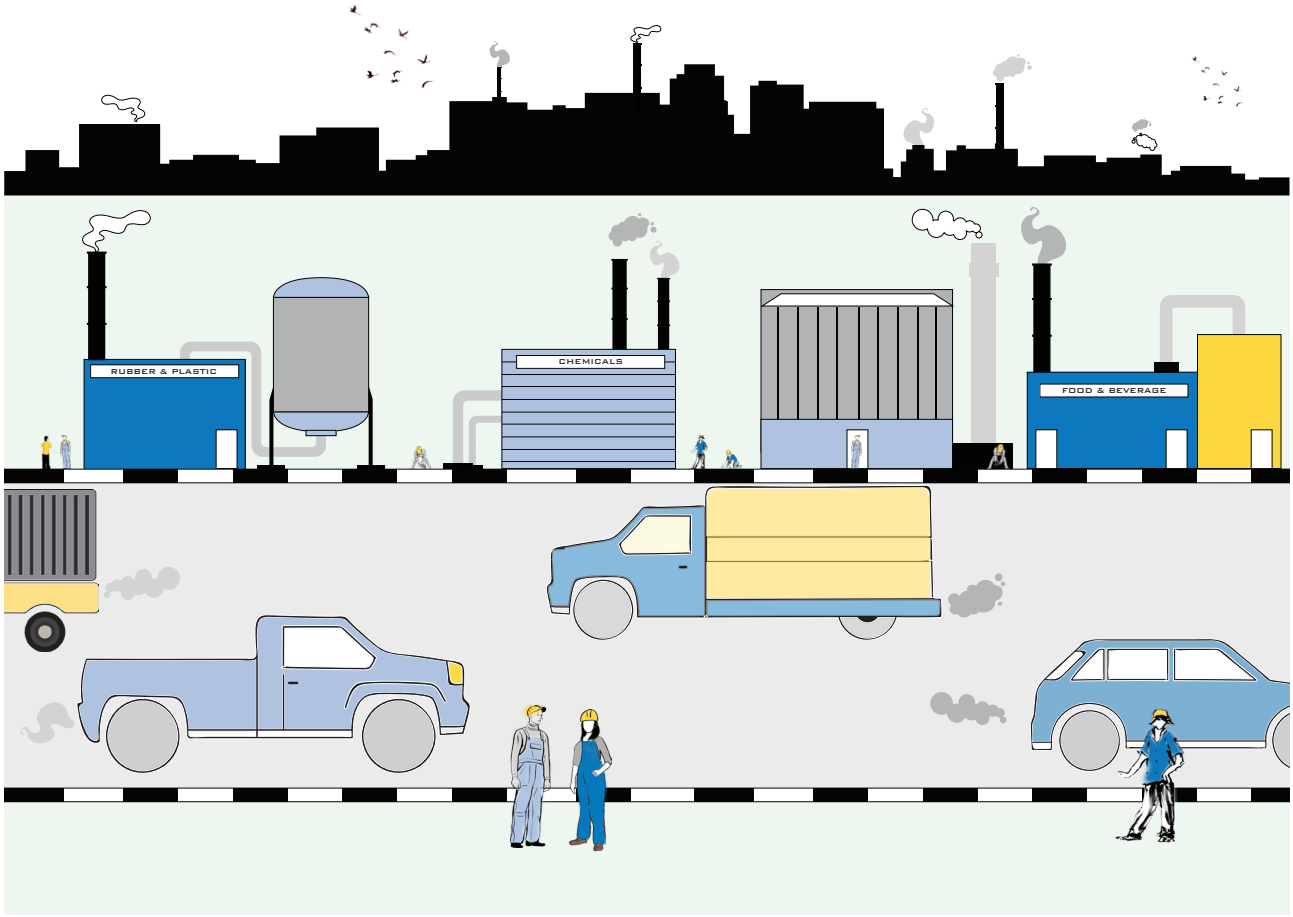
United Nations Educational, Scientific and Cultural Organization
منظمة الأمم المتحدة للتربية والعلم والثقافة

TVET
Reforming Technical and Vocational Education and Training in Iraq
إصلاح التعليم والتدريب التقني والمهني في العراق

Project funded by the European Union
مشروع ممول من الاتحاد الأوروبي

Assessment of the Labour Market & Skills Analysis
Iraq and Kurdistan Region-Iraq



Manufacturing

وزارة التخطيط
Ministry of Planning
جمهورية العراق وزارة التخطيط الجهاز المركزي للاحصاء
CSO Central Statistical Organization IRAQ
KRSO

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Education Sector

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UNESCO and Sustainable Development Goals

UNESCO actively helped to frame the Education 2030 agenda which is encapsulated in UNESCO's work and Sustainable Development Goal 4. The Incheon Declaration, adopted at the World Education Forum in Korea in May 2015, entrusted UNESCO to lead and coordinate the Education 2030 agenda through guidance and technical support to governments and partners on how to turn commitments into action.

