

The Geography of Water and Oil Resource Governance in Post-Conflict Iraq

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Abstract

The governance of important natural resources in Iraq will play a large role in recovery of the country's economy, livelihoods and stability. This article examines the geography of the governance of two critically important resources in the country—water and oil. With an initial focus on the description of the resources and the legal and administrative components of their governance, the paper looks at the primary problems and challenges to the governance of these resources. The paper finds that the complexity, magnitude and spatial arrangement of resource governance problems for water and oil in the country to be a daunting challenge. The article seeks to contribute to the articulation of this challenge, in order to provide initial material for deriving ways forward for more effective governance of natural resources in Iraq and other war-affected countries.

Keywords: Middle East, natural resources, law, post-war, economy.

Introduction

The recovery of Iraq from decades of armed conflict will be an ongoing challenge. How the country governs important natural resources will play a large role in this challenge, with repercussions on livelihood and economic recovery, stability, and future development. The damage to natural resources and the infrastructure needed to use and manage them has been substantial. This has occurred through direct destruction, neglect and mismanagement during the various conflicts; but also as now successive governments have responded to war, sanctions and tense regional relationships and their repercussions. At the same time war-affected populations have degraded resources as they pursued crisis livelihoods forced upon them through lack of services, personal and food insecurity, breakdown in the rule of law, forced displacement, sanctions and government intervention (Schnepf 2003).

This paper provides a description and critique of the current resource governance of two important natural resources in the country: water and oil.¹ Water resources in particular will be an ongoing concern in the country. With the population growing and freshwater resources declining, there is no Tigris-Euphrates agreement among the countries with interests in the river system. And with water data regarded as a state secret in Iraq and the other basin states, planning for water use and development is extremely difficult and subject to error, overly broad estimations, and shortages. The 1991 Gulf War damaged the irrigation and transportation infrastructure, to the degree that agricultural productivity declined significantly. Salinization then expanded across much of the irrigated area in the country's central and southern regions, with these then becoming much less usable (Schnepf 2003). A drought from 1999 to 2001 that affected much of the Middle East further impacted agricultural output in Iraq, with cereal production in the rain-dependent north particularly affected (Schnepf 2003).

Although a great many Iraqis are farmers and pastoralists who rely on access to water, it is the oil resources that are responsible for 60 percent of the country's GDP, 99 percent of exports, and 90 percent of government revenue (UNDP 2017). Yet damage, deterioration and neglect of infrastructure due to conflict and its repercussions has greatly reduced output, and long delays in the passage of a law to regulate oil and gas production, rights, and investment has had significant resource governance repercussions. The recently passed oil law (March 2018) was long stalled due to political division and disagreement over what rights Baghdad versus the regions will have, and the role of foreign investors.

Subsequent to a description of methods, the paper provides, for both resources, a description of the geography of the resource including the primary problems that use of the resource faces. This is then followed by description of the legal and institutional framework that governs the resource, including a critique of these. Recovery efforts regarding use and management of the resource are then presented and critiqued, followed by a description of the primary resource governance challenges.

Methods

Data and information collection was conducted in three periods of fieldwork in Iraq, comprising key informant and group interviews conducted in October of 2016 (105 persons), April of 2017 (93 persons), and a household survey conducted in July of 2017 with 101 internally displaced persons (IDPs) in order to learn about contemporary displacement problems (DDHLP 2017). Key informant interviews included Iraqi researchers; Iraqi federal government officials (law-makers, ministry representatives); tribal leaders; and representatives of the international community working in Iraq—the UN International Organization for Migration's (IOM), UN High Commissioner for Refugees (UNHCR), and representatives from western donors, NGOs and INGOs. In addition an in-depth review of the relevant Iraqi legal and government documents, and the academic, UN, multilateral and bilateral donor and INGO literature was conducted.

