

PROJECT INFORMATION DOCUMENT (PID)
IDENTIFICATION/CONCEPT STAGE

Report No.: PIDC103062

Project Name	Iraq Gas Flaring Reduction TA (P162845)
Region	MIDDLE EAST AND NORTH AFRICA
Country	Iraq
Lending Instrument	IPF
Project ID	P162845
Borrower Name	Republic of Iraq
Implementing Agency	Ministry of Oil
Environmental Category	B - Partial Assessment
Date PID Prepared	07-Dec-2016
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Initiation Note Review Decision	

I. Introduction and Context

Country Context

Iraq has seen its development thwarted by decades of conflict and economic decline, with twin crises of oil price declines and the ISIS insurgency being the latest expression of deep-rooted structural challenges and fragility. Today it is an Upper Middle-Income, resource-rich, yet conflict-riven country. Historically, Iraq has periodically witnessed, as it does today, internal and regional struggles seeking to align political institutions across the country with a diversity of socio-economic religious cross-cutting identities. Progress on the twin goals of ending extreme poverty and boosting shared prosperity is inevitably an uphill struggle in such a context. In 2014, the twin crises are estimated to have erased the reduction in poverty achieved between 2007 and 2012, raising the poverty headcount to 22.5 percent and pushing an additional three million people into poverty. More than 4 million Iraqis have been displaced by the country's various conflicts. In recent times, oil prices have recovered to some extent and there has been progress in the fight against ISIS. However, Iraq's multifaceted fragility leaves it vulnerable to shocks.

Iraq's undiversified economy remains under pressure owing to the ongoing conflict, and the sharp drop in oil revenues since mid-2014. After a strong growth at an average of 9 percent during 2010-13, Iraq's economy decelerated to 0.1 percent in 2014, mainly driven by the conflict-led contraction in the non-oil sector. In 2015, the economy grew at 2.9 percent on the back of a 19.4 percent increase in oil production (this also includes KRG's oil production share). Growth is expected to have reached 10 percent in 2016 sustained by continued strong oil production. The non-oil economy sharply contracted because of the disruption of trade, destruction of infrastructure, impeded access to fuel and electricity, and low business confidence

Compounding the country's fragility is the sharp and sustained drop in oil prices that has severely

impacted Iraq's non-diversified and oil-dependent economy. Iraq has the fifth largest proven crude oil reserves in the world with 141.4 billion barrels. With the rapid increase in production in 2015 and 2016, the country is now the world's third largest and OPEC's second largest oil exporter. With 112 trillion cubic feet of proven reserves, Iraq's proven and largely untapped natural gas reserves are the twelfth largest in the world. The oil and gas sector dominates the economy, even by regional standards. The sector accounts for over 65 percent of GDP, more than 90 percent of central government revenue, and 98 percent of the country's exports. The fall in oil prices, which have dropped to between one third and one half of their June 2014 level, has resulted in a sharp and large deterioration of the country's public finances and external balance.

Sectoral and Institutional Context

Iraq is the second largest gas flaring country in the world, while at the same time it suffers from a shortage of natural gas for which it incurs large fiscal and balance of payments costs. Shortages of natural gas are especially acute in power generation. On November 1, 2016, Iraq endorsed the World Bank's "Zero Routine Flaring by 2030" initiative, which is a welcome and positive development. To date, however, more than 60 percent of the country's gas production continues to be flared in-field because of inadequate contractual and regulatory frameworks for investment in the gathering, treatment, processing, and transport of natural gas.

Flaring of gas contributes to climate change and impacts the environment through emission of CO₂, black carbon and other pollutants. It also wastes a valuable energy resource that could be used to advance the sustainable development of producing countries. Flaring generates significant air pollution and carbon release, the shortage of deliverable gas imposes significant economic and fiscal costs and precludes the introduction of efficient combined-cycle power plants and the development of industries that depend on gas feedstock and gas fuel. Reductions in flaring and the equivalent displacement of oil, heavy fuel oil (HFO), and diesel generation by natural gas would decrease Iraq's CO₂ emissions—which currently stand at around 140 million tons per year—by approximately 12 million tons per year, equivalent to Guatemala's and slightly lower than Kenya's total emissions in 2014.

The amount of gas currently flared represents an annual economic loss approximately equivalent to US\$2.5 billion and would be sufficient to meet most of Iraq's unmet needs for gas-based power generation. Current production and gas flaring volumes amount to roughly 2.8 bscfd (billion cubic feet per day) and 1.7 bscfd, respectively. While installed gas-based generation capacity is close to 15,000 MW, gas-based peak load supply did not surpass 6,000 MW in 2015 due to restrictions in gas deliverability. It is estimated that currently flared gas volumes would be sufficient to support an incremental generation capacity of roughly 8.5 GW. This is particularly significant, given Iraq's severe electricity shortages, whose cost is estimated to exceed US\$40 billion annually (INES report, 2013). Shortages of natural gas have also led to the use of (expensive and for some parts imported) fuel, which costs the country an estimated US\$6 billion to US\$8 billion per year.

