

**RAPID INSTITUTIONAL CAPACITY NEEDS
ASSESSMENT OF**

**Iraq's Ministry of Health and
Environment for Environmental
Management in the Oil
and Gas Sector**



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1 BACKGROUND	3
2 SCOPE AND OBJECTIVES	3
3 METHODOLOGY	4
4 KEY FINDINGS	4
4.1 LEGISLATIVE GAPS	4
4.1.1 INCOMPLETE AND OUTDATED LEGISLATION AND STANDARDS RELEVANT TO THE OIL AND GAS SECTOR	4
4.1.2 LACK OF TECHNICAL GUIDELINES ON ENVIRONMENTAL AUDITING TO REGULATE EXISTING INDUSTRY	4
4.1.3 ABSENCE OF STRATEGIC ENVIRONMENTAL ASSESSMENT POLICY INSTRUMENTS TO AID DECISION-MAKING	5
4.2 INSTITUTIONAL GAPS WITHIN THE ENVIRONMENT MINISTRY	5
4.2.1 INSTITUTIONAL OVERVIEW	5
4.2.2 INSUFFICIENT INTRA-DEPARTMENTAL COORDINATION AND OVERLAPS	7
4.3 INADEQUATE STAFFING AND RESOURCES	7
4.3.1 STAFFING OVERVIEW AND SHORTAGE OF TECHNICAL STAFF	7
4.3.2 GAPS IN TECHNICAL CAPACITY	8
4.3.3 SCARCE FINANCIAL AND MATERIAL RESOURCES	11
4.4 INADEQUATE INTER-MINISTERIAL CO-ORDINATION	12
4.5 WEAK COMPLIANCE MONITORING	12
4.6 INADEQUATE ENVIRONMENTAL DATA MANAGEMENT AND COMMUNICATION PLATFORMS	13
4.7 GAPS IN EMERGENCY PREPAREDNESS AND RESPONSE	15
5 KEY CHALLENGES AND FIRST-LEVEL RECOMMENDATIONS	17
ANNEXES	18
ANNEX 1. DEPARTMENTS AND PERSONS MET	18
ANNEX 2. ENVIRONMENT MINISTRY INSTITUTIONAL ORGANOGRAMS	21
ANNEX 3. IRAQ OIL FIELDS MAP	25

PHOTO 1. Environment Ministry main building in Baghdad	6
PHOTO 2. Around sixty percent of the technical staff in the Environment Ministry headquarter office are women	7
PHOTO 3. Technical capacity to address the considerable backlog of EIA reports – mostly in English – is inadequate	8
PHOTO 4. Air pollution from associated gas flaring	9
PHOTO 5. Dumping of produced water	9
PHOTO 6. Poor storage of chemicals	9
PHOTO 7. Oil spills from conflict and sabotage	9
PHOTO 8. The offices of the Niniveh Environment Directorate in Mosul were destroyed during the ISIL conflict	10
PHOTO 9. Fatha gorge near Baiji refinery is a critical oil pollution hot spot	11
PHOTO 10. Lack of a central environmental information management system in the Environment Ministry is an important constraint	14
PHOTO 11. Sunken oil tankers in the Shatt Al-Arab estuary	15
PHOTO 12. Considerable experience was gained from controlling the massive Qayarah oil field fires set alight by ISIL in 2016	16
MAP 1. Oil development plans pose a threat Mesopotamian Marshlands of Southern Iraq which gained World Heritage Status in 2016	13

1 BACKGROUND

The Ministry of Health and Environment¹ is the legal entity mandated with full life-cycle oversight of the oil and gas industry in Iraq. This includes review and approval of Environmental Impact Assessments (EIA), and monitoring the performance of the oil and gas industry in all its key phases. Although Iraq is one of the leading oil producing countries in the world, having produced oil for nearly a century since the 1920s, a modern environmental governance and management framework regulating the industry was only

recently created in the mid-2000s. Preparation of EIAs in accordance with international standards began following the first oil licensing rounds in 2009 when the upstream oil and gas sector was opened to foreign investment. The capacity of the Environment Ministry to regulate and influence decision-making in a fast-growing oil and gas sector based on 'good international practice', however, is widely acknowledged to be inadequate and requires significant strengthening to successfully implement its mission.

2 SCOPE AND OBJECTIVES

The scope of this rapid Capacity Needs Assessment (CNA) primarily focuses on the Environment Ministry. It does not cover the full institutional and regulatory framework in Iraq dealing with environmental management of the oil and gas sector. Nevertheless, given the Environment Ministry's legally sanctioned role to oversee environmental performance in the oil and gas sector, this CNA addresses the key institution responsible for environmental management in the industry.

The overall objective of this CNA is to identify key capacity gaps and recommend interventions to strengthen environmental management in the oil and gas sector. Specifically, this CNA process seeks to identify the priority capacity needs of the Environment Ministry. It is supported by the Government of Norway through its Oil for Development Programme (OFD) and is meant to help inform the design of the second phase of the Iraq OFD programme (2019-2021). The findings of this CNA are also addressed to the Iraqi Government and other development partners interested in improving environmental management in Iraq's oil and gas sector.

Specific aims of this CNA are:

- i) Obtain a general understanding of the institutional roles, administrative mechanisms and capacities within the Environment Ministry for managing environmental issues related to the oil and gas industry;
- ii) Establish the existing capacity baseline, and identify capacity gaps and challenges facing the Environment Ministry in fulfilling its supervisory responsibilities for environmental management of oil and gas exploration and production; and
- iii) Identify the key capacity building efforts needed to ensure effective environmental oversight by the Environment Ministry of oil and gas exploration and production, including tackling current and future challenges in the sector.

¹ Referred to in the report as the Environment Ministry.

3 METHODOLOGY

Data gathering for this CNA started with a standard questionnaire that was shared with the Environment Ministry. The questionnaires were completed by five key technical departments in the central ministry headquarters working with the oil and gas sector, and several of its regional and governorate-level environment directorates. UN Environment then conducted face-to-face interviews and focus group discussions with staff from the Environment Ministry in Baghdad

from 3 – 7 June 2018, and collected additional documentation on environmental management in the oil and gas sector in the process. In addition, UN Environment also interviewed staff from the Ministry of Oil's Health, Safety and Environment Department with discussions focusing on oil emergency preparedness and response. The draft of this CNA report was shared with Environment Ministry for consultation, and finalized based on the feedback and comments received.

4 KEY FINDINGS

During a one week visit to the Environment Ministry headquarters in Baghdad, UN Environment met with a total of 47 individuals (Annex I) from the Environment Ministry representing seven technical departments and centres, and the Middle Region and Baghdad governorate environment directorates. In addition, two staff from the Ministry of Oil's Health, Safety and Environment Department were consulted. Most interviews lasted one to two hours, and were structured around a predefined set of topics and questions.

The challenges identified in these discussions and questionnaire survey are presented below under the following headings:

4.1 LEGISLATIVE GAPS

4.1.1 INCOMPLETE AND OUTDATED LEGISLATION AND STANDARDS RELEVANT TO THE OIL AND GAS SECTOR

The *Environmental Protection and Improvement Law* of 2009 provides a general framework for regulating the oil and gas sector. Regulations, rules, instructions, standards, and guidelines enabling the enforcement of the law, however, are currently inadequate and need to be completed. Moreover, many of the regulations and standards are outdated and do not include key parameters that are needed to monitor the performance of the oil and gas industry. For example, while the *Protection of*

Rivers and Public Water from Pollution Law No. 25 of 1967 was partially updated by the *Law of Conserving Water Resources No. 2 of 2001*, the standards set under the 1967 were not revised and remain valid. Scientific capacity to develop appropriate standards taking into consideration changing environmental conditions in Iraq, such as major reductions in Tigris and Euphrates water flows of almost 50 percent, is highlighted as an important gap. Moreover, the standards do not provide adequate coverage of hydrocarbon compound parameters.

4.1.2 LACK OF TECHNICAL GUIDELINES ON ENVIRONMENTAL AUDITING TO REGULATE EXISTING INDUSTRY

Most of the oil and gas industry operations in Iraq predate the requirement for EIAs mandated in the Environmental Law of 2009, and hence presently lack formal environmental permits. Supervision of existing oil and gas industry is currently limited to periodic but typically infrequent inspections. Environmental auditing guidelines to assess and monitor existing oil operations does not presently exist. Development of an auditing protocol system is therefore considered to be an important measure that could help fill this legal gap and improve the performance of the industry.