Freshwater Resource Governance

Resource quantity, quality, use and distribution

Hydrographically Iraq can be divided in a number of ways, but generally three zones stand out: the highlands in the northeast (rising to approximately 3,000m) the desert in the southwest and west (elevation 600-900m), and the plains in the south-central part of the country (below 100m). The plains are dominated by the river systems of the Tigris and Euphrates, which combine in the southeast of the country to form the Shatt Al-Arab waterway, a wide body of water which empties into the Arabian Gulf/Persian Gulf. The Tigris and Euphrates, as the two major rivers in the country, provide over 98 percent of the country's surface freshwater (Abd-EL-Mooty et al 2016). The headwaters of both rivers reside outside of the country, and once they enter Iraq the Euphrates traverses approximately 1000 km and the Tigris about 1300 km before joining together to form the Shatt Al-Arab waterway in the southeast of the country which then travels 193 km and drains into the Persian Gulf (Figure 1). Additional tributaries join the Shatt Al-Arab, the most important of which are the Karkheh and the Karen rivers. While the country had ample water

supplies compared to its neighbours up until the 1970s, both Syria and Turkey began to construct dams on their portions of the Euphrates during this period, resulting in a pronounced decrease in both quantity and quality of river flow into Iraq (Abd-EL-Mooty et al 2016) (Figure 1). While a number of dams on both rivers exist within Iraq, hydropower output in the country has dropped in recent years and regularly operates at 30-50 percent of capacity. Together both rivers provide an annual flow of 80 - 84.2 Billion Cubic Meters (BCM), with 65.7 BCM coming from Turkey, 11.2 BCM from Iran, 6.8 BCM from Iraq, and 0.5 BCM added in Syria as the Euphrates passes through that country. The volumes highlight the very significant influence of Turkey on the flows of both rivers in Iraq (Abd-EL-Mooty et al 2016), and the large role of regional relations on governance of Iraq's freshwater resources.

Groundwater usage in Iraq is low, ranging between one and nine percent of all freshwater use, and accounting for approximately 1.2 BCM/year. However groundwater use is an essential resource in the desert areas, which cover some 58 percent of the country (Lorenz and Erickson 2013). Groundwater quality in the east and north is adequate for drinking and irrigation, whereas groundwater quality is considerably lower in the south and west of the country. In the latter regions, groundwater development has become impossible in some areas, while in others where the quality is acceptable, excessive pumping allows saline water intrusion (Lorenz and Erickson 2013). In the 1980s a large number of wells were drilled to provide water for agriculture. By 1990 the total number of wells drilled by government reached 8,752 with 1,200 of these being used for agriculture. In addition to these, the private sector established approximately 400 wells in the same timeframe. After the war between Iraq and Kuwait in 1990 no records as to the number of wells excavated were available. It is thought that a large number of additional wells were established during the 1990s when the government pushed the private sector to increase agricultural productivity in response to UN sanctions (Abd-EL-Mooty et al 2016).

Agriculture use accounts for 90 percent of Iraq's freshwater use. However, salinization of agricultural lands, particularly over recent decades, has reduced yields and produced high levels of salinity in rivers, which then creates problems for the drinking water supply and the restoration of the southern marshlands that were drained by government forces in a conflict with the Marsh Arabs (Lorenz and Erickson 2013). In addition, erosion and river basin flooding on fertile agricultural lands over large areas of the country has occurred; and wartime damage and deterioration to agricultural infrastructure has led to a decline in productivity particularly since 2002 (Lucani 2012). Agriculture primarily exists as small farming units with low input-output systems, as farmers attempt to minimize costs related to land preparation, planting, and harvesting. As a result yields are quite low. Crop agricultureⁱⁱ is the primary income source for 75 percent of farmers, with the remainder dependent on livestock and mixed crop-livestock systems. The many small farming units makes monitoring and managing water use difficult, particularly as rule of law, government presence in rural areas and effective policy-making and implementation suffered in recent decades. And as a result of UN sanctions beginning in 1990, the poultry and livestock populations declined significantly due to the conversion of rangeland to grain crops, together with the decline in feed grain imports and veterinary medicines.

Irrigation plays a significant role in agricultural production (Mundi 2017). Two-thirds of Iraq's cereal production is produced in the irrigated zone along and between the Tigris and Euphrates rivers (Schnepf 2003) (Figure 1). In general, there is only one cropping cycle per year although there is some multiple cropping of vegetables under irrigation. Due to a saline water table in the central-south region even a small over-irrigation brings saline water to the surface (Schnepf 2003).

Iraq's southern marshlands once constituted the largest marsh system in the Middle East. In 1970 the marshlands covered an estimated 15,000 - 20,000 km². By the year 2000 this had been reduced to an area of approximately 1,000 km² comprising between five and seven percent of its original area, due primarily to efforts of the Saddam Hussein government to drain the marshes in punitive measures aimed at the Marsh Arabs (Lorenz and Erickson 2013). There have been a number of efforts to reclaim the marshlands over the past decade with limited success. It has been estimated that it would take approximately 20 BCM of water per year to restore the marshes, which is unlikely to be available given current water demands, declining water availability (Lorenz and Erickson 2013), and the difficulties in governing water resource use.

