiscal Stand-alone Model (MfMod) for Iraq.
68 United Nations and World Bank (2017); Schwartz, Hahn, and Bannon (2004).
69 Schwartz, Hahn, and Bannon (2004).
70 An amount similar to that of significantly larger economies such as Egypt and Nigeria and the second largest as a share of GDP among OPEC countries.
71 A level consistent with the investment needs indicated by the GoI. In 2018, a US$ 5 billion increase in non-oil public investment is assumed compared to the baseline.
72 Under this scenario public debt would continue to increase and peak in 2020 at 61.8 percent of GDP, compared to the baseline.

Further delays in the reconstruction would continue to increase the cost of the conflict for the people of Iraq. However, investment alone would not be sufficient for Iraq to achieve higher non-oil growth if structural reforms would not result in higher productivity of the Iraq economy. The recovery would also take longer if the reconstruction fails to crowd in the private sector.

Figure 12: *Non-Oil GDP (in percent)*

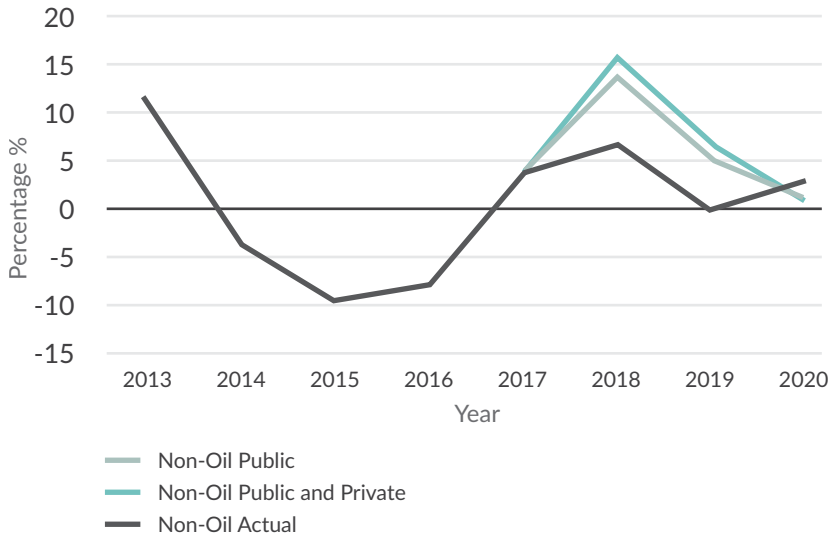


Table 54: *Macroeconomic Indicators*

	Actual		Projection in Apr. 2013	Actual
	2012	2013	2014–2017 Average	2014–2017 Average
Economic Growth and Prices				
GDP, constant prices (percentage change)	8.43	9.04	8.56	4.03
GDP, current prices (US$ billions)	212.5	233.29	292.53	194.72
GDP per capita, current prices, US$	6305.08	6708.39	7774.37	5219.32
Oil production (mbpd)	3	3	4.43	3.98
Oil exports (mbpd)	2.4	2.4	3.66	3.4
Iraq oil export prices (US$ per barrel) 2/	106.7	102.9	92.5	56.25
Consumer price inflation (percentage change; average)	6.1	1.9	5.5	1.03
National Accounts				
Gross domestic investment	22.1	27	23.55	22.53
Of which: public	13.2	17.6	15.88	13.83
Gross domestic consumption	69.4	69.5	72.15	80.35
Of which: public	20.7	21.2	20.85	21.85
Public Finance				
Government revenue and grants	47	42.6	45.15	33.2
Government oil revenue	43.4	39	42.93	29.75
Government non-oil revenue	4	3.6	2.25	3.2
Expenditure, of which:	42.9	48.4	42.03	42.08
Current expenditure	29.7	30.9	26.18	28.25
Capital expenditure	13.2	17.6	15.88	13.83
Overall fiscal balance (including grants)	4.1	–5.8	3.13	–8.9
Non-oil primary fiscal balance, (percent of non-oil GDP)	–64	–68.7	–66.25	–48.38
Memorandum Items				
*Total government debt (in US$ billion)****	75.7	74.3	27.2	116.8
*External government debt (in US$ billion)****	60.3	59.2	20.7	68.3
Monetary Indicators				
Growth in reserve money	8.3	12.6	11.05	–4.5
Growth in broad money	3.4	16.7	9.68	1.2
Credit to the economy (percentage growth)	14.9	14.7	4.3*	6.03
External Sector				
Current account	6.7	1.3	3.88	–3.7
Trade balance	14.3	9.5	11.15	3.23
Overall external balance	4.4	–1.3	4.25	–4.78
Gross reserves (in US$ billion)	69.3	77.8	92.55	52.95
In months of imports of goods and services	9.8	10.4	8.95	8.55
Exchange rate (dinar per US$; period average)	1,166	1,166	1,171**	1,171