Acknowledgements

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Contents

Table of Figures

Table of Tables

Executive Summary

TVET Reform Programme for Iraq and KR-I

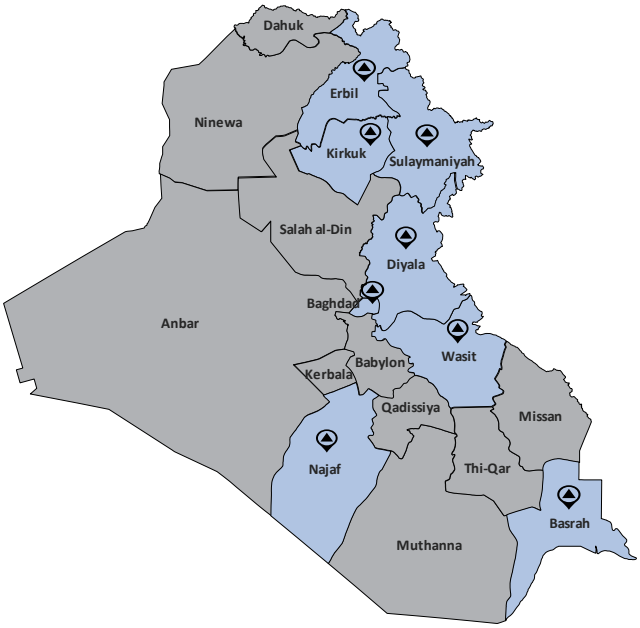
This is one of a series of reports on selected key economic sectors in Iraq and Kurdistan Region-Iraq (KR-I), prepared by UNESCO under the auspices of the European Union funded TVET Reform Programme, in partnership with the government of Iraq and KR-I. The purpose of the reports is to inform decision makers and education and training providers about issues of supply and demand in priority sectors. Research and data collection activities were implemented in 2017 and the reports were completed in 2018.

Desk-based research on the sector was based on publicly available documents and statistics; and on documents and submissions provided by the relevant ministries, agencies and organisations. Research on the supply of skills to the sector relied on data submissions from the Ministry of Education (MoE), Ministry of Labour and Social Affairs (MoLSA), Ministry of Higher Education and Scientific Research (MoHESR). Every effort was made to mitigate issues of the completeness, quality and currency of the data available.

Qualitative data for this report were collected during interviews with ministry officials and professional body representatives; and during two days of discussions with eight pilot sector councils constituted to provide public and private sector perspectives on the challenges and opportunities of the sector. A survey of firms in each sector (excluding the informal sector) was implemented in eight governorates through the Central Statistical Organization (CSO) and the Kurdistan Regional Statistics Office (KRSO).

Manufacturing sector

Manufacturing is the ninth largest non-oil sector, mostly (90%) in private hands in KR-I; and in Iraq mostly (70%) controlled by the government. The private sector dominates in minerals; food and beverage processing and rubber and plastic; while the other subsectors are mostly controlled by government. There is very little foreign investment in manufacturing.



Manufacturing employs 8-10% of the total workforce, and the workers are mostly male (84%) with 26% youth. There are some small companies (mostly private sector companies, for metal products and furniture, in particular) but 79% are large companies, mostly owned by the government. There are also some large companies in KR-I but over half of all manufacturing in KR-I is done in small companies especially for food (mostly bakeries), textiles, printing, metal, rubber and furniture. Overall 90% of manufacturing in KR-I is private sector operated.

The manufacturing sector was on a growth trajectory, and doubled in value between 2009-2012, but

has decreased significantly in recent years of political crisis and economic downturn. Oil refining was particularly hard hit with the loss of the Baiji refinery.

The most productive subsectors are coke/oil refinery, minerals (mainly for cement) and food processing. The mineral subsector is the only subsector where the value of the local production exceeds the value of comparable imported products. Cement is a uniquely protected product, with no imports of cement allowed. In all other subsectors cheap imports exceed and (reportedly) undermine local production.

Local production is in many cases too costly, and not profitable enough for companies to survive in a competitive environment. Productivity issues noted in this report include poor work environment; lack of computerisation and advanced technologies; loss of expertise; lack of innovation; and overstaffing of public companies. Another serious impediment to business success is the unreliability of electricity, which has caused many factories to close. According to the World Bank Iraq is 133rd in the world for access to electricity. Business representatives also describe inconsistent application of standards to local manufacturing (high compliance requirements) and foreign imports (low or no compliance requirements), and not enough controls on smuggling.