Legal framework for water governance

Water rights in Iraq are officially held by the state. For irrigation purposes users have no water rights per se, and must contribute by the way of fees to the agricultural program set by the government (World Bank 2006). Distribution rights for inland waters can be held by associations of users of a common water source. But planning and allocation decisions for water use are managed from Baghdad, and there is little cooperation among the different government agencies that deliver water and almost no water user involvement in decision-making (Shawky 2008). In spite of a number of well-intentioned laws regarding water use and management, in areas of the country where enforcement and government support are lacking, local-level assertions of rights over water are widespread, based on the authority of customary institutions. With declines in the rule of law and services due to armed conflict, the role of customary and informal law has increased in the governance of water resources. And there is no evidence of coordination between customary institutions and government.

The primary statutory water laws in the country include:ⁱⁱⁱ

Ministry of Water Resources Law No. 50 of 2008. This law established the Ministry of Water Resources and created the legal and technical framework for the institutionalization of the management of water resources throughout the country.

Instructions No. 1 on digging water wells. This set of 14 articles regulates well drilling. It establishes that groundwater is state property and hence its exploitation, including extraction, can only occur with a license issued by the General Authority for Groundwater within the Ministry of Water Resources.

Law No 11 of 2012 - Fourth Amendment of Law No. 12 of 1995 Relative to the Maintenance of Networks of Irrigation and Drainage. The primary objective of this Amendment is to give control

of the distribution of inland waters to associations connected to specific users. Such associations are established by the users of a common source of water. Associations must work to: raise the efficiency of water use and reduce waste; arrange for a fair distribution of water among participants in the association; contribute to dispute resolution; and maintain irrigation and drainage facilities.

Forests and Woodlands Law No. 30 of 2009. The intent of this law is to prevent deforestation in order to protect waterways and springs.

Irrigation Law No. 6 of 1962. This law intends to regulate irrigation activities and to protect water resources. It stipulates that the responsible authority for public irrigation activities is the Ministry of Agriculture. The law also describes that the Ministry of Agriculture has the responsibility to monitor and protect lakes and rivers and man-made waterways. The Ministry is also responsible for the establishment of irrigation water quotas, water distribution, and supervision of sector activities.

Law No. 2 of 2001 on Preservation of Water Resources. This law regulates the use of water for purposes other than domestic use. The law establishes rules of water management, use, preservation and pollution.

Law No. 27 of 2009 on the Protection and Improvement of the Environment. This law intends to improve and protect the environment including the protection of water bodies from pollution by dealing with damaged resources. The Law creates a Council for the Protection and Improvement of the Environment, located within the Ministry of the Environment to operate in cooperation with other ministries. The Law stipulates environmental impact assessments shall be completed for new projects within the country.

A primary problem in the governance of surface water resources is that there is no Tigris-Euphrates basin-wide legal agreement between the countries with an interest in the basin. Lorenz and Erickson (2013) note that despite many years of water resource development, water law plays only a minor role in Iraq and in managing water with other countries in the basin. Part of the reason for this is the lack of datasets on water in all the basin countries (Lorenz and Erickson 2013). Ownership of surface water that crosses international boundaries is a contentious issue in the region and highly political. Iraq and the surrounding states regard water data to be a state secret, which undermines effective cooperation regarding water use and quantity of flow across borders, and complicates ownership issues (Lorenz and Erickson 2013).

Government administration and institutions

Iraq's water administration is heavily centralized, and this is reflected in the current laws and administrative structure that govern water use, ownership and management. The Ministry of Water Resources (MoWR) is responsible for water management in the country, including maintenance of the irrigation dams and canals. It is also tasked with promoting and improving water resources, preserving the rights of Iraq in the transboundary water sector, and restoring the

southern marshlands in cooperation with the Ministry of the Environment (UNESCO 2014). The MoWR has ‘surveillance staff’ and cooperatives which oversee water management. The Ministry is the successor to the former Ministry of Irrigation, and is organized into a series of commissions, directorates and centres, and is receiving donor assistance to enhance capacity.