**2014-2016 average–as projected in June 2015 **2014–2016 actual average ***end 2017 data and not period average displayed*

3. Sector Impacts

Agriculture represented only 4.3 percent of the economy in 2013 and the largest source of employment (30 percent), including for the poor and women. It has however been hurt enormously during the conflict. Its value added dropped by 2 percent in 2014 and 49 percent in 2015 (Table 56) mainly because of conflict, and that includes output loss during conflict that resulted in depletion of farmers' working capital, damages to fixed assets such as machineries and greenhouses, as well as livestock assets. Only 20 percent of farmers had access to irrigation by early 2017 compared to about 65 percent before the conflict. Also inputs such as fertilizers, pesticides, and seeds were lacking as a result of damage to transport routes and infrastructure. For instance, the Regional Food Security Analysis Network Country (RFSAN 2016) reported that Iraqi agricultural production capacity has dropped by about 40 percent following the conflict. The loss of livestock reached up to 95 percent in some areas.

Construction industry share of GDP in 2013 was 8.7 percent, and it suffered hugely throughout the conflict dropping in value added by about 35–40 percent in each year during 2015–2016 and still about 6 percent in 2017 (Table 56). Over 300,000 housing units were damaged, with 37 percent of the housing stock destroyed beyond repair, with low-income housing experiencing the most damage. In the aftermath of conflict, it is expected that labor demand for the demolition, clearance of debris, and reconstruction of destroyed and damaged housing units will grow. This in turn will increase demand and earnings for skilled and unskilled labor also, in industries such as manufacturing and transport.

In the ***services*** sector, finance and insurance services incurred the biggest hit in the conflict period. While physical damage is significant in terms of bank branches, it is significantly outweighed by the credit impairment in the banking sector, especially to State-Owned Banks (SOB)s (Table 55). Losses estimated from the additional provision needed to cover credit impairment of the SOBs (mostly R&R), is estimated to be in the amount of IQD 9.6 trillion (US$ 8.3 billion). The Transport sector suffered considerable damages as well, estimated at IQD 3.3 trillion (US$ 2.8 billion) which include damage to infrastructure but also to service delivery.

Fiscal and monetary sector: While it is difficult to estimate precisely the impact of the conflict and oil price shock separately on the economy, oil production and hence revenues from it have held up well (Table 54) despite the conflict. Oil revenues are very important for Iraq's fiscal sustainability since they comprise over 66 percent of GDP, more than 90 percent of central government revenue, and 98 percent of the country's exports. Non-oil activity has been harmed by the conflict, particularly in the formerly controlled ISIS areas, but also in the rest of Iraq, as productive assets and infrastructure have been destroyed, internal and external trade disrupted, and the confidence of households and investors weakened.

Despite expenditure consolidation efforts supported by the international community, Iraq's fiscal balance deteriorated in 2015 and 2016 due to low oil prices, higher security spending, humanitarian outlays, and weak controls. Iraq' s oil export prices fell from US$ 96.5 per barrel in 2014 to US$ 35.5 in 2016, causing oil revenue to fall by 52 percent in two years, despite a

48 percent production increase. With no other relevant source of revenue, GoI's overall budget deficit increased to 13.8 percent of GDP in 2016. During this period the GoI has reduced primary expenditure by almost 23 percent in real terms, equivalent to a reduction of the non-oil primary expenditure by 10 percentage points of non-oil GDP. Given the ongoing crisis, the government protected salary and pension expenditure, so the brunt of the adjustment fell on the non-oil investment budget. In 2017, the fiscal deficit is estimated to improve to 4 percent of GDP thanks to higher oil prices, measures to increase non-oil revenue, and expenditure caps on wage, pensions, and transfers.