The volume and the proportion of flared gas are expected to increase in the absence of effective measures to capture it and to support increased gas utilization. Iraq's continued increases in oil production would result in further increases in flaring and waste unless measures are undertaken to capture, process and transport associated natural gas. The government needs to take action to help internalize the costs of currently flared gas and capture the economic and social benefits that can accrue from increased private investment in gas capture, processing, and transmission infrastructure, from reduced flaring and waste and from increased electricity generation.

Iraq joined the Global Gas Flaring Reduction Initiative in 2011 (the second country after Qatar) and created the Basra Gas Company (BGC) in 2013 to capture, process, and monetize associated natural

gas from its giant southern oil fields. BGC has recently attained a raw gas processing record of well above 600 MMscfd and an LPG production of 3,300 tons per day. Iraq's natural gas has a significant LPG content, which, if properly processed, can be compressed and bottled for distribution for household use in cooking and heating. As a result of increased gas processing by the BGC, and having faced acute shortages of LPG until recently, Iraq reinitiated exports of gas condensates and LPG in March and July of 2016, respectively.

Despite being an energy-rich country, Iraq continues to suffer from chronic and pervasive shortages of electricity, which during the summer of 2015 contributed to social unrest. Inadequate electricity supply has been persistently pointed to as a top concern among Iraqi households. Inefficiencies in the power sector also impose significant fiscal and balance of payments costs and an economic burden on Iraq. At the same time, Iraq is the second largest gas flaring country in the world. To date, more than 60 percent of the country's gas production continues to be flared in-field because of inadequate contractual and regulatory frameworks for investment in the gathering, treatment, processing, and transport of natural gas.

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In October 2015, the Government assumed commitments to eliminate routine gas flaring by 2030 [per Council of Ministers' Decision 370 in 2015] and, on November 1, 2016, endorsed the World Bank's "Zero Routine Flaring by 2030" initiative. Meeting these targets will require establishment of a solid natural gas policy and supportive contractual and regulatory frameworks for investment.

Iraq's progress in reducing gas flaring has so far remained limited, however, and it is critically dependent on increasing processing capacity around the Basra petroleum hub in the south, where the largest five fields account for 65 percent of currently flared volumes. At present, no more than 750 MMscfd of natural gas are allocated to power generation because of supply, treatment, and logistical constraints. Because of the need to strictly prioritize cash allocations, the government has incurred large arrears to its suppliers of gas used for power generation. For the same reason, it made limited progress in 2016 in expanding gas capturing and processing capacity, which remains below the DPF I target of 1,070 MMscfd by Q1 2017.

No specific legal, institutional or regulatory framework for exploration, production, gathering, processing, transport or marketing of natural gas exists in Iraq at present. Current Technical Service Contracts for oil production do not contain any provisions with respect to natural gas other than to establish the operator's obligation to transfer control / ownership of raw, unprocessed gas to government/NOCs at no cost. Because of budget restrictions, NOCs have been unable to make necessary investments in gas gathering, processing and transport infrastructure. Oil and gas operators have expressed an interest in making the necessary investments to tackle flaring, but are prevented from moving forward by existing contractual limitations.

Severe budget limitations and security demands will continue to be confronted by the GoI in the foreseeable future; this makes it unlikely that the expenses involved in the development of an integral contractual and regulatory framework for natural gas or that investments in needed gathering, processing and transport capacity will be prioritized among planned expenditures. If the targets and commitments assumed under the Iraq Emergency Fiscal Stabilization, Energy Sustainability, and SOE DPF (P155962, December 2015) and the gas sector component objectives of the Second Expenditure Rationalization, Energy Efficiency and State-Owned Enterprise Governance Program DPF (P161167, 20 December 2016) are to be fulfilled -including flaring reductions to zero by 2030 and increasing gas-to-power allocations-, investment flows into gas gathering, processing and transport capacity will need to come from the private sector. Technical Assistance to develop the appropriate framework to attract and sustain them will need to be quickly provided.

The following World Bank interventions on gas sector reform are currently ongoing:

I. IQ: RAS for the Structuring of the Gas Value Chain and Gas Marketing (P148220)

The activity, initiated October 2015, has two main components and includes the following activities and outputs:

1. Baseline and forecast of the Iraq's gas industry. Carrying out an analysis of Iraq's gas industry with particular focus on institutional, legal, regulatory, policy, commercial and contractual frameworks.
2. Benchmarking and Gap Analysis. Carrying out a comparative review and assessment of different development models followed by other gas producing countries.