Rights to groundwater are also held by the state, and individual users must apply for a license from the General Authority for Groundwater. The National Groundwater Centre, as part of the Commission for Integrated Water Resources Management, works in quantitative and qualitative assessment of groundwater and for developing the national hydrological database. The MoWR has divided the country into 10 groundwater blocks and carries out hydrogeological surveys to determine their potential. The surveys for the desert blocks are complete, and there exists the prospect of establishing additional wells in certain aquifers (Abd-EL-Mooty et al 2016; World Bank 2006).

The UN Development Programme (UNDP) and the UN Educational, Scientific and Cultural Organization (UNESCO) have assisted Iraq in establishing a series of Local Water Committees (LWC) in some parts of the country. And while other donors have also worked with the MoWR to establish additional administrative and institutional structures for water management, the Ministry is still in a period of change, as are its relationships with other institutions in and out of government, and it has failed to set up the promised National Water Management Council (also UNDP-UNESCO 2014).

Water resource recovery efforts

As noted above the MoWR is still in a period of change, and while it does have a strategic plan, progress in reconstruction and development efforts is behind schedule (Lorenz and Erickson 2013). While the government has plans to build more dams, an uncoordinated operation of these dams could dramatically reduce flows to the marshlands (Jones et al 2008; Lorenz and Erickson 2013). In July of 2003 MoWR put together a one-year plan that included an ambitious schedule for, 1) the privatization of certain water facilities, 2) conducting an inventory of all pumping stations and waterworks, 3) the re-establishment of user fees for water, and 4) an emergency repair plan for facilities (Lorenz and Erickson 2013). To date however work on these goals is still underway. In 2011 the Iraqi Ministry of Water Resources announced plans to build a 129 km canal to divert water from the Shatt Al-Arab waterway for use in irrigation, bringing approximately 0.95 BCM/year to agricultural land in Basra Governorate (Abd-EL-Mooty et al 2016).

Water infrastructure reconstruction began under the Coalition Provisional Authority and continued after the transfer of sovereignty at the end of June 2004. In 2003 the US approved USD \$4.3 billion for water and public works (re)construction, including 90 large water projects. By 2004 however ongoing insecurity prevented meaningful progress in water infrastructure reconstruction. Security costs and administrative costs for Western companies further decreased the funds available for actual reconstruction and created obstacles and delays, with the result being that contractors were only able to supply half of the potable water that was initially planned (Lorenz and Erickson 2013).

Also in 2003, the US worked with the Ministry of Water Resources in the preparation of a new Water Resources Master Plan, but it was not completed. In 2011 the Italian government provided funding for a similar effort through the Department of Agricultural and Forest Engineering at Florence University in Italy. The Italian project includes assistance with the recovery of the southern Iraqi marshlands, and the establishment of monitoring stations located throughout the country including on both the Tigris and Euphrates rivers. Information on the progress of this effort however is scant.

Primary resource governance challenges

Iraq's water resource governance challenges can be grouped into six main themes: 1) the role of customary/informal law and institutions, 2) international cooperation, 3) internal coordination, 4) centralization, 5) data collection and access, and 6) donor fatigue.

In spite of the existence of a set of statutory water laws and the legal role of state institutions in the administration of water, in reality the role of customary and other informal authorities continue to be quite important. Large areas of the country exist outside of effective state presence, rule of law and services with regard to water use, allocation, rights and administration. These areas, to varying degrees, have been taken over by informal authorities and operate from various sources of legitimacy, including customary law, lineage and militia priorities, and violence. Transitioning from informal governance to formalized governance will require more than simply enforcement of statutory laws. Because current informal authorities and those who benefit from their decisions regarding water will likely be unwilling to relinquish control over water resource governance without a stake or role in formal approaches to water governance, resistance to enforcement of statutory laws could become a significant problem, complicating further national water resource governance.

The existence of trans boundary water courses in a context of a lack of cooperation among the basin states constitutes a governance problem that is unlikely to be easily resolved. Tensions among neighbouring states over water and other issues makes trust a problem, as does the perspective that water data is a matter of national security and not to be shared. This puts in jeopardy the reliability of water data in the context of any treaty negotiations. The change that would need to occur in the culture of governments regarding this issue in particular is significant, and likely to require a good deal of time if it is to change. At the same time coordination internal to Iraq with regard to water resource development is critically important if such development is to deliver water supplies in the quantity and quality promised. Unfortunately such coordination is currently quite difficult in the country, in spite of numerous attempts by ministries and the international community to install technical approaches for such coordination.