External sector: The conflict did not affect hugely the current account balance as oil production and oil exports with some disruptions remained in high levels. The collapse in oil prices in the second half of 2014 dealt a huge blow to the external balance as Iraq's exports are heavily dominated by oil. This resulted in the current account balance turning negative in 2015 and it has remained so till 2017. In 2017, the current account deficit is expected to decline to 2.4 percent of GDP thanks to fiscal consolidation and higher oil revenues. With current oil price projections and the implementation of the fiscal consolidation under the IMF and supported by the WBG, the current account deficit should be eliminated or substantially reduced by 2022.

Figure 13: *Damage and Loss by Sector (in IQD billion)*

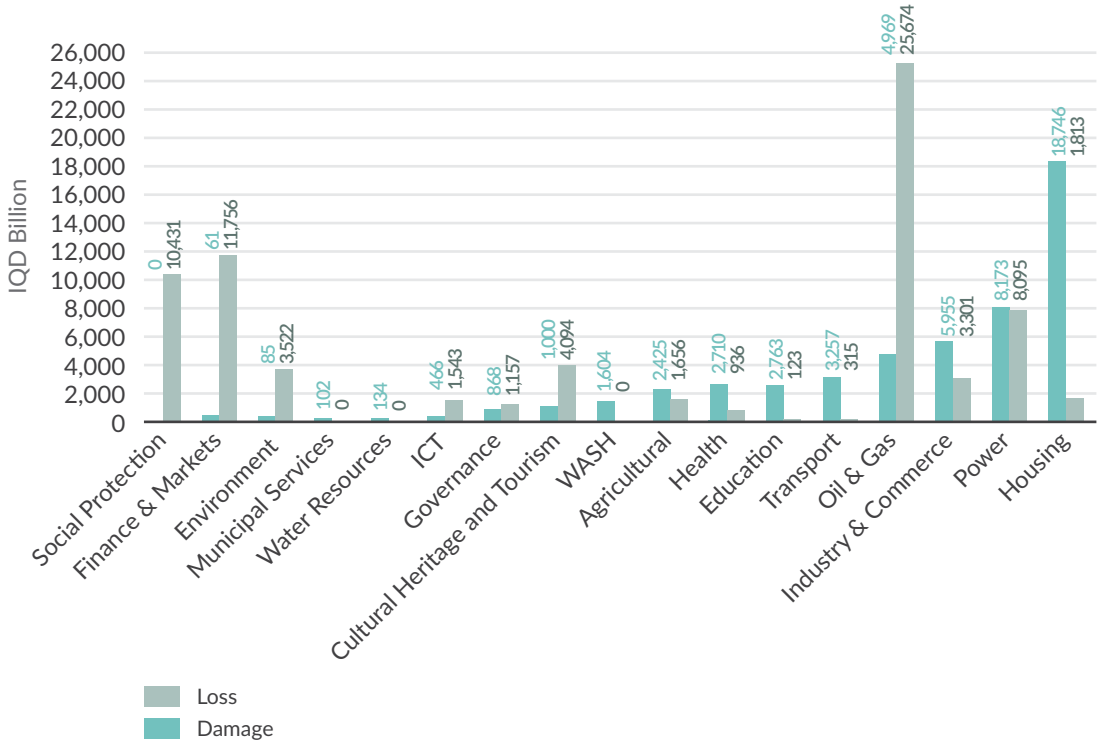


Table 55: *Governorate-Level Damage and Loss (in IQD billion)*

Sector	Damage Cost IQD Billion (US$ Million)	Loss IQD Billion (US$ Million)
Social Sectors		
Housing	18,746 (16,077)	1,813 (1,555)
Health	2,710 (2,324)	936 (803)
Education	2,763 (2,369)	123 (106)
Social Protection	n/a	10,431 (8,946)
Cultural Heritage and Tourism	1,000 (858)	4,094 (3,511)
Productive Sectors		
Agriculture	2,425 (2,080)	1,656 (1,420)
Water Resources	134 (115)	n/a
Industry and Commerce	5,955 (5,107)	3,301 (2,831)
Finance and Markets	61 (52)	11,756 (10,082)
Infrastructure Sectors		
Power	8,173 (7,009)	8,095 (6,943)
Oil & Gas	4,969 (4,262)	25,674 (22,019)
ICT	466 (400)	1,543 (1,323)
Transport	3,257 (2,794)	315 (270)
WASH	1,604 (1,375)	n/a
Municipal Services	102 (88)	n/a
Cross-cutting Sectors		
Governance	868 (745)	1,157 (993)
Environment	85 (73)	3,522 (3,021)
Total	**53,318 (45,727)**	**74,417 (63,822)**

Table 56: *Annual GDP Growth Rate by Economic Activities (in percent)*

	2013	2014	2015	2016	2017
Agriculture, Hunting, Forestry, and Fishing	4.3	–2	–49.3	59.6	–3
Mining, Crude Oil, and Quarrying	49.7	6.3	17.1	24.4	–3.6
Crude oil	49.4	5.4	18.4	24.6	–3.5
Other mining	0.3	–34.6	0.7	–54.5	–50
Manufacturing	1.5	–22.2	–25.7	5.9	20
Electricity and Water	1.1	11.8	1.8	–2.2	5
Construction	8.7	– 4.6	–34.4	–40.3	–5.8
Transport, Storage, and Communications	7.2	6.1	6.5	–28.3	3
Wholesale and Retail Trade, Restaurants and Hotels	8.5	–0.5	0.3	1.6	5
Finance, Insurance, Real Estate, and Business Services	7.2	–8.4	0.3	1.8	6.2
Finance and insurance services	1.7	–41.2	–30.5	1.6	8
Real estate	5.5	1.9	5.9	–5.4	6
Community, Social and Personal Services	12.2	–8.5	1.4	–4	8.2
Producers of government services	9.9	–11	1.1	–10.8	9
Personal services	2.3	2.6	2.6	11	5