The Enterprise Survey sampled 876 manufacturing companies in eight governorates, mostly in the mineral and food processing industries. The top ten jobs (total of 13 with seven overlaps between Iraq and KR-I) reflect the two main types of industry included in the sample, and show disproportion between the high number of management, accounting and security jobs (five of the top 13 jobs) and fewer than expected jobs in actual production (eight artisan manufacturing occupations). There is some evidence of under-qualification in the higher-level jobs, and this accords with the evidence from the survey that recruitment decisions in the manufacturing sector are based mainly on age, gender, interview behaviour and practical experience, rather than qualification and skill levels.

Top ten most frequent manufacturing-related occupations in employment by region

Rank	1	2	3	4	5	6	7	8	9	10
Iraq	Manufacturing managers	Cement, stone and other mineral product machine operators	Security guards	Handpackers	Food and related products machine operators	Earthmoving and related plant operators	Cooks	Corporate service managers	Account-ants	Freight handlers
KR-I	Manufacturing managers	Corporate service managers	Account-ants	Cement, stone and other mineral product machine operators	Earthmoving and related plant operators	Mechanical engineering technicians	Sales and marketing managers	Security guards	Cooks	Crane, hoist and related plant op-erators

Three of the top ten jobs are also in the top ten for other sectors, so these should be especially noted. Freight handlers are also found in the top ten in the transport sector; earthmoving; related plant operators are in the top ten for the construction sector; and cooks are in the top ten for hospitality.

In Iraq skills are slightly below expectation for managers and accountants (where expectations are higher) but skills generally exceed expectations for jobs which require lower levels of knowledge and skill (like security guard or freight handler). Employers in Iraq seem to have lower expectations than KR-I employers for foreign languages, continuous learning skills, digital technology and creative thinking, as few gaps are identified in these skill areas. KR-I employers are also generally less satisfied (and have higher expectations) with the specialist knowledge and technical skills of workers in the top jobs than their Iraqi counterparts.

Most of the governorates (except Basrah and Erbil) are unsure or negative about the future outlook. Erbil and Baghdad are the governorates most likely to hire in the next five years.

Although the pilot Manufacturing Sector Council was clear about the central role of new technologies and high skill levels in the further development of the sector, not all of the survey participants believed that 'high skilled staff' and 'more effective use of technology' were important. Nevertheless, technological change is one of the three factors which have affected businesses most adversely, along with economic downturn and law and policy.

Businesses in the survey have made improvements to some business practices, especially in the area of improving products and services, but improvements were least likely to have been made in recruitment practices and performance management of staff. Recruitment decision making practices are currently based on mostly on demographic factors, which are no good predictors of skills. Employers do not value qualifications in their recruitment decision making, perhaps because they have no relationship with providers. A third of companies surveyed had offered training to their employees in the past five years but only 5.9% of them had a relationship with a training provider.

The provision of skills for this sector seems to be mismatched with the needs and opportunities of the manufacture industry in terms of level; areas of specialisation, and orientation to modern manufacturing methods and employability skills.

The recommendations include:

- Focussing more on vocational non-tertiary qualifications, since this is the level of most jobs
- Noting the prevalence of jobs for freight handlers, earthmoving; related plant operators and cooks in more than one economic sector
- Orienting training to the specific subsectors which are most productive and biggest employers i.e. increase or introduce specialist programmes for coke/oil refining, food processing, mineral industries and fabrication of metal products
- Stronger focus on employability skills such as creative thinking, digital skills, continuous learning skills and foreign languages
- Preparing graduates to work with modern technologies and computerised methods
- Dedicating more time and effort to training interview behaviour and providing meaningful work-based learning experiences
- Reviewing and developing qualifications with industry representatives, and involving them in the delivery of the programmes, especially in the provision of work-based learning experiences.

Chapter 1: Introduction to the Sector Skills Analysis Project

This report on the manufacturing sector is one of a series of eight reports on the seven economic sectors and informal sector in Iraq and Kurdistan Region-Iraq (KR-I). The series consists of:

- Report on the **Agriculture, Forestry and Fishing** sector in Iraq and KR-I
- Report on the **Manufacturing** sector in Iraq and KR-I
- Report on the **Construction** sector in Iraq and KR-I
- Report on the **Wholesale and Retail and Repair of Motor Vehicles** sector in Iraq and KR-I
- Report on the **Transport and Storage** sector in Iraq and KR-I
- Report on the **Accommodation and Food Services (Hospitality)** sector in Iraq and KR-I
- Report on the **Information and Communication** sector in Iraq and KR-I
- Report on the **Informal** sector in Iraq and KR-I

These reports are the culmination of a series of primary and secondary research activities implemented in 2017.