The tendency to centralize water resource decisions in Baghdad is an important issue, resulting in delayed, misunderstood, and difficult to implement and enforce water allocation, rights, and management decisions. Decentralization however is a process requiring some time, as capacity must be built locally, and power relinquished centrally.

The problematic availability of water resource data, from its collection, to analysis, to access and sharing is a primary constraint to effective cooperation and coordination, nationally and internationally. The ability to engage in the development of water data collection and analysis capacity, and its deployment to the primary need areas of the country is currently low and will be a significant challenge. This would be separate from the needed efforts at transparency of water data among national and international actors.

Finally, donor fatigue is a real issue with regard to Iraq, and not just in the governance of water resources. Donor support for water resource governance is likely to continue to be low, on the heels of large sums of money already spent over time on water resource governance, and the relatively small return from such support. As a result lessons learned from other countries regarding water resource governance, including resolution of technical problems, negotiations, conservation, and use will likely not be as forthcoming as previously.

Oil Resource Governance

Resource quantity, quality, use and distribution

Iraq's mineral wealth is substantial, particularly with regard to oil and gas (Bloomberg 2017; Ycharts 2018). Iraq produces approximately 4.2 million barrels of oil per day making it the second largest producer in OPEC, an organization it helped establish. Natural gas production on the other hand remains low, particularly compared to proven reserves. Most natural gas produced in the country is currently flared, but there are plans to capture flared gas and market it. The country is 12th in the world in terms of proven natural gas reserves with 111.52 trillion cubic feet, and gas reserves are expected to grow significantly with continuing exploration. Overall Iraq is ranked as fifth in the world for proven reserves of oil (IES 2017).

Iraq exports about 3.48 million barrels per day of crude oil, most of which is produced in Basra. In 2012 Iraq was the sixth largest net exporter of petroleum liquids in the world, and its proven crude oil reserves of 141.5 billion barrels are the fifth largest in the world, representing almost nine percent of global proven reserves (Devine and Al-Amin 2014). Most of the country's proven oil reserves reside in the southern part of the country, but some exploration takes place in the north between the Kurdistan Region and the provinces of Ninewa, Kirkuk, and Diyala.

Legal framework for hydrocarbon governance

Article 112 of the Constitution stipulates the enactment of a law to regulate oil and gas, and an initial draft was produced in 2007. However considerable disagreement and political division over the law, and its subsequent 2011 version delayed and stalled passage of the law until March 2018. Part of the disagreement involved a preference by the Sunnis for a stronger role of central government, while the Kurds preferred a stronger role for regional authorities. The role of foreign investors (such as BP, Exxon and Total, active in the south) as well as the classification of oil fields also divided politicians (Beehner and Bruno 2008). The 2018 oil law however has received considerable criticism. The new law is thought to transform what is essentially a successful relationship between operating companies and the government. The law creates a single enti-

ty (the Iraq National Oil Company) with exclusive responsibility for all elements of the oil and gas sectors for the country (Butler 2018). If implemented (and this is questioned), the new law would give control of all oil and gas revenues, all marketing and tanker interests as well as all pipeline and export infrastructure to the new company. The company would be the only contract signing authority with both national and international companies, and be able to invest in hydrocarbon, industrial and agricultural projects on any land it owns. Such a concentration of responsibilities into a single entity invites corruption, particularly as there appear to be few limits on those who will be running the company (Butler 2018).

The new law also exempts the National Oil Company from several laws such as, the Foreign Residency Law, the Law of Government Contracts, and the Customs Law (Olswang 2018). Iraq already occupies the 169th position out of 180 on Transparency International's corruption index and may fall further still. There are concerns that revenues from production could be easily diverted into private accounts. While all the primary political parties have supported the law, there are concerns that a law that has the potential to deepen corruption would drive away long term investors, and some investors have already indicated their frustration over the difficulties of hydrocarbon agreements with the government (Butler 2018). There are also concerns that implementation of the new law would result in major contractual and legal restructuring, potentially complicating and creating new obstacles for the development of the hydrocarbon industry (Olswang 2018). As well the law is thought to add complexity and ambiguity to an already ambiguous legal framework in the country (Olswang 2018).