BACKGROUND ON ENVIRONMENT IMPACT ASSESSMENT FOR OIL INDUSTRY

Environmental Impact Assessments (EIA) only became mandatory in Iraq in 2009 with the adoption of the Environmental Law. Pre-existing brownfield oil and gas developments therefore lack EIA permits, and are not required to develop environmental impact statements retrospectively. Consequently, EIA requirements are in principle only applied to new developments within existing oil fields and new greenfield projects that have come on-line following the enactment of the Environment Law in 2009. In practice, the need to develop EIA's coincided with the first auction rounds opening the country's oil and gas industry to foreign investment that occurred the same year. Five auction investment bids have been held from 2009-2018 in the upstream sector.

While the 2009 Environment Law sets the requirement for EIA's, it did not define the level and scope of EIA studies and a decision-making process for their approval. In 2011, *Instruction No. 3 on Environmental Requirements for the Establishment of Projects and Monitoring the Safety of their Implementation* identified oil projects as 'Category A' projects having significant adverse environmental impacts on the environment and requiring full EIA. Subsequently, in 2017 sector specific EIA guidelines for oil and gas activities were adopted defining a standard approach and systematic process for the development and approval of EIAs.

4.1.3 ABSENCE OF STRATEGIC ENVIRONMENTAL ASSESSMENT POLICY INSTRUMENTS TO AID DECISION-MAKING

There is no legal requirement or experience in preparing Strategic Environmental Assessments (SEAs) in Iraq. Neither is there adequate awareness of the utility of applying SEAs to guide the development of oil and gas sector activities that would allow for consideration of issues such as cross-sectoral alignment, cumulative impacts and land use planning at regional scale factoring environmental sensitivity mapping.

4.2 INSTITUTIONAL GAPS WITHIN THE ENVIRONMENT MINISTRY

4.2.1 INSTITUTIONAL OVERVIEW

All the five key technical departments and two national centres comprising the core of the Environment Ministry's Technical Directorate have responsibilities related to the oil and gas sector (**Annex II – Institutional Organograms**). Three technical departments, however, are most directly implicated in environmental management of the oil and gas industry including:

- i) *EIA and Land Use Department* is responsible for the review and approval of EIAs for Category A projects which includes all oil and gas exploration and development projects, pipelines, processing facilities and refineries. It is also
- responsible for reviewing environmental audit reports for existing oil fields, facilities and installations.
- ii) *Monitoring and Assessment of Industrial and Service Activities Department* is responsible for assessing the performance of oil refinery installations through regular inspection visits and measurement of 'point source' effluent discharges and gas emissions. This Department is also in charge of compliance monitoring of EIA approval permits in coordination with the EIA Department. It is also responsible for long-term ambient air monitoring of pollutant levels through a national network of 60 stations; and
- iii) *Chemicals Monitoring and Contaminated Site Assessment Department* which is responsible for: a) regular monitoring of pollution in both the upstream and downstream oil sectors including in surface and groundwater, and overseeing salvage operations of shipwrecks; b) managing the import, transport, storage, handling and use of chemicals in the oil industry; c) monitoring hazardous waste generated by the oil industry including disposal options; and d) carrying out contaminated site assessments and developing remediation plans including for oil spills. This department is also the focal point on oil emergency and response within the Environment Ministry.

PHOTO 1: Environment Ministry main building in Baghdad



4.2.2 INSUFFICIENT INTRA-DEPARTMENTAL COORDINATION AND OVERLAPS

The general feedback from respondents is that the Environment Ministry does not have an overall defined vision and strategy on engaging with the oil and gas sector. While intra-departmental committees or working groups on oil and gas related issues exist; these are typically set-up on ad-hoc and short-term basis to deal with specialised tasks (e.g. substitutes for tetraethyl lead in gasoline) or are concerned with specific oil pollution incidents (e.g. tanker accidents in Shatt El-Arab). Better alignment between the monitoring roles and responsibilities of the various technical departments and the establishment of a permanent working group or committee to systematically deal with the oil and gas sector is needed.

4.3 INADEQUATE STAFFING AND RESOURCES

4.3.1 STAFFING OVERVIEW AND SHORTAGE OF TECHNICAL STAFF

Although the Environment Ministry has a relatively large overall number of staff of approximately 2,500 persons, over half of the staff comprises of administrative staff. The central Technical Directorate in Baghdad comprises of 298 staff which also includes a substantial number of administrative personnel. The majority of the staff are located at the regional and governorate levels. These include four regional environmental directorates (Northern, Middle, Middle Euphrates and Southern), and the 15 governorate environment directorates. Administrative employees predominate at these levels as well. It is also noteworthy that approximately 60 percent of the technical staff in the central ministry are women, and 40 percent are men. At the governorate level, however, the number of men significantly outweighs that of women.

PHOTO 2: Around sixty percent of the technical staff in the Environment Ministry headquarter office are women



All the staff interviewed consistently reported that staff levels are inadequate for fulfilling their mandated tasks; particularly the three abovementioned technical departments which are overwhelmed by the review of EIAs, compliance monitoring of industry, and the issuance of environmental permits for import of chemicals used in the oil industry. For example, the EIA and Land Use Department has an important backlog of EIA reports to review and is overwhelmed by the sheer size of documentation (thousands of pages and multiple volumes per EIA study) which is often in the English language. Its three-person review team – which is typically formed in an ad hoc manner – lacks adequate recourse to the range of subject-area specialists needed to review EIA studies. Furthermore, a new batch of EIAs is expected to soon land on their desks with the upcoming round of licensing bids. The Chemicals Management Section reported that on average 70 percent of its staff time is taken-up in processing import permits for use in the oil industry. As a result, it is unable to adequately attend to its principal responsibility of overseeing chemicals management.

The staffing situation is particularly wanting at the governorate level, where one or two persons may be responsible for the entire portfolio for the two departments dealing with industrial and services monitoring, and chemicals management, including oil pollution. For example, in Basrah governorate where there are several supergiant oilfields extending over thousands of square kilometres, there is only one dedicated officer dealing with both the oil sector and the full portfolio of the Chemicals Monitoring Department in the environment directorate.



PHOTO 3: Technical capacity to address the considerable backlog of EIA reports – mostly in English – is inadequate

4.3.2 GAPS IN TECHNICAL CAPACITY

Inadequate technical understanding of environmental issues across the oil and gas life cycle was identified as an important constraint by all those interviewed in the Ministry's Technical Directorate. This includes the various phases from oil exploration and drilling to pipeline transportation, storage and downstream processing. Knowledge of social and health dimensions as well as stakeholder consultation processes is reportedly completely lacking. According to the staff interviewed, technical capacity in the environment directorates in the governorates is substantially weaker and requires significant strengthening, particularly given their primary role in conducting field inspections.

Most of those interviewed reported that they never participated in training courses on the oil and gas industry. The few that did participate in such trainings indicated that these were few and far in between; and that such training (e.g. by The World Bank) was either on the oil industry itself and did not address the environmental aspects or consisted of generic training on industrial inspections (e.g. by the Japan International Cooperation Agency and Korea International Cooperation Agency). The first training to comprehensively address environmental issues across the life-cycle of the oil and gas sector was the Foundation Course delivered by UN Environment under the OFD Programme in Beirut in November 2017. Furthermore, the staff interviewed indicated that they have no knowledge about environmental issues specific to the development of gas fields, which is an emerging industry in Iraq following the discovery of significant gas reservoirs. Consequently, the Environment Ministry will need to build its technical capacity in this emerging sector.

Those interviewed reported across the board that capacity development is essentially based on self-training via the Internet (especially YouTube). Although this was generally useful for orientation purposes, it was considered not reliable, scattered and sometimes confusing. During field inspections, environmental staff often relied on 'friendly' tips from oil companies to understand site operations and identify environmental problems.