The Sector Skills Analysis (SSA) Project[2] is a component of the Technical and vocational education and training (TVET) Reform Programme, funded by the European Union and in partnership with the government of Iraq and KR-I. The twin aims of the SSA project are (I) to inform education policy and priorities at secondary and tertiary levels, especially curriculum development for TVET and the development of training and opportunities for unskilled and/or unemployed people (with emphasis on women and youth) to enter the labour market and participate in formal and informal economic activity and (ii) to build the capacity of stakeholders to survey businesses and analyse employer demand in order to determine the best use of funding and target relevant TVET provision to better meet the demand of the labour market.

1.1 Global expectations of TVET

TVET is widely understood to be key to achieving a range of sustainable development goals including alleviation of poverty by empowering people to work and create jobs for others; increasing productivity and economic growth; promoting social equity, stability and peace; and increasing awareness of environmental issues and promoting green practices. TVET is regarded as pivotal to the achievement of inclusive, equitable and sustainable economic growth of industry and business, youth employability and enhanced social well-being. A TVET system has potential to influence work practices in the long term by emphasising occupational and professional standards, through developing skills and knowledge for sustainable work practices, and by introducing new technologies.

A TVET system capable of achieving these aspirations should be demand-driven by the current and projected needs of the labour market and by identified social and economic development opportunities for the future, so that it is relevant to the needs of employers and the opportunities of the formal and informal sectors.

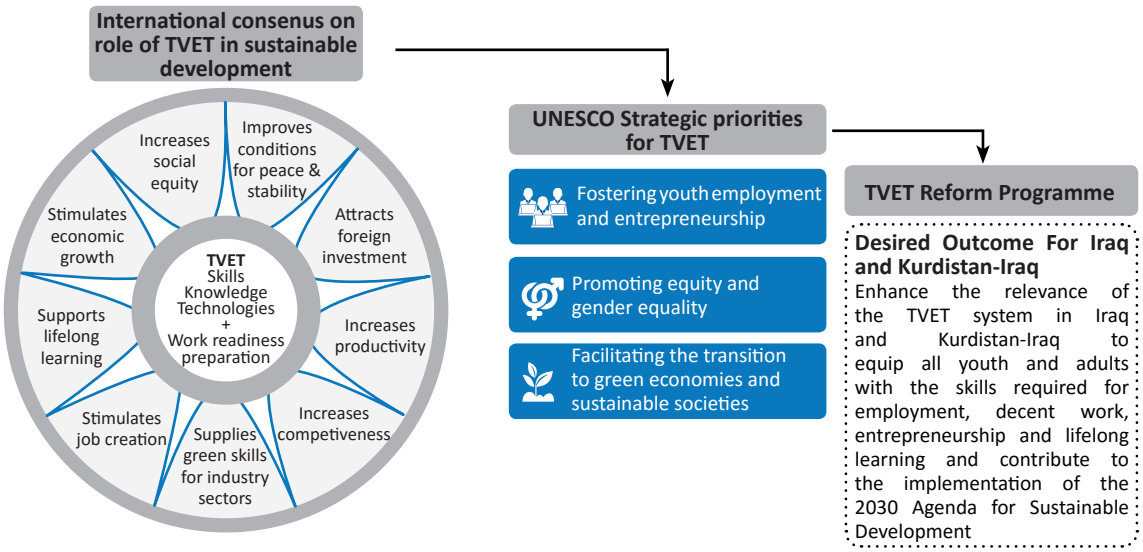
[2] The full title of the project is "Labour Market Assessment and Sector Skills Analysis. In this document, the short name "Sector Skills Analysis" is used to refer to all parts of the project, including assessment of the labour market

It needs to be accessible to all social groups (including urban and rural and marginalised segments of the population) and include a range of components to ensure that graduates (especially youth) are equipped with work-ready skills.