Such legal ambiguity has been a particular problem in the hydrocarbon sector. The different sources of regulations and laws that comprise the regulatory regime in Iraq produce a degree of uncertainty for hydrocarbon exploitation. Confusion regarding which laws and regulations apply in any given situation or for different actors, stem largely from changes in the political system over time. Thus, certain laws that pertain to oil and gas which were enacted during the Kingdom era, the military and Ba'athist regimes, and issued by the Coalition Provisional Authority may remain in effect (Blanchard 2009; Devine and Al-Amin 2014). This is because article 130 of the Constitution states that pre-existing laws (and there are many) remain in effect unless they have been specifically repealed or amended. The result is that some older laws that do not fit with the current legal environment, still apply and are often enforced (Blanchard 2009). Much of the regulatory regime that applies to gas and oil exploration and production prior to the 2018 law is based primarily on the laws and regulations produced by the Ba'athist government prior to 2003. It should be noted however that nationalization of the oil and gas sector started in 1960 before the Ba'athist coup in 1968. At that time foreign companies were limited to certain areas around Kirkuk and Basrah until 1972 when the oil and gas sector was fully nationalized. The Iraq National Oil Company (INOC) was created in 1964 to take over from foreign oil companies. INOC was subsumed under the Ministry of Oil in the late 1980s, and the new Iraq National Oil Company will take over primary governance responsibilities with the implementation of the 2018 law.

The legislation applicable in Federal Iraq includes:

- The Law of the Iraq National Oil Company of 2018;

- The Organization of Ministry of Oil Law of 1976;
- The Preservation of Hydrocarbon Resources Law No. 84 of 1985;
- The Ministry of Oil Regulation Law No. 21 of 1978;
- The Iraqi Revolutionary Command Council Order No. 1075 of 1976 regarding authority to negotiate and sign petroleum contracts;
- Revolutionary Command Council Order No. 167 of 1985 regarding oil pipelines
- Protection of the Environment Law No. 27 of 2009 stipulates that an Environmental Impact Statement (EIA) must be submitted by a hydrocarbon ‘project owner’.

The Ministry of Oil has in the past had wide discretionary powers in the management of hydrocarbons, and invited foreign companies to work in Iraq by way of five petroleum licensing rounds, with the majority of licenses issued in the first and second round. In Iraqi Kurdistan the Regional Government has enacted its own oil and gas law, the Kurdistan Oil and Gas Law No 28 of 2007. Following passage of this law, the Kurdistan government has moved to award numerous contracts to oil companies, but the federal government does not view these contracts as legal.

According to the Constitution, oil rights are held by the people of Iraq; hence rights to oil and gas are not generally held by those who may hold surface rights to land. The result is that the state of Iraq, acting through the government is the sole representative of the Iraqi people, and thus has exclusive rights to explore, develop, extract, exploit and use hydrocarbons in the country, including the appointment of contractors to assist carrying out these activities (Blanchard 2009). The Kurdistan Regional Government however takes the position that the provinces and Federal Regions have the rights to explore, develop, exploit and use hydrocarbons that exist within their territory without the need to consult the Federal Government (Blanchard 2009; Devine and Al-Amin 2014). This is likely to be a difficult topic to resolve between the Kurdish government and the federal government given the current (late 2017) difficult relationship between the two (e.g., Chmaytelli 2017).

Government administration and institutions

With the full nationalization of the hydrocarbon sector in 1972 the government considered that it alone controlled the sector in the country. This changed with the 2005 Constitution that transformed the country into a federal state, and most competencies were then devolved to the regions and provinces, with more limited involvement of federal authorities. However the oil articles in the Constitution also state that the federal government is to manage the nation’s oilfield ‘with’ the regions and provinces. It is not articulated however precisely what this means. There is a different position in the Kurdistan Region in the interpretation of the Constitution with regard to control over extraction of oil and gas within their borders; and the Ministry of Natural Resources of the Kurdistan Region has taken responsibility for oil and gas within the region. Nevertheless, the Ministry of Oil within the Federal Government has had broad discretion to regulate extraction of gas and oil in the Federal Provinces and this discretion will likely now pass to the newly created Iraq National Oil Company. In addition the new Iraq National Oil Company has administrative and financial independence and reports directly to the Council of Ministers. This distances it from the Ministry of Oil and takes important operational responsibilities away from the Min-

istry, whose purpose is to become more focused on planning and follow up (Olswang 2018). The purpose of the new company is to engage in exploration, development, marketing and production of hydrocarbons and develop methods of operation to maximize revenues (Olswang 2018). The new Iraq Oil Company will fully own nine state-owned oil companies—the Basra Oil Company, the Maysan Oil Company, the North Oil Company, the Dhi Qar Company, the Midland Oil Company, the Oil Exploration Company, the State Organization of Marketing Oil (SOMO), the Iraq Drilling Company, and the Iraq Oil Tankers Company (Olswang 2018). Of these, the first five existed previously, with the latter four created more recently (Blanchard 2009). Prior to the new 2018 law such state owned companies had limited discretionary powers and could be overridden by the Ministry of Oil (Blanchard 2009). It remains to be seen if this will change with the implementation of the new law.