KEY ENVIRONMENTAL ISSUES OF UPSTREAM OIL INDUSTRY

PHOTO 4: Air pollution from associated gas flaring



PHOTO 6: Poor storage of chemicals



PHOTO 5: Dumping of produced water



PHOTO 7: Oil spills from conflict and sabotage



Options for capacity development suggested by interviewed staff include both in-country and overseas training, consulting with international experts via a 'hot desk' by email and phone calls on specific questions, and off-line training using CD-ROM or USB stick given the poor internet connectivity. Training themes identified during the discussions by preliminary order of priority include:

1. Air pollution and emissions monitoring
2. Contaminated site assessment and clean-up
3. Oil spill preparedness and response
4. Chemicals and waste management (focus on storage issues)
5. Environmental damage assessment (calculating compensation and restoration costs)
6. Produced water including water management
7. O&G operations near and within protected and environmentally sensitive areas
8. Risk assessment and remediation planning
9. Environmental issues across the oil and gas life cycle from exploration and production to transport and downstream processing
10. Best available technologies for effluent discharge and emission treatment (including from refineries)
11. Environmental auditing
12. Environmental Impact Assessment including drafting of environmental permit documents
13. Environmental sample collection
14. Greenhouse gas inventorying and reporting (based on IPCC 2006 guidelines)
15. Approaches to fieldwork and site inspection visits for female environmental officers

PHOTO 8: The offices of the Niniveh Environment Directorate in Mosul were destroyed during the ISIL conflict



PHOTO 9: Fatha gorge near Baiji refinery is a critical oil pollution hot spot

4.3.3 SCARCE FINANCIAL AND MATERIAL RESOURCES

As with other Iraqi Government ministries, the Environment Ministry is strained for financial resources following the breakout of the ISIL conflict in 2014. Most of its planned programmes and projects came to a halt. Only basic routine activities and projects supported by development assistance continued. The Ministry's budget primarily covers staff salary costs and there are no resources for capital investments. Some limited resources are available from the Environment Protection Fund whose income is largely from processing fees for licensing permits (e.g. importation of chemicals, treatment of hazardous waste, etc.).

In the five governorates that were largely under ISIL occupation, a substantial part of the environment directorate offices lay in complete ruin and their assets including vehicles and laboratories were thoroughly looted. An early warning system network using sensors for rapid detection of oil spills along the approximately 230 kilometres stretch of

the Tigris River from Fatha Gorge near Baiji to Baghdad – considered a high-risk oil pollution hot spot area – was destroyed by both sabotage and floods. Although important steps are being taken to re-establish environmental administration in the areas retaken from ISIL, they are far from being fully re-equipped to effectively exercise their normal functions.

All the technical departments indicated that they lacked adequate budgets, equipment and materials needed to fulfil their inspection and monitoring roles. A major constraint that was repeatedly underscored is inadequate portable testing equipment (e.g. stack gas and hydrocarbon analyzers) and sampling collection kits. The lack of adequate vehicles for fieldwork is also cited as an important limitation for timely assessments of oil pollution incidents, and conducting regular inspections. Many of the staff interviewed did not have office computers and rely on their own personal laptops. Moreover, the offices in the technical directorate were generally overcrowded, and some staff indicated they do not have dedicated desks.

4.4 INADEQUATE INTER-MINISTERIAL CO-ORDINATION

From the interviews conducted, it appears that while there are several inter-ministerial committees and working groups, many of these are on specialized topics, and concern specific oil fields or incidents. Inter-ministerial committees and working groups of relevance to the oil and gas sector cited during the interviews include:

- i) monitoring of oil fields;
- ii) oil pollution;
- iii) follow-up of EIA requirements;
- iv) chemical and hazardous materials used in the oil industry;
- v) monitoring the storage, distribution and sale of chemicals;
- vi) environmental auditing of oil fields;
- vii) granting of hazardous waste disposal permits; and
- viii) assessment of contaminated sites from the ISIL conflict.

At the same time, it was pointed out that several of these committees are no longer active due to lack of funds. There are also inter-ministerial committees dealing with specific oil fields facing specific environmental problems (e.g. Nahrn Umar and Zubair oil fields in Basrah). It is noteworthy that for the EIA review and approval process, there is no established mechanism to consult with other ministries. It is only occasionally, that the EIA department may selectively choose to reach out to specific Government agencies or experts on an “as-needed” basis.

Fragmentation of inter-ministerial coordination mechanisms into multiple committees is one of the challenges that need to be resolved. Establishment of a higher-level inter-sectoral committee or platform to deal with strategic planning and coordination of cross-cutting environmental issues in the oil and gas sector is therefore one of the key questions which needs to be reviewed.

4.5 WEAK COMPLIANCE MONITORING

For the new ‘greenfield’ projects, verification that EIA conditions are being fulfilled by the proponent is one of the critical gaps that was highlighted in the discussions with Environment Ministry staff. Similarly, regular monitoring and auditing of existing installations or projects through site visits is also cited as a major challenge. The shortage of funds, vehicles and equipment to conduct monitoring and site inspections makes it difficult to collect the necessary evidence to check compliance with pollution limits and environmental management plans.

The underlying fact reiterated several times during interviews with Environment Ministry staff is that the oil and gas industry enjoys ‘sovereign’ status in Iraq, and as such is shielded from independent environmental oversight. Given the overwhelming dependence of the Iraqi economy on oil revenues, the Government can justify non-compliance on the grounds of safeguarding the ‘public interest’; particularly during this difficult period of instability and conflict where the country is facing serious existential threats. The bottom line is that the Government will not close down an oil project for breaching environmental laws or standards. Indeed, Environment Ministry staff pointed out that decisions on closure of oil operations are made ‘only on paper’; even citing an example where such a theoretical ‘paper closure’ had to be withdrawn.

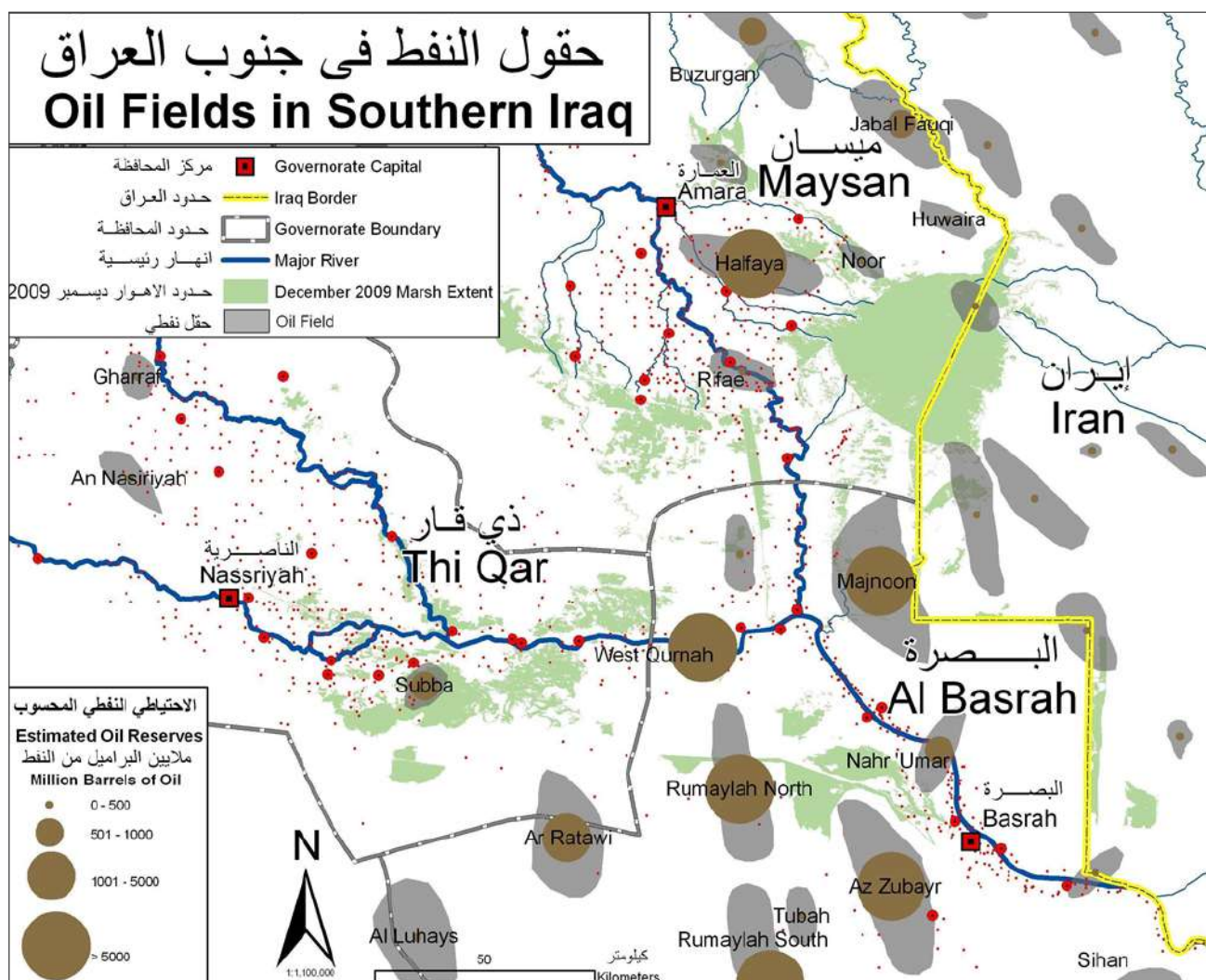
Gaining access to oil operations by the Environment Ministry is a difficult endeavour which is typically justified by ‘security reasons’. It requires lengthy notification and approval processes from both the Ministries of Oil and Interior that need to be initiated at least one month in advance. Even when prior permission is granted, Ministry staff sometimes wait for several hours before being granted entry to the site. Consequently, surprise ‘spot checks’ are not possible. While it was pointed out that oil companies normally pay the fines levied by the Environment Ministry for violating environmental standards, the sums collected are relatively small. Given these realities, Environment Ministry staff appear to have taken a pragmatic approach working with the oil industry to gradually improve its performance by issuing recommendations for corrective actions and following-up on their implementation.