3. Recommendations. Develop a set of policy recommendations to strengthen Iraq's gas industry's institutional, legal, regulatory, commercial and contractual frameworks.
4. Capacity building. Carrying out a training program designed to build the capacity of Iraq's officials including staff of Iraq's institutions and marketing entities,

II. Second Expenditure Rationalization, Energy Efficiency and State-Owned Enterprise Governance Program DPF (P161167)

The DPF II established specific objectives and a timeline to (1) reduce natural gas flaring, (2) allocate captured natural gas for the urgently needed expansion of gas-based power generation, and (3) establish basic conditions and concrete guidance for private investment in natural gas gathering, processing and transport. The DPF II's gas sector component aims to establish a core contractual and regulatory framework that enables private investment in those activities. The following were agreed with the GoI as DPF II prior actions and triggers:

1. Adoption of a contractual framework for private sector investment for the capture, processing, transport and commercialization of currently flared gas;
2. Operationalization of the Inter-Ministerial Gas-to-Power Committee (created under the 2015 DPF I);
3. Introduction of a core/basic set of regulations conducive to private sector investment in gas infrastructure.

A request for TA from the Minister of Oil was submitted to the Bank on September 8, 2016 to support the Ministry in meeting the criteria for the DPF triggers, including the following:

A. Introduction of a core/basic framework conducive to private sector investment in natural gas development, including an assessment of existing legal and regulatory conditions and recommendations on their future development.

B. Operationalization of the Gas-to-Power Committee created by Council of Ministers' decision of December 2015 by developing a Five Year (2017-2022) Gas-to-Power Action Plan for implementation of a flaring-reduction, gas-to-power program.

Relationship to CAS/CPS/CPF

The proposed TA responds to high level objectives in the Country Partnership Strategy (years 2013-2016). In particular: CPS Result Area 2: Supporting Economic Diversification for Broadly-Shared Prosperity: "enhancing the environment for private sector development", "Investment Climate Assessment (ICA) identified several reform areas that should be undertaken to address the major concerns of firms in Iraq: Electricity is a top constraint", "improve the quality and delivery of its core infrastructure services through a combination of investments and institutional development... In the energy sector, this includes support for the Iraq National Energy Strategy (INES), as well as analytical work and technical assistance on policy, strategy, governance and institutional development in the power and gas sectors".

II. Project Development Objective(s)

Proposed Development Objective(s)

Support Government of Iraq in the preparation 5-yr Gas-to-Power Action Plan to plan

Key Results

- i. Preparation of a 5-yr Gas-to-Power Action Plan to plan, prioritize and coordinate gas-to-power

infrastructure investments between MoO, MoE and MoF.

III. Preliminary Description

Concept Description

The proposed activity consists of the preparation of a 5-Year Gas-to-Power Action Plan (2018-2022) to plan, prioritize, coordinate and fund gas-to-power infrastructure investment requirements between Ministry of Oil, Ministry of Electricity and Ministry of Finance. Essential coordination between the Ministry of Oil and the Ministry of Electricity is limited at present. The proposed Action Plan is expected to address the planning, coordination and funding of a phased transition from the current power generation mix of predominantly crude, heavy crude, and LFO to the increased use of natural gas as the lowest cost technology in both open-cycle (OCGTs) and combined-cycle gas turbines (CCGTs).

The proposed Action Plan is expected to address the following:

- i. an identification and volume estimation of existing and expected gas flares and their location
- ii. a prioritization, initial economic assessment and location of required natural gas capture, gathering and processing infrastructure requirements including their indicative expected investment costs
- iii. a prioritization and initial economic assessment of projected gas-based power generation options, their location and indicative expected investment costs, including the re-conversion to natural gas of existing plants currently using alternative fuels and the incorporation of new gas-based facilities
- iv. an assessment of the condition of existing natural gas transport pipelines
- v. a prioritization and initial economic assessment of existing natural gas transport infrastructure refurbishment and projected new capacity needs in support of (ii) and (iii) above
- vi. an assessment of options to attract private interest and capital for natural gas capture, processing, transport and gas-to-power investments within the framework of the ongoing RAS and DPF II PSP-led conceptual approach, including the convenience/feasibility of conducting licensing international tenders in support of program investment goals

IV. Safeguard Policies that Might Apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04		X	
Forests OP/BP 4.36		X	
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11		X	
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	

V. Financing (in USD Million)

Total Project Cost:	0.95	Total Bank Financing:	0
Financing Gap:	0.45		
Financing Source			Amount
Extractives Global Programmatic Support			0.5

VI. Contact point**World Bank**

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