Oil resource recovery efforts

The primary goal of the government is to increase production in the oil fields that are already producing oil to approximately three times current levels. It also seeks to stop the flaring of gas and is intending to initiate gas capture efforts in the southern fields with the Basra Gas Project (Devin and Al-Amin 2014). The Oil Ministry has recently (July 2017) has suggested that nine oil and gas projects (both exploration blocks and discovered fields) along the borders of Kuwait and Iran, could possibly be available for foreign investment in the upcoming year, with the bid round scheduled to begin in mid 2018 (IOR 2017).

In recent years declining oil prices have led to an arrangement between the IMF and the Iraqi government whereby a USD \$5.3 billion loan was made, conditional on the government settling all of its debts to international oil companies and not adding new debts. This requires the country to put a large portion of its oil exports into paying its outstanding debts to international oil companies instead of to the national treasury. The terms for the 11 contracts made with international oil companies since 2009 for the development of the country's southern oil fields stipulate that the government repay all the cost incurred by the companies, in addition to a fee per barrel (MEI 2016).

Primary governance challenges

With the large potential of the hydrocarbon sector to contribute to the recovery of Iraq, comes significant governance challenges. The new 2018 oil law attempts to clarify and streamline what was an extremely complicated and ambiguous legal framework for hydrocarbon exploitation in the country. However the concentration of powers and responsibilities into a single entity, the Iraq National Oil Company, runs the risk of alienating investors, particularly foreign investors; given the history and opportunity for corruption. Significant ambiguity continues to exist with regard to how pre-existing national laws will intersect with the new law, with such ambiguity allowing for multiple potential interpretations of this intersection. This may be particularly problematic given the political divisions and disagreements that caused an 11 year delay in the drafting and passage of the new oil law.

There are ongoing difficulties with the relationship between Kurdistan and the Iraqi government regarding hydrocarbons, with these two governments seeming to disagree fundamentally over approaches to control of resources within Kurdistan. In this context the fate of existing contracts between the government of Kurdistan and foreign actors becomes problematic. And while the donor fatigue noted for assistance with water resource governance is likely not an issue for hydrocarbons due to how lucrative this sector is, training and capacity building for a wide variety of hydrocarbon sector professions so that Iraqis are able to replace foreign workers will be a challenge in terms of funding and training.

Conclusions

Effective natural resource governance will be important to Iraq's ongoing recovery from decades of armed conflict and its repercussions. Important to this effort will be the recovery of the resources themselves, along with the infrastructure to effectively use and manage them. This article reviews the geography of resource governance for water and oil, in order to make a contribution to understanding the history and challenges facing the country's recovery for these resources and their exploitation.

For water resources, because Iraq is a downstream country in the Tigris-Euphrates riparian system, significant benefit could be derived from pursuing improved relationships with upstream countries in the water sector. A good deal can be learned from other countries in the region and beyond that have established water treaties with neighbouring countries, and these examples can be explored for their relevance to Iraq's position in the riparian system. This will become increasingly important given that the country is already water stressed given its rising population, lack of environmental regulatory enforcement, increased salt intrusion in the river system, desertification, and an aging, damaged water infrastructure. Advances in water technologies, institutions, and ways of organization involving local user groups can also be considered for application in the country. To the degree donor and national support to the water sector is forthcoming, priorities will include rebuilding water infrastructure and capacity building in hydrology and the management of water for arid regions.

For the hydrocarbon sector, a significant way forward now that the new oil law has been approved, would be to now further clarify and streamline the legal framework for oil and gas, so that domestic and international investment can be made in secure and predictable ways. In particular, what are seen as potential opportunities for ambiguity, corruption, and mismanagement should be attended to, as well as ongoing efforts to mitigate the negative effects of political divisions and disagreements within government, civil society, Kurdistan and international investors.

While this article does not intend to provide an exhaustive technical and political review of all the important issues involved in the governance of water and oil resources, it is hoped that the paper is able to raise some awareness as to the complexity and importance of pursuing effective resource governance in scenarios of recovery from armed conflict.