A more recent challenge is the issue of oil development within the Mesopotamian marshlands, which were recently declared in 2016 as a UNESCO World Heritage Site (WHS). Although oil development is not allowed within a WHS property, the Oil Ministry reportedly granted up to three oil exploration licenses in the core part of the Hawizeh marsh. Although this cannot yet be confirmed, and it is not clear whether oil exploration activities have started, Environment Ministry staff consider oil development to be an existential threat to the survival of this unique wetland ecosystem. Furthermore, the Environment Ministry has plans to establish a protected area network comprising of 20 sites, which may overlap with oil field development plans.

4.6 INADEQUATE ENVIRONMENTAL DATA MANAGEMENT AND COMMUNICATION PLATFORMS

The lack of a central environmental information management system in the Environment Ministry is an important constraint for establishing oversight of the oil and gas sector. While the Information Technology Department has a dedicated Geographic Information System (GIS) Section, it lacks a central GIS based environmental repository integrating the various data sets maintained by the respective technical departments. Its main function appears to be providing mapping services and products on request basis.

MAP 1: Oil development plans pose a threat Mesopotamian Marshlands of Southern Iraq which gained World Heritage Status in 2016 (Source: Canada-Iraq Marshlands Initiative)



The technical departments each typically maintain their own data sets. This data is available in various formats including inventories, databases, and reports, which are disconnected and not linked under an information system. For example, the Chemicals Monitoring department maintains inventories of chemicals imported in the country (approximately 90 percent of which is used in the oil industry), chemical storage warehouses, and hazardous waste. Inspection reports are also maintained by the Industrial and Service Activities Department, and the Oil Pollution and Contaminated Site Assessment Sections of the Chemicals Monitoring Department. Similarly, the other departments maintain their own data sets which are of variable quality. However, there is no central database or digital platform that can be used by Environment Ministry staff to access and use this data. UN Environment is starting a project which will support the Environment Ministry in establishing an environmental information system which should help bridge this gap.

Communication between the central Technical Directorate in Baghdad and the governorates is an important constraint on timely exchange of data including in relation to the oil and gas sector. Currently, reports from the governorates are typically sent on a quarterly basis in paper format by postal mail; noting that hard copy versions are administratively regarded as the officially accepted form of communication. This clearly has important implications on time sensitive decision making, particularly on response to oil pollution events. Improving information sharing through the creation of a central server linking the Ministry in Baghdad with the governorates could therefore significantly help in facilitating timely information sharing particularly with regards to notification on environmental pollution incidents requiring rapid response. In addition, data from the country's network of air quality monitoring stations can be sent to the server enabling almost instantaneous access to information.

PHOTO 10: Lack of a central environmental information management system in the Environment Ministry is an important constraint

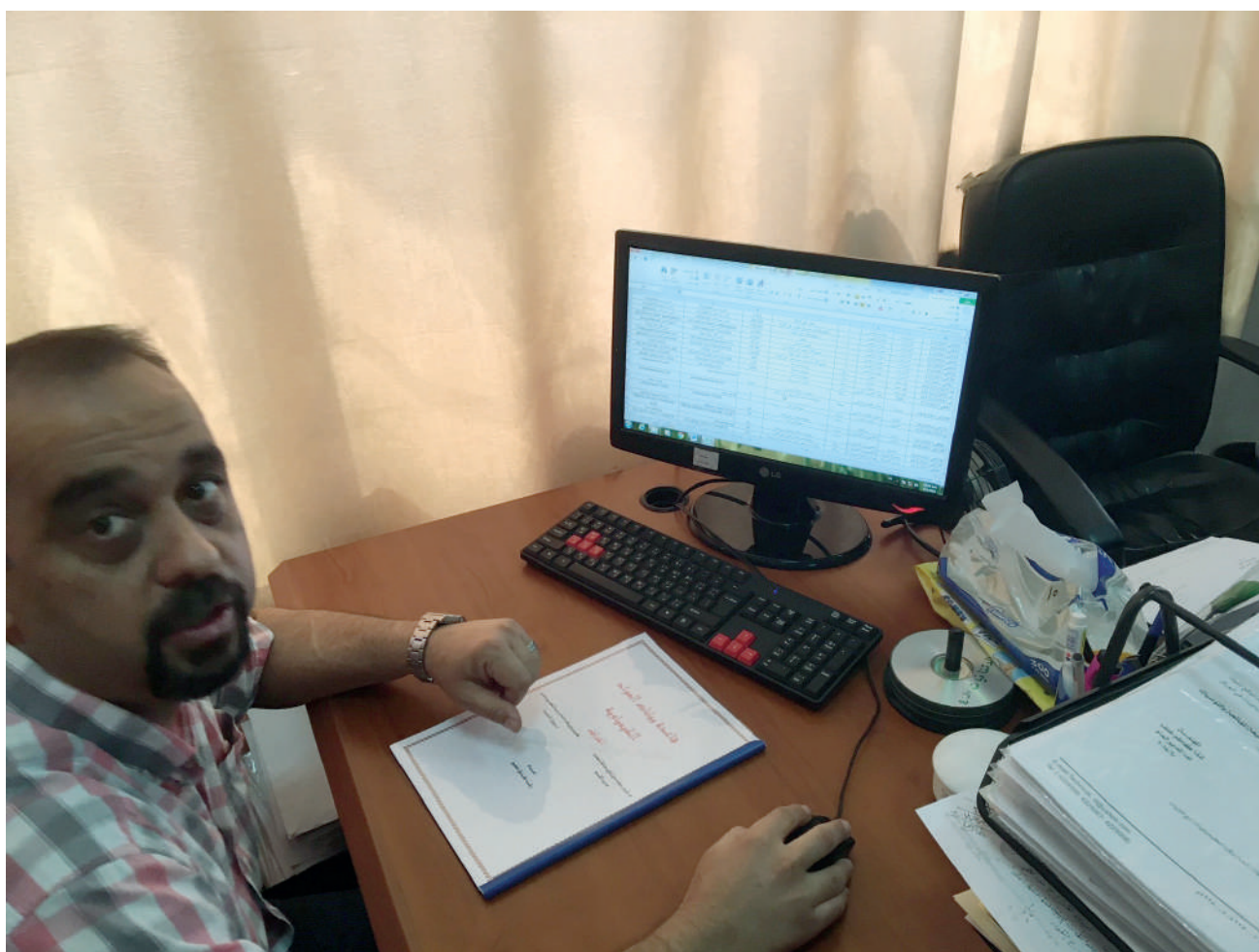
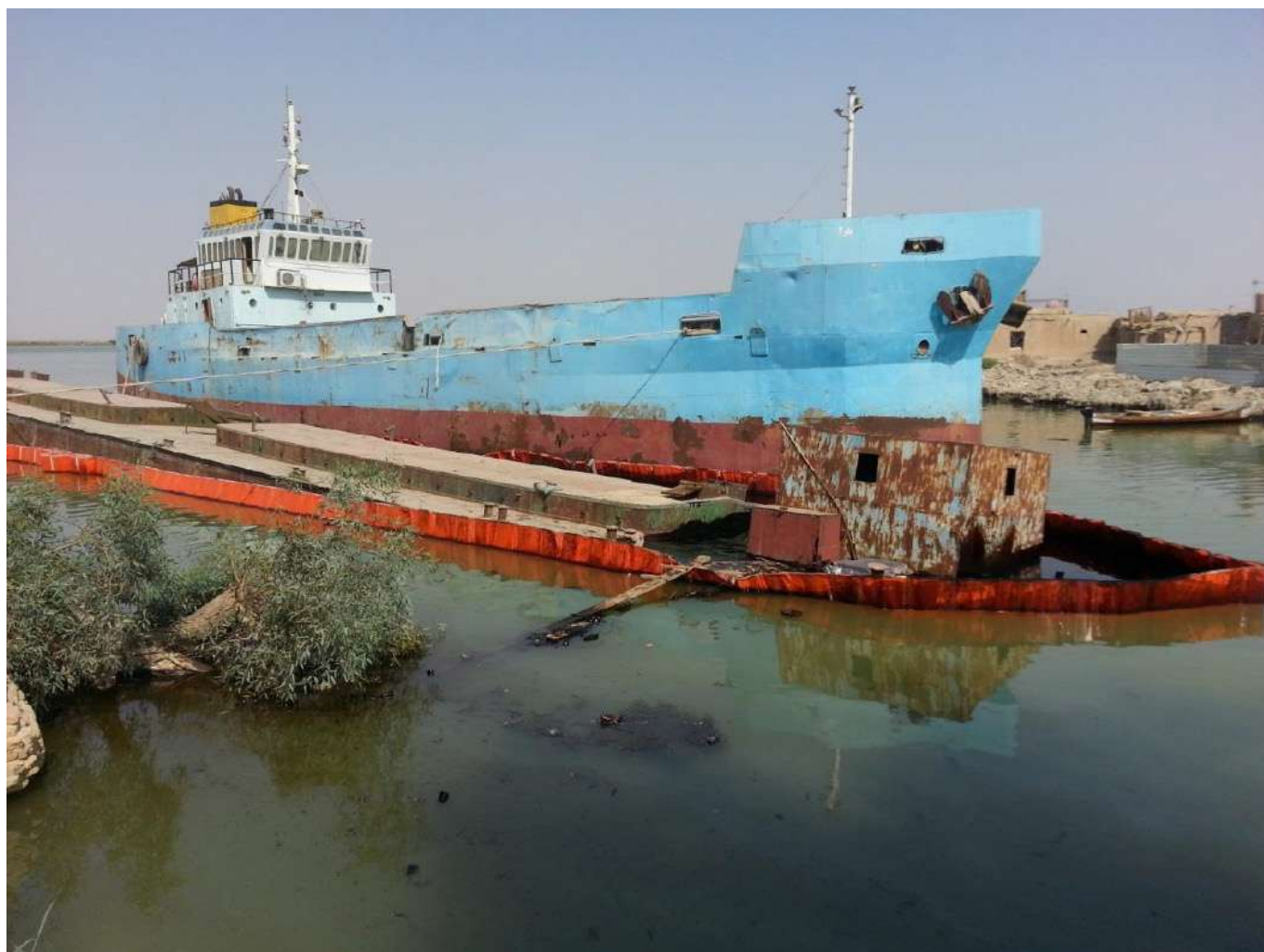