1.2 Context of the project

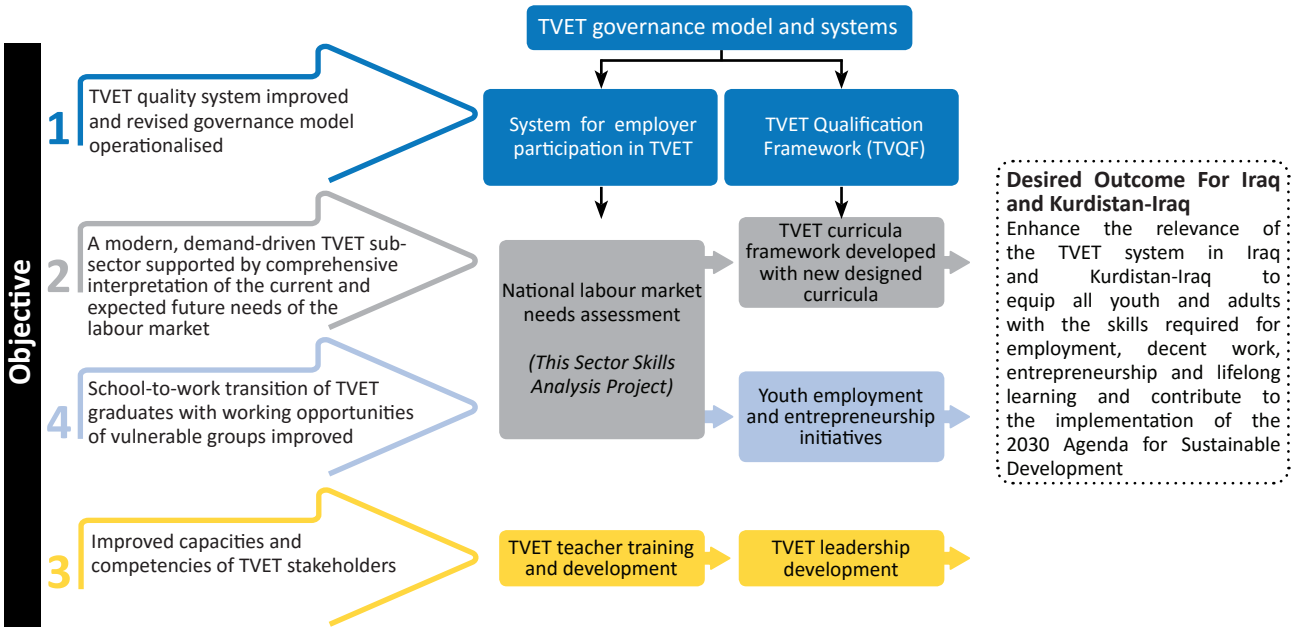
These concepts have shaped the UNESCO Global TVET Strategy and underpin the TVET Reform Programme for Iraq and KR-I (see Figure 1).

Figure 1: TVET Reform Programme for Iraq and KR-I is aligned with global thinking about TVET



This SSA Project is an essential element in the realisation of the desired outcome for the TVET system in Iraq. It constitutes a specific component in the overall design of the larger TVET Reform Programme (as shown in Figure 2), and it contributes to the other components. The larger Programme needs labour market information and analysis of skills supply to inform the development of new training programmes leading to the award of TVET Qualification Framework (TVQF) qualifications and youth employment and entrepreneurship initiatives. The Project provides skills demand and supply analysis for these purposes and it lays the groundwork for a system for employer participation in TVET, through the establishment of pilot Sector Councils.

Figure 2: Relationship between the Sector Skills Analysis (SSA) Project and other elements of the TVET Reform Programme



1.3 Scope of the project

There are no established systems in Iraq and KR-I for monitoring changes in the demand for labour and ascertaining employers' changing requirements for human capital, and there are no systematic arrangements for responding to emerging skills needs by adapting curricula, developing qualifications or designing learning provision to meet those needs. Information on labour market trends and skills needs is scarce, and any existing information is the result of ad-hoc initiatives of national and international institutions. As a result, the mix of occupational training offered, and the number of students enrolled in each occupation have little relationship with the needs of the labour market.

Assessing the needs of the labour market requires synthesis and analysis of information about the dynamic relationship between the labour market, the economy and the education and training system. The Project synthesises information about these three systems by collating data from the past (existing data and identified trends), from the present (actual current situation and needs of employers) and about the potential future (planned and untapped potential development). It includes desk review of existing data and past trends, qualitative and quantitative data from the present situation (Enterprise Survey, interviews and structured pilot Sector Council meetings) and projected and planned future development (national and sectoral strategic plans, Enterprise Survey and pilot Sector Council meetings).

1.3.1 Focus on selected economic sectors

The Project focuses on seven ISIC[3] economic sectors and the informal sector. The seven economic sectors selected for the focus of the Project are shown in Table 1.