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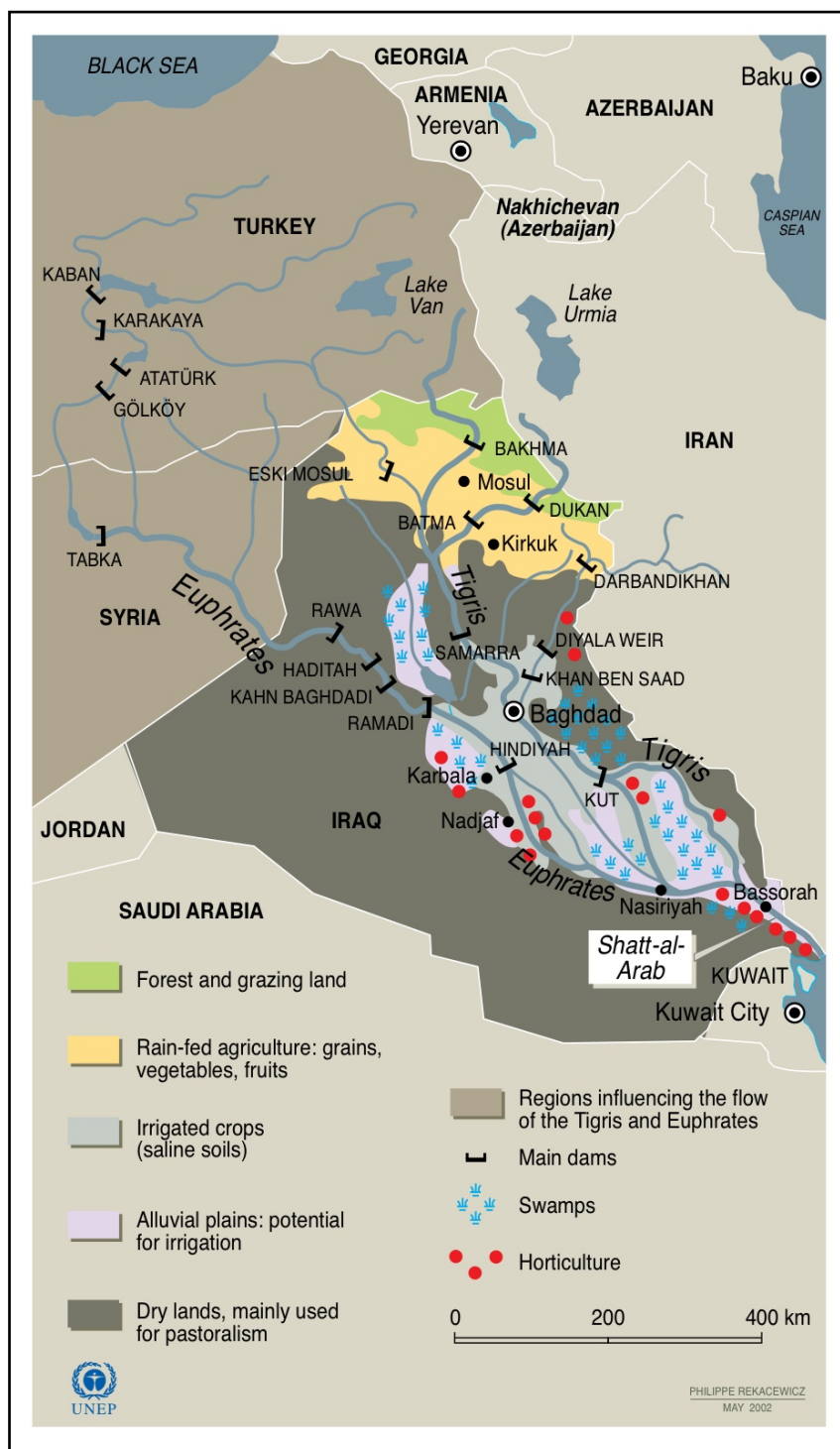


Figure 1. The Tigris-Euphrates-River basin, with main dams and land use.

ⁱ Portions of this paper appeared previously as a working paper for USAID's Country Profile-Iraq.

ⁱⁱ Iraq's main crops are grains, primarily wheat and barley, with tomatoes and potatoes grown in irrigated areas, and dates constituting a major cash crop (Lucani 2012).

ⁱⁱⁱ For an overview see Ahmad (2012).