Gross Domestic Product at Constant Factor Cost	100	0.7	4.8	0	–0.8
Gross Domestic Product	100	0.7	4.8	11	–0.8
Oil GDP	49.4	5.4	18.4	24.6	–3.5
Non-oil GDP	50.6	–3.9	–9.6	–8.1	4.4
Memorandum					
Gross domestic product (in IQD trillion)	273.6	273.6	209.7	202.7	230.7
Oil GDP	125.6	124.12	69.9	68.6	87.3
Non-oil GDP	148	149.48	139.8	134.1	143.4

4. Way Forward

Iraq has to fund and support the reconstruction and recovery effort while at the same time continue the fiscal adjustment process toward long-term sustainability. To consolidate improvements in the non-oil economy, emphasis must be placed on reducing the level of violence and rebuilding the social contract. Non-oil economic growth is conservatively projected to recover to about half its pre-2014 average growth to 4 percent, as recurrent violence could potentially delay investment and post-conflict recovery. Improved security and the initial reconstruction effort can sustain non-oil growth, driven by construction and services on the supply side. High levels of forced displacement and remaining insecurity could limit private consumption and investment initially, but are expected to then increase also, thanks to a projected increase of credit to the private sector albeit from a very low level.

The government's focus on sustaining social cohesion following the liberation of most of ISIS-controlled territories and avoiding conflict ahead of the parliamentary elections defines the challenges of containing current expenditure and implementing structural reforms. Fiscal adjustment has so far been implemented through a large reduction of non-oil related investment expenditure. While the postponement of non-oil investments seems contrary to boosting reconstruction and service delivery, the quality and efficiency of non-oil investments suffers from weak institutional capacity and governance issues historically. Hence there is a need to be selective in non-oil investments due to fiscal pressures, while building the capacity of implementing agencies in the future to take on more investments. Current expenditure, and the wages and pensions paid through the budget, have not adjusted yet to the lower level of revenues. Reductions of the wage bill and pensions as part of the fiscal consolidation effort are highly sensitive initiatives as they are part of the existing social contract in Iraq, as in other MENA countries but there is commitment to improve control of expenditure by removing fraud in the payment of wages and to potentially use natural attrition to transition civil servants from payroll to contribution-funded public pension scheme.