The selection criteria for the economic sectors, which were determined in consultation with the Programme Steering Committee, the Inter-Ministerial Working Group (IMWG), the Central Statistical Organization (CSO) and the Kurdistan Regional Statistics Office (KRSO), were as follows:

- Minimum of 6 sectors relevant to both Iraq and KR-I
- Sectors considered to be drivers for inclusive, equitable and sustainable economic growth in Iraq and KR-I
- Sectors conducive to fostering youth employment, decent jobs and entrepreneurship
- Sectors that can support the reconstruction of the country and transition to green economies and environmental sustainability
- Sectors with potential for leveraging employment opportunities and business development in other sectors
- Include primary, secondary and tertiary sectors of the economy
- Take into consideration growth potential in terms of GDP, employment and exports, and changing technology
- Capable of using and applying the results and insights from a sectoral skills analysis (i.e. the sector is relatively well organised).

[3] International Standard Industrial Classification of All Economic Activities

Table 1: Selected economic sectors and subsectors

Section	Sector	Selected subsectors of interest based on consultation and desk-review
A	**Agriculture, Forestry and Fishing**	01 - Crop and animal production, hunting and related service activities 03 - Fishing and aquaculture
C	**Manufacturing**	10 - Manufacture of food products 11 - Manufacture of beverages 19 - Manufacture of coke and refined petroleum products 20 - Manufacture of chemicals and chemical products 21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations 22 - Manufacture of rubber and plastics products 23 - Manufacture of other non-metallic mineral products 24 - Manufacture of basic metals 25 - Manufacture of fabricated metal products, except machinery and equipment 26 - Manufacture of computer, electronic and optical products 27 - Manufacture of electrical equipment 28 - Manufacture of machinery and equipment 32 - Other manufacturing
F	**Construction**	41 - Construction of buildings 42 - Civil engineering 43 - Specialised construction activities
G	**Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles**	45 - Wholesale and retail trade and repair of motor vehicles and motorcycles
H	**Transport and Storage**	49 - Land transport and transport via pipelines 52 - Warehousing and support activities for transportation 53 - Postal and courier activities
I	**Accommodation and Food Services**	55 - Accommodation 56 - Food and beverage service activities
J	**Information and Communication**	61 - Telecommunications 62 - Computer programming, consultancy and related activities 63 - Information service activities

1.3.2 Focus on a sample of governorates

The scope of the Enterprise Survey included a sample of firms from each of the 7 economic sectors from 8 governorates, as shown in Figure 3 (survey was not conducted for the informal sector).

The selection criteria of the governorates for the Survey were as follows:

- Have at least 5 governorates in Central and Southern Iraq (CSI) and 2 governorates in KR-I to represent the whole country
- Urban and rural economic areas

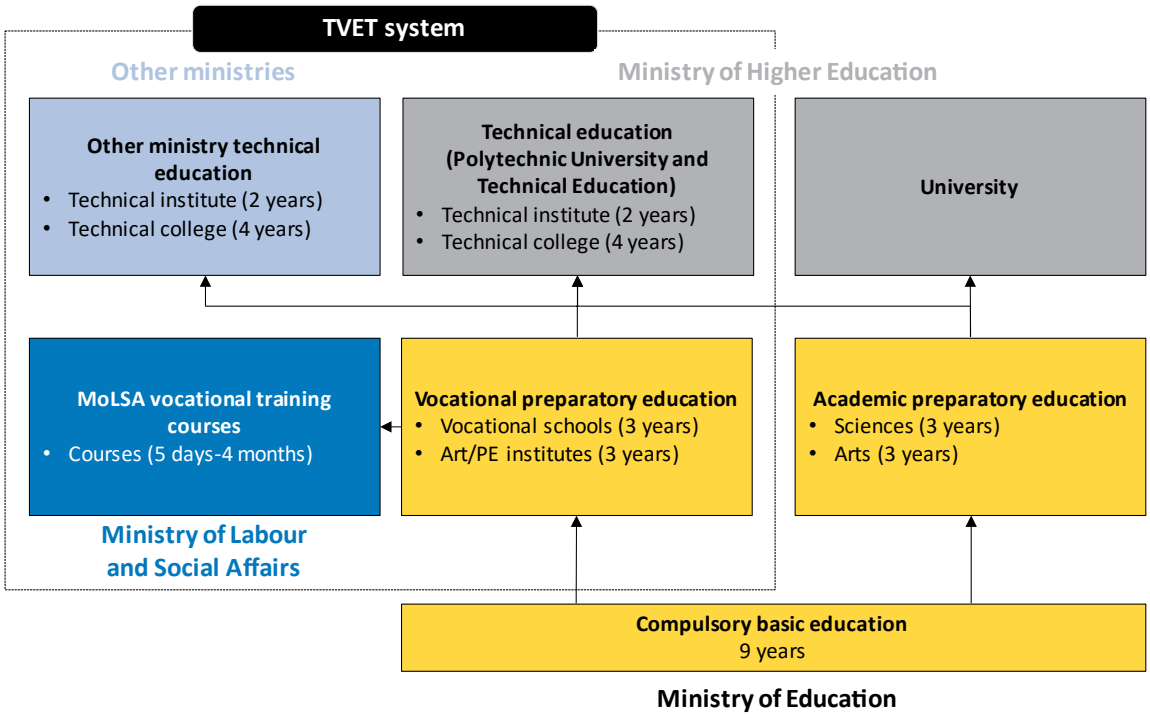
- Based on population, employment trends and growth predictions
- Consistency with the selection of economic sectors (i.e. the selected sectors are active in the selected governorates).