PHOTO 11: Sunken oil tankers in the Shatt Al-Arab estuary

Finally, use of the Ministry's website to improve public access to information can be improved. Notably, electronic versions of EIA reports and related documentation can be published which would also help in facilitating public consultations.

4.7 GAPS IN EMERGENCY PREPAREDNESS AND RESPONSE

Iraq drafted its first oil spill plan in 1986 which focused only on inland areas covering oil spill treatment in rivers and wetlands. A separate oil spill plan was subsequently created dealing with offshore territorial waters to prevent marine pollution. Building on these two plans, Iraq developed a National Oil Spill Contingency Plan (NOSCP) which was formally adopted by the Ministry of Oil in November 2017. The Ministry of Health and Environment was involved in the development of the NOSCP, and the Director of the Technical Directorate of the Environment Ministry also sits on the national body supervising NOSCP implementation.

The plan which was developed with technical support from Japan International Cooperation Agency (JICA) covers Tiers 1, 2 and 3 oil spill incidents. It is also aligned with the requirements of the Marine Environment Mutual Aid Centre (MEMAC), which is part of the Regional Organisation for the Protection of the Marine Environment (ROPME, Kuwait Convention). Implementation of the NOSCP is delegated to the three main national oil companies (Government owned) in Iraq which cover the south, middle and north areas of the country. Each of these three companies are to set-up dedicated bodies dealing with oil spills at the regional level, with the South Oil Company also covering territorial waters. All oil production sites and operations also in principle have their own local level emergency plans.

PHOTO 12: Considerable experience was gained from controlling the massive Qayarra oil field fires set alight by ISIL in 2016



The NOSCP also provides a road map for the plan's implementation including staffing and equipment requirements. The Environment Ministry is specifically mandated to supervise the monitoring of coastal areas for oil spills, but currently lacks the resources and equipment to fulfil this role. Neither have Environment Ministry staff received training on oil spill preparedness and monitoring. At the same time, it is important to point out that other than for the coastal zone, no environmental sensitivity mapping was conducted for the inland areas to help guide oil spill response efforts under the NOSCP. In addition, the NOSCP does not establish integrated early warning and notification systems for oil spill incidents.

At the regional oil company level, emergency response plans for accidents and fires are also in place. Regular training exercises are also reportedly carried out three times per year. The North Oil Company has, however, lost all its equipment in the ISIL conflict including its emergency response centre in Samara. In addition, oil smuggling continues in northern Iraq due to weak central government oversight. Therefore, the northern region is currently considered to be the most vulnerable region in Iraq with respect to oil related emergencies. At the same time, the staff of the North Oil Company are considered to be the most experienced in terms of emergency response capacity given their extensive practical experience, particularly in putting out the massive oil fires in Qayarra in 2016/2017. In fact, they are reportedly widely solicited to provide training to the other oil companies.

5

KEY CHALLENGES AND FIRST-LEVEL RECOMMENDATIONS

1. Legislative Gaps

- Review, update and develop environmental regulations, guidelines, and standards relevant to the oil and gas sector.

2. Insufficient Intra-Departmental Coordination and Duplication of Efforts

- Establish an inter-departmental committee or working group to coordinate activities and projects related to the oil and gas sector within the Environment Ministry.

3. Inadequate Staffing, Resources and Technical Capacities

- Review the institutional structure of the Environment Ministry and improve alignment of roles and responsibilities of the various technical departments, including Terms of Reference for staff.
- Review funding requirements and potential sources to improve environmental compliance monitoring, including carrying out of inspection visits.
- Prioritize the training courses identified in the CNA that will help improve staff technical capacity and support the Ministry in fulfilling its mandate. As an immediate first step, develop a general online foundation course on environment and oil and gas geared for all technical staff within the Environment Ministry (including sub-national level/governorates technical staff), to be delivered in Arabic. A review of the available university curricula on environment and oil and gas should also be undertaken, as well as the available lecturers/professors, who can be called upon to deliver trainings in the future.

4. Inadequate inter-ministerial co-ordination

- Establish a higher-level inter-sectoral committee or platform to deal with strategic planning and coordination of cross-cutting environmental issues in the oil and gas sector.

5. Weak compliance monitoring

- Review and determine the most appropriate means to improve enforcement of environmental laws by the Oil Ministry and national oil companies.
- Examine means to improve access of Environment Ministry staff to oil development sites and installations, including those operated by international oil companies.
- Monitor the status of oil exploration and development in the Mesopotamian marshlands and other planned protected areas.

6. Inadequate environmental data management and communication platforms

- Compile an inventory of data sets held within the Environment Ministry relevant to the oil and gas sector.
- Establish a central electronic data repository accessible to all staff.
- Identify the most suitable and cost-effective mechanism for improving rapid information sharing and reporting between the technical directorate in Baghdad and the environment directorates in the governorates.
- Publish EIA reports and related documentation on the Environment Ministry website to improve transparency and public consultation.

7. Gaps in emergency preparedness and response

- Strengthen the technical capacity of Environment Ministry staff in oil preparedness and monitoring.
- Conduct environmental sensitivity mapping of inland areas to help guide oil spill response efforts.
- Review opportunities to establish an integrated early warning and notification systems for oil spill incidents under the NOSCP.