There is a need to involve the private sector in reconstruction and recovery activities and support priority non-oil sectors for growth such as the construction sector, religious tourism, and agribusiness. The construction sector could generate jobs relatively quickly in the reconstruction phase, while the agribusiness sector was once a major source of jobs and exports for Iraq and could be once again. It is important to note the geographical implications of a sector strategy which have a growth potential. Indeed, these strategies would likely create jobs and growth differently in different parts of the country. For example, construction is likely to generate the most growth and jobs in areas that have recently suffered from destruction from war—the areas liberated from ISIS, and most notably Mosul. Tourism job creation and growth is likely to be concentrated on the major religious sites in Karbala and Najaf as well as in Baghdad and Erbil. Agribusiness growth is likely to be concentrated in rural areas around Baghdad as well as near Erbil.

In the more medium term the government has to (a) maintain macroeconomic stability by controlling public expenditures, (b) improve oil revenue management and, (c) expand non-oil revenue by broadening the tax base. This is an effort that is supported by the international community and the IMF and WBG more specifically.

Risks remain however. Oil price and security shocks are two shocks that are exogenous and independent of each other, but recent experience has shown that the combination of these two negative shocks has resulted in negative non-oil growth, higher fiscal deficits, and unsustainable debt dynamics, which would undermine the effort undertaken so far to maintain macroeconomic stability and increase fiscal space to enable future reforms. While oil prices are expected to follow a slight upward trend, they are expected to remain on average 50 percent lower than in 2014 and their level over the projection period remains highly uncertain per the volatility indices. Iraq could yet again face a fiscal crisis if conflict and violence reignite because of setbacks in the recent successes against ISIS or increased tension with the Kurdistan Regional Government following the referendum on its independence. In such a downside scenario, recovery and reconstruction efforts and investor confidence would be undermined.

Children carry a water vessel in Khanke refugee camp (August 2014).
Photo credit: Answer5 (Shutterstock).

V. RECOVERY AND RECONSTRUCTION STRATEGY

Based on international experience for prioritization of needs, the following three Strategic Recovery Objectives are recommended as the foundation for the proposed recovery and reconstruction strategy that seeks to respond to the challenges in Iraq:

- ***Renew social contract.*** Iraq needs to capitalize on the historic opportunity to break with past conflict patterns and to use the reconstruction effort to forge a new social contract between the state and its citizens. The legacy of the previous regime coupled with the aftermath of the 2003 invasion has exposed deep-rooted divisions in Iraqi society, and a distrust in government that pre-dated 2003. Through this objective, the government aims to improve transparency and accountability of the reconstruction effort itself, as a means to rebuild trust and confidence. Furthermore, it will focus on advancing critical policy reforms required to strengthen local level implementation capacity, thus moving development closer to the affected populations. In doing this, the government commits to improve its effectiveness to respond to and mitigate risks of future conflict by promoting social cohesion.
- ***Promote economic and business recovery/development.*** It is important to create employment, develop productive capacities, and stimulate economic activities and private sector engagement in the reconstruction effort. An energy crisis, rampart insecurity, weak laws and regulations, and low levels of national and international investment have crippled the private sector. Combing priorities from the Economic Development and Human and Social Development Sectors in the GoI's Vision 2030, it is critical to focus on critical priorities, including implementation of fiscal and financial reforms, improvements to the business environment, and job creation. A particular and urgent focus is on how the reconstruction effort itself can be used both to generate opportunities for the private sector and for employment purposes.
- ***Rehabilitate major infrastructure and restore service delivery.*** The conflict in Iraq has caused devastation to the infrastructure in the country which has affected critical services such as energy production, transport and communication, water and irrigation, as well as destroying private homes rendering many homeless. A critical outcome of the reconstruction framework is to restore and rehabilitate key public and private infrastructure that will enable service delivery, provide housing for people, and facilitate economic development.