Figure 3: Map of governorates of Iraq and KR-I showing those selected for the Enterprise Survey

1.3.3 Focus on TVET skills providers

Figure 4 below provides the overview of provision of TVET by the Ministry of Education (MoE), Ministry of Labour and Social Affairs (MoLSA), Ministry of Higher Education and Scientific Research (MoHESR) and other ministries.

Figure 4: Structure of TVET provision



Vocational preparatory education is offered by the MoE in Iraq and KR-I. Vocational education is offered in 3-year programmes (equivalent to years 10, 11 and 12) in vocational schools and institutes. Due to capped numbers, a very small percentage of vocational education graduates are eligible for entry to tertiary technical education in the polytechnic universities and technical universities. In Iraq, there were 315 vocational education institutions. The total number of all vocational students enrolled in specialist vocational programmes was just over 50,000 in 2016-2017. In KR-I, there were 33 vocational schools and 28 institutes (for a total of 61 institutions). The total number of students enrolled in all three years of the programme in 2015-2016 was nearly 8,000.

In Iraq, there are 38 MoLSA training centres with an average annual MoLSA cohort size of 16,659. In KR-I , there are 7 MoLSA training centres with annual enrolment of approximately 1,500 learners.

In Iraq, there are four technical universities with 29 institutes and 16 colleges (for a total of 45 institutions) with an annual admission of approximately 30,000 students. In KR-I, there are three polytechnic universities with a total of 36 institutes and colleges, and a total estimated annual enrolment of approximately 12,000 students.

The Boards of Tourism in both Iraq (Ministry of Culture) and KR-I (Ministry of Municipality and Tourism) offer training for tourism and hospitality. The nine tourism and hospitality institutes in Iraq provide pre-service training in four 3-year programmes with a total enrolment of 756 students in 2015-2016. The operationalisation of the KR-I Tourism Training Centre has been subject to significant delays. A specialist facility with capacity for approximately 120 students is only partially equipped for training of hospitality staff; and licensed by MoHESR.

The Ministry of Communications in Iraq offers training through its Higher Institute for Communications and Post, but insufficient information was provided for inclusion in the skills analysis. Likewise, the Ministry of Agriculture has many training centres (78 not including KR-I) all over the country offering professional development to farmers and ministry staff, but no detailed information about these was accessible within the research period. The Ministry of Transport in Iraq also has three training centres, which are reportedly partially operational, but no detailed information was available for these.

Therefore, the analysis of skills supply included programmes relevant to the selected economic sectors delivered by the following provider types:

- All public vocational preparatory schools in Iraq and KR-I
- MoLSA training centres in Iraq and KR-I
- All public technical institutes in Iraq and KR-I
- All public technical colleges in Iraq and KR-I
- Travel and tourism institutes and training centres in Iraq and KR-I (Ministry of Culture, and Ministry of Municipality and Tourism).

1.4 Methodologies of the project

1.4.1 Methodology overview

Four streams of information inform the final Sector Skills Analysis (SSA):

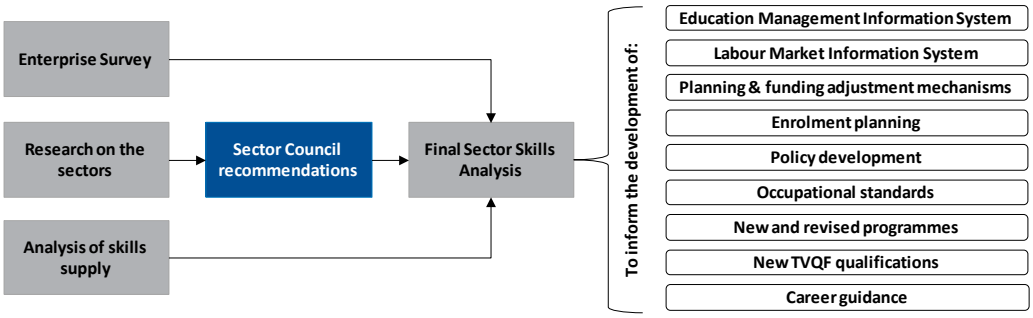
- Desk-based research on the seven ISIC economic sectors and the informal sector

- Synthesis and augmentation of the desk-based research by the eight pilot Sector Councils
- Analysis of skills supply
- Results of the Enterprise Survey (not conducted for the informal sector).