ANNEXES

ANNEX 1. DEPARTMENTS AND PERSONS MET

Name	Technical	Email
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Technical Directorate

Dr. Jasim Abdulazeez Humadi	Deputy Minister of Health and Environment	moen.iraq@gmail.com
Ms. Shatha Kalaf	Director General	shatha_water@yahoo.com

EIA and Land Use Department

Mr. Thamer Diwan	Environmental Engineer, Director of Department	Thamerdiwan @gmail.com
Ms. Asia Qassim Salih	Civil Engineer	Asia-salih68@yahoo.com
Ms. Taghreed Ahmed Salih	Environmental Engineering	Tabms_760@yahoo.com
Mr. Heyan Abd-al Sadi	Civil Engineer	d.env@yahoo.com

Monitoring & Assessment of Industrial and Services Activities Department

Mr. Jaleel Hussein Salman	Chemical Engineer, Director of Department	Jaleel_iq-70@yahoo.com
Mr. Ali Jabir Laffa	Chemical Engineer, MSC Environmental Engineering	Ali_jabir1999@yahoo.com

Chemicals Monitoring & Contaminated Site Assessment Department

Mr. Luay Sadeq Mohammed	Director of Department	Luay_al_mokhtar@yahoo.com
Mr. Majed Ahmed	Head of Senior Engineer/ Associate Director	Majidsh1964@yahoo.com

Chemicals Monitoring & Contaminated Site Assessment Department/Oil Pollution Unit

Mr. Waleed Ali Hussein	Chief Engineer Head of Oil Pollution Unit	Walidalbaghdadi @yahoo.com Engwaleedaliraqi75@gmail.com
Mr. Husam Abdulmattaleb	Senior Environmental Engineer	Husamenv@yahoo.com

Chemicals Monitoring & Contaminated Site Assessment Department/Chemical Management Unit

Mr Amer Abdul Kareem	Senior Chemist Head of Chemical Management Unit	Amer_iq@yahoo.com
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Chemicals Monitoring & Contaminated Site Assessment Department/CSA Unit

Ms. Saja Mohammed Jebur	Senior Engineer Head of CSA Unit	Sajaallay2016@gmail.com
Mr. Majid Ahmed	Chemical Engineer Site Assessment Department	Majidsh1964@yahoo.com

Chemicals Monitoring & Contaminated Site Assessment Department/Health Impact Assessment Unit

Ms. Rasha Raad Salman	Senior Engineer Head of Health Impact Assessment	Eng.rasharaad@yahoo.com
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Chemicals Monitoring & Contaminated Site Assessment Department/ Environmental Health Unit

Dr. Selma Abdul Fattah Kreidi	Doctor/Head of Environmental Health Unit	Salmaalamry50@gmail.com
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Chemicals Monitoring & Contaminated Site Assessment Department/Hazardous Waste Management Unit

Ms. Hiba Mohammed Anon	Senior Engineer Head of Hazardous Waste Management Unit	Engh.m185@gmail.com
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Disaster Management Center

Mr. Ahmed Hakki Al-Ajaj	Assistant Chief Engineer	Ahmedajaj63@yahoo.com
Mr. Suhad Rahman Hadi	Agronomist MSC Environment Management	hadishubara@yahoo.com
Mr. Talal H. Hasan	Chief chemistry	
Mr. Ahmed Hammodi Hamdi	Senior Chief chemistry	ahmedhahmadhh@yahoo.com

Soil & Water Monitoring Department

Ms. Buthainah Rustom	Department Deputy Director	CheifAglica_eng bath_66@ yahoo.com
Ms. Rana Suhail	Agric Engineering	Rana.suhail77@yahoo.com
Mr. Muthanna Ibrahim Hayder	Environmental Enginnering MSC Environmental Enginnering	Muthanna_env@yahoo.com
Ms. Aseel Majeed	Environmental Enginnering	Aseelmoon77@yahoo.com

National Centre for Climate Change		
Mr. Hadi Hamdi Mahdi	Director of Center	Hadi34_200617@yahoo.com
Mr. Sahar Hussein Jasim	Iraq National Focal Point for of IPCC	Saharhussain84@gmail.com
Ms. Susan SSami Al-Banaa	Iraqi National Focal Point to UNFCCC & Head Assistant of the National Climate Change Center	Suzan_banna@yahoo.com
Mustafa Mahmood	Senior Engineer	Mostfa_mahmood@yahoo.com

Marshlands & Sustainable Management of Natural Ecosystems Department/Protected Areas Unit		
Ms. Dalal Ali Qais	Head, World Heritage Site Unit	daliqais@gmail.com
Ms. Nahla Mohammed Ridh	Marshlands and Wetlands Unit	
Ms. Israa Munqith	Senior Chemist	ismunqith81@yahoo.com

Information Technology Department		
Ms. Ruaa Khaled	Translator	Ruaa.khaled2000@yahoo.com
Mr. Talal AbduKareem	Website Graphic Designer	talalsp@gmail.com
Mr. Ahmed Abd Alabbas Lafta	GIS Expert	ahmedhmb@yahoo.com
Mr. Saifal Deen Ali	IT Expert	saifaldeenali@ygmail.com
Ms. Lubna Mohamed	Expert GIS	Lubua.mohamed@yahoo.com

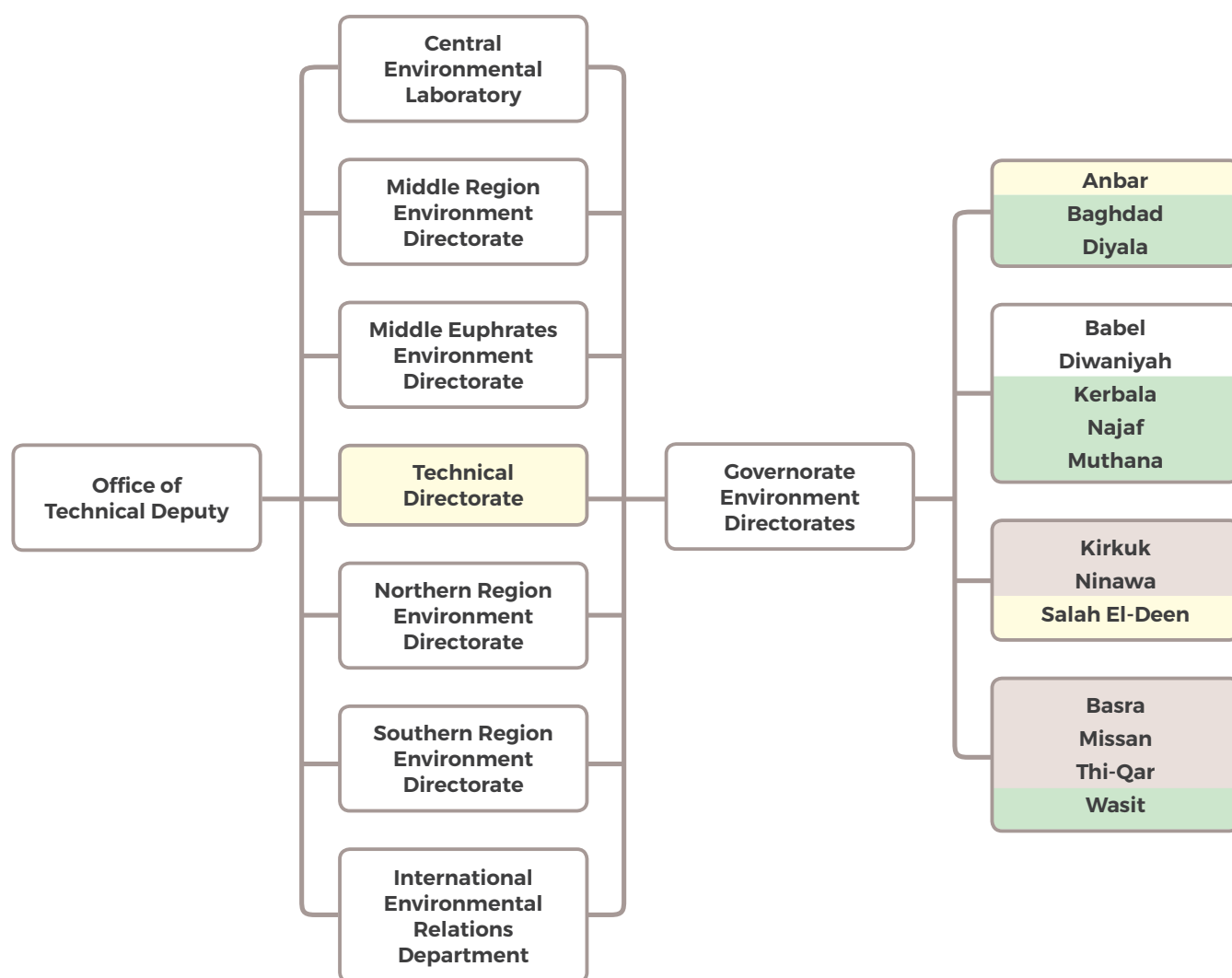
National Environmental Training Center		
Ms. Kareema Sahman	Director of Center	Karam_mulhim@gmail.com

Middle Region Environment Directorate (Anbar, Baghdad, Diyala Governorates)		
Mr. Shaker Ahmed Al-Haj	Director, Middle Region Environment Directorate	
Mr. Muthana Hassan Sallomi	Director of Baghdad Environment Directorate	muthmat@yahoo.com
Ms. Nahla H. Alogaty	Director of Technology department	Nahlaenv37@gmail.com
Ms. Abeer Hani Essie	Director of Follow-up department	abeerhessa@yahoo.com
Mr. Hatham Abbas Abed	Director of Education department	hathamabdu@yahoo.com
Mr. Liwaa Kareem Jawad		L954k@yahoo.com
Mr. Bashair Kamal	Assistant DC	Bashair_1955@yahoo.com