The next steps towards a more comprehensive recovery and reconstruction strategy include the rapid scaling-up of the Damage and Needs Assessment to cover the remaining 11 governorates which have felt the shockwaves of the conflict.

The results of the Iraq DNA and the Strategic Recovery Objectives will feed into the government's Reconstruction and Development Framework (RDF). The reconstruction framework will further develop and adopt a programmatic recovery approach to ensure that the recovery and reconstruction needs identified in the DNA are well-coordinated, synchronized, and systematically prioritized to reduce potential gaps and overlaps. The framework ought to progressively implement coherent institutional, financing, prioritization, policy development, and program management structures. A GoI-led and locally implemented recovery effort will help garner the most systematic and harmonized support from national and international partners possible. Several cross-cutting issues are also recognized as critical to successful reconstruction. Specific attention through the reconstruction framework will be placed on gender equality and on the role of women and youth, as well as to ensure that activities address both those displaced and host communities to avoid localized conflicts over resources and access to services. Furthermore, attention will be given to the need to rapidly strengthen local level capacity to deliver, including both local government institutions and non-state organizations.

A child in Lalesh, Ninawa plays outside a tent in a refugee camp (August 2014).
Photo credit: Answer5 (Shutterstock).

Annex: Acronyms

ALP	Accelerated learning program
AML/CFT	Anti-Money Laundering and Counter Financing of Terrorism
BBB	Build back better
CBI	Central Bank of Iraq
CPI	Consumer price index
CS	Central Statistics
CSO	Central Statistics Office
CT	Cash transfer
DNA	Damage and Needs Assessment
EMIS	Education Management Information System
ENR	Environment and Natural Resources
EODP/AF	Emergency Operation for Development/Additional Financing
ESSRP	Emergency Social Stabilization & Resilience Project
FCV	Fragility, conflict, violence
FDI	Foreign direct investment
GBV	Gender-based violence
GDP	Gross domestic product
GoI	Government of Iraq
GW	Gigawatt
ICT	Information and Communication Technology
IDP	Internally displaced person
IMF	International Monetary Fund
IQD	Iraq dinar
IRFFI	International Reconstruction Fund Facility for Iraq
IRR	Iraqi Republic Railways
ISIS	Islamic State of Iraq and Syria
ITPC	Iraq Telecommunications and Post Company
KWh	Kilowatt hours
KYC	Know Your Customer
LPG	Liquid petroleum gas
M&E	Monitoring and evaluation
mbpd	Thousand barrels per day
MDG	Millennium Development Goals
MENA	Middle East and North Africa
MFI	Microfinance institution
MFM	Macroeconomics and Fiscal Management
MfMod	Macro-Fiscal Stand-alone Model
MoE	Ministry of Education
MoEH	Ministry of Environment and Health
MoEn	Ministry of Environment
MOLSA	Minister of Labor and Social Affairs

MoP	Ministry of Planning
MoT	Ministry of Transport
NCD	Non-communicable disease
NGC	North Gas Company
NGO	Nongovernment organization
NOC	North Oil Company
NPL	Nonperforming loans
NRC	North Refineries Company
O&M	Operation and maintenance
OPC	Oil Pipelines Company
OPEC	Organization of the Petroleum Exporting Countries
PAI	Publicly available information
PDS	Public Distribution System
PHC	Primary health care
PMT	Proxy means-testing
PPP	Public-private partnerships
PW	Public works
R&R	Rafidain and Rasheed
RBF	Results-based financing
REFAATO	Reconstruction Fund for Areas Affected by Terroristic Organizations
RFSAN	Regional Food Security Analysis Network Country
SBAH	State Board of Antiquity and Heritage
SFD	Social Fund for Development
SOB	State-Owned Bank
SOE	State Owned Enterprises
SME	Small and medium enterprise
UN	United Nations
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNICEF	The United Nations Childrens' Fund
UNOCHA	UN Office for the Coordination of Humanitarian Affairs
US	United States
USD	United States dollar
WASH	Water, sanitation, and hygiene
WBG	World Bank Group