Oil Ministry		
Mr. Mashwan M. Khadhair	Senior Chief Engineer	neshwanmkh@yahoo.com
Mr. Basim A. Hussein	Senior Chief Engineer	basimalihussain@yahoo.com
Farah Hatit		farahabdameer@yahoo.com

ANNEX 2. ENVIRONMENT MINISTRY INSTITUTIONAL ORGANOGRAMS

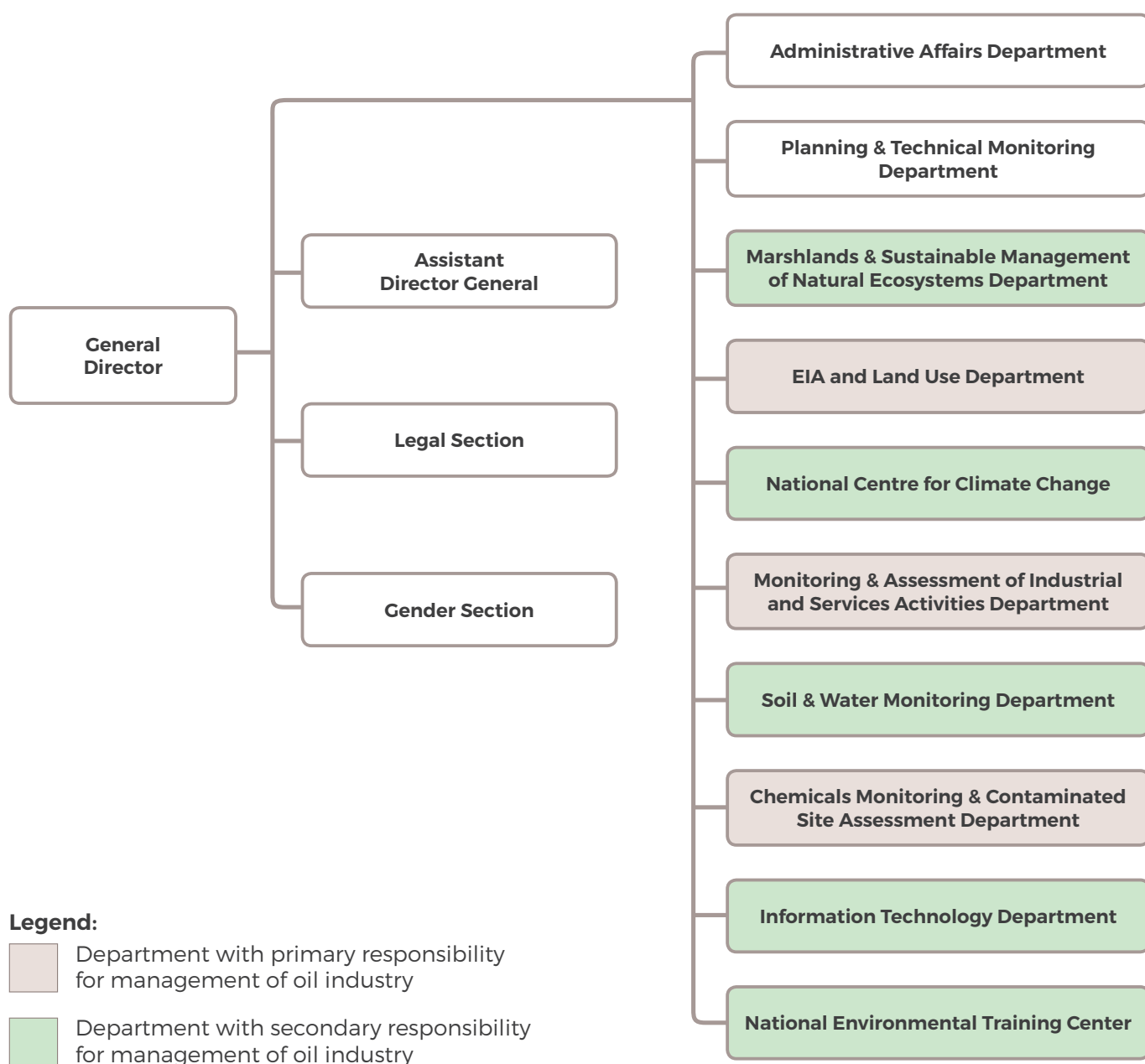
1. OFFICE OF TECHNICAL DEPUTY



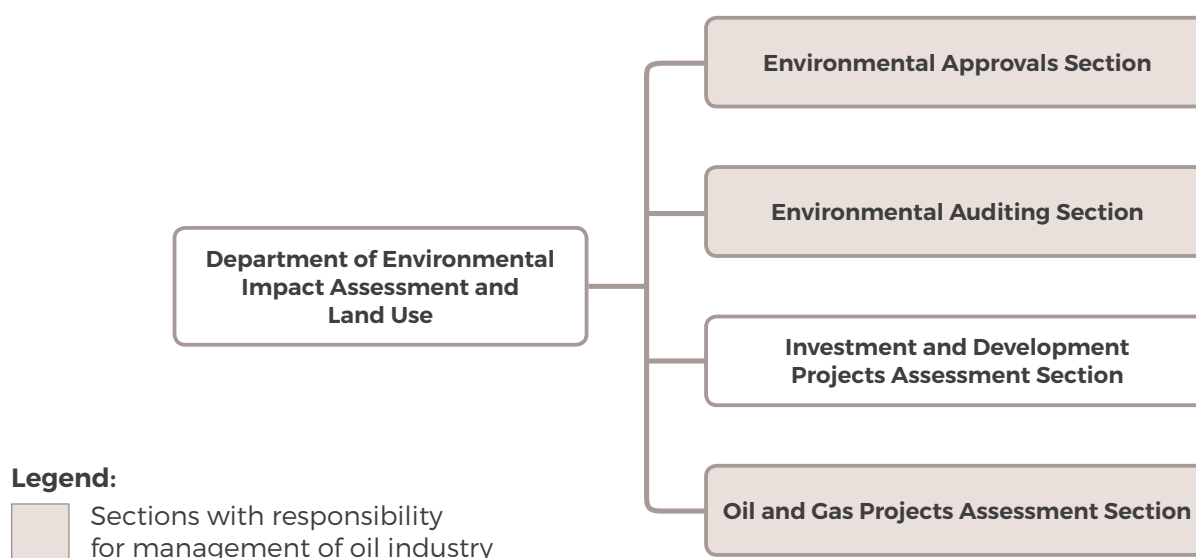
Legend:

- Main oil producing governorates
- Secondary oil producing governorates
- Governorates where oil and gas recently discovered

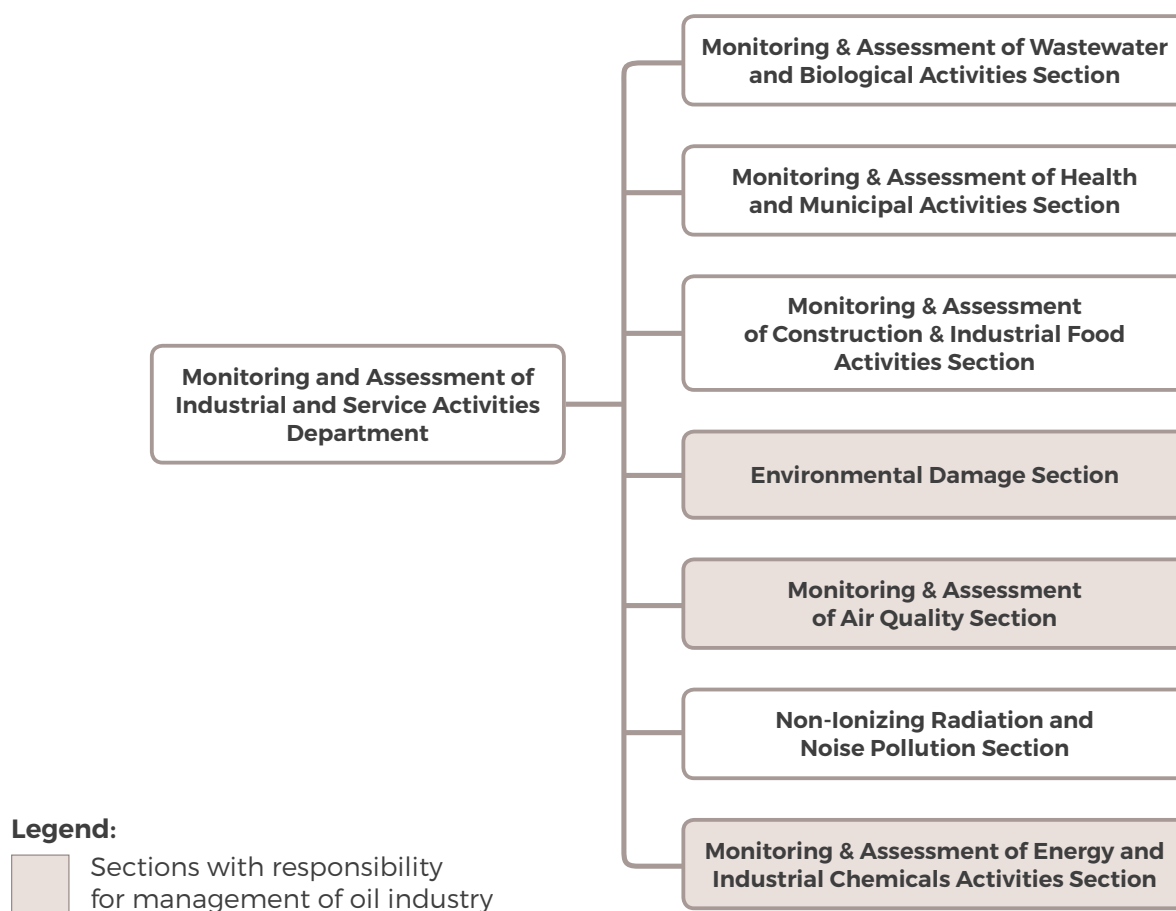
2. TECHNICAL DIRECTORATE



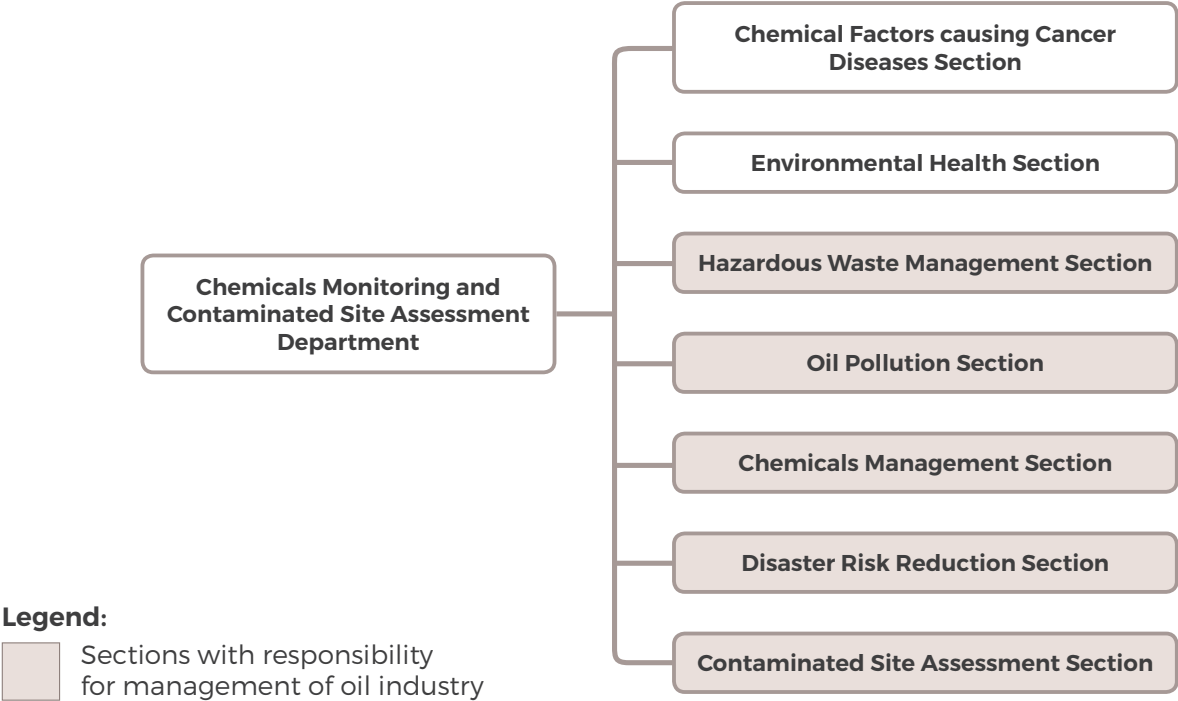
3. DEPARTMENT OF ENVIRONMENTAL IMPACT ASSESSMENT AND LAND USE



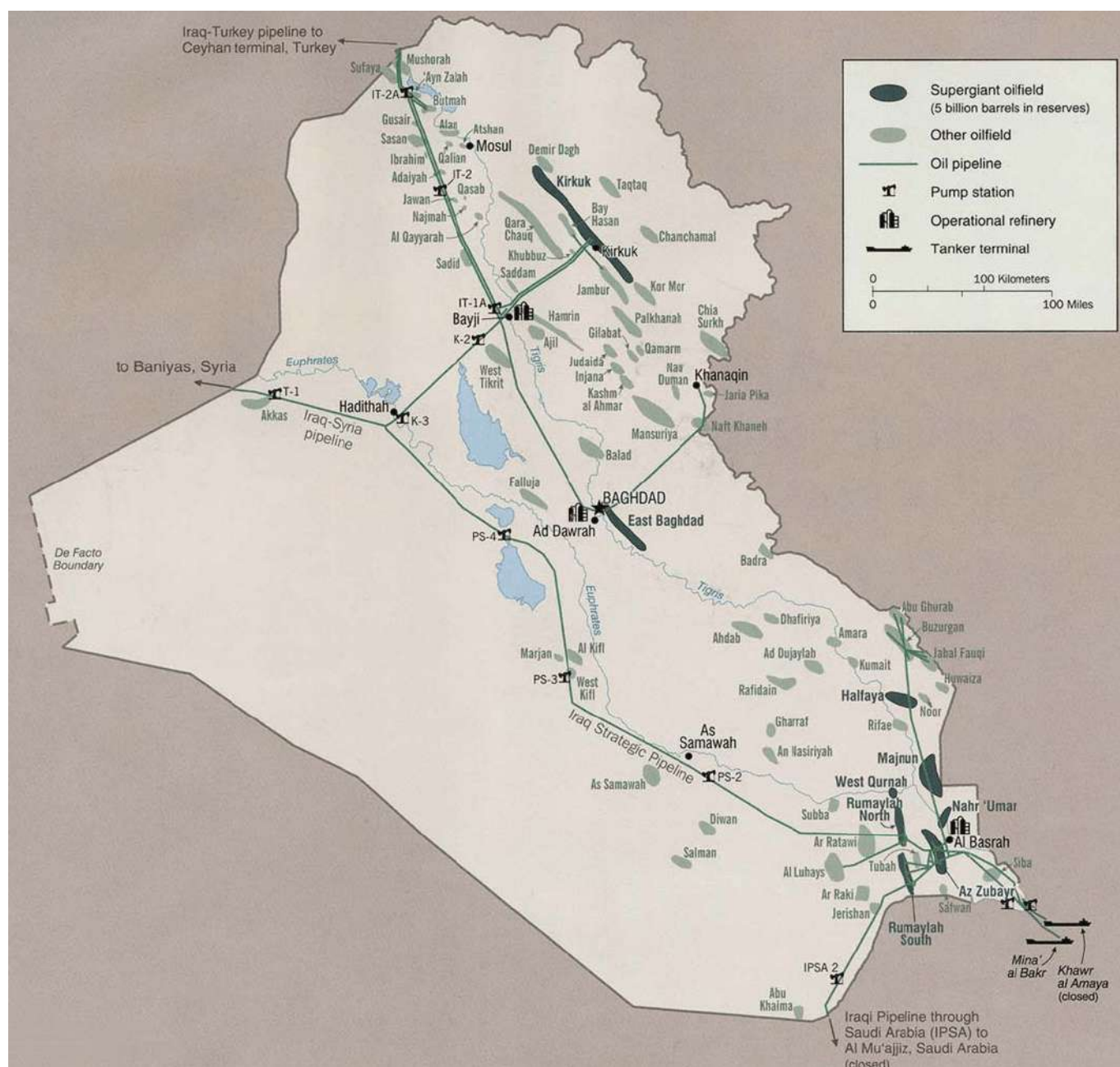
4. MONITORING AND ASSESSMENT OF INDUSTRIAL AND SERVICE ACTIVITIES DEPARTMENT



5. CHEMICALS MONITORING AND CONTAMINATED SITE ASSESSMENT DEPARTMENT



ANNEX 3. IRAQ OIL FIELDS MAP



Source: Intergrupp