The sources of primary data for the analysis include (i) the Enterprise Survey, (ii) 32 interviews with ministries and leading private sector organisations, and (iii) eight pilot Sector Council meetings. The secondary data sources for the background research included existing documents (strategies, plans, reviews, policies, laws), and international and national websites and data sets.

The purpose of the SSA is to inform education policy and priorities, especially curriculum development for TVET and the development of training and opportunities for unskilled and/or unemployed people; and to build the capacity of stakeholders to analyse and respond to labour market demand. Figure 5 shows the multiple potential uses of the information.

Figure 5: Overview of the Sector Skills Analysis (SSA) Project



1.4.2 Desk-based research methodology

Preliminary analysis of the economic sectors of Iraq and KR-I commenced during the inception period, for the immediate purposes of selecting the sample of economic sectors and governorates for the Enterprise Survey.

After final agreement on the selected sectors, each of the selected economic sectors was researched and analysed, using the PESTLE framework (Political, Economic, Social, Technological, Legal and Environmental) as a tool for analysing, holistically, each sector from different perspectives.

1.4.3 Mapping the supply and demand systems

Background research included mapping the institutional landscape within which economic development and education and training are planned, financed, regulated and delivered.

Mapping the supply and demand systems includes analysing the mandates of, and the relationships between, organisations providing related and complementary services in the broad fields of the labour market and the TVET system.

These stakeholder organisations are the main beneficiaries of this Project, since the Project aims to influence policy and planning in these two fields, and any developments resulting from the TVET Reform Programme will be implemented by these organisations.

Therefore, it was important to have a detailed understanding of the component parts of the systems: how they work; how information flows between them; the location and processes of decision making, implementation and monitoring and evaluation; the main outputs and outcomes; and any identified constraints or issues of concern. Sources of information for mapping included both desk-based research and interviews.

1.4.4 Interview methodology

The ministries relevant to all the selected economic sectors in Iraq and KR-I were involved in the research through participation in interviews, submission of documents, and participation in the pilot Sector Council workshops. The other main public sector participants included MoLSA, MoHESR, and MoE.

32 interviews were conducted in Baghdad and Erbil between January and February 2017 and some additional interviews were conducted in Erbil in April 2017. In some cases, formal data requests were sent to the interview participants in advance, and in some cases written requests followed the interviews. The format of the interviews varied according to the availability of participants and prior access to relevant information. In most cases interviews took between 1 and 2 hours.

1.4.5 Sector Council methodology

Both the Enterprise Survey and the pilot Sector Council meetings are mechanisms for collecting information about employer demand and increasing employer participation in TVET. The qualitative data collected from the pilot Sector Councils complements the quantitative data collected in the Enterprise Survey.

Eight pilot Sector Councils were established to represent the public and private leadership of each of the selected seven economic sectors and the informal sector. Private sector representatives included the Chamber of Commerce and Industry and relevant professional federations, unions and associations.

The rationale for including an Informal Sector Council includes these considerations:

- The Enterprise Survey of employers includes mainly formal sector businesses
- Skills development should acknowledge the skills needed for informal economic development opportunities and transition to the formal sector
- The informal sector includes traditional forms of informal skills training such as informal apprenticeships which can be further developed
- Women and vulnerable groups like unemployed youth, displaced people and refugees work in the informal sector
- Entrepreneurship initiatives often start on a small scale in the informal sector
- Green skills and sustainable development practices need to penetrate all of society and all workplaces
- The informal sector employs a substantial proportion of the population.

Sector representative bodies are a necessary element of a demand-led TVET system. The system can only be 'demand-led' if the sectors have organised leadership that is well informed and able to advise on the skills needed by the sector.

Formal establishment of permanent Sector Councils will take time as the concept needs to be widely discussed and agreed upon, and policy and legislative implications need to be considered. Thus, for the purposes of this project, 'pilot' Sector Councils were constituted to act as 'think tanks' for the sector; to provide a forum for strategic discussion about sector growth and development; to identify challenges and opportunities; and to develop goals to address challenges and exploit the opportunities and achieve its goals.

The eight pilot Sector Councils met between April and July 2017, and played an important role in validating, augmenting and interpreting the findings of the desk-based research; and providing explanations and illustrative stories behind the statistical information presented.

Each two-day workshop (with slight variation for the Informal Sector) consisted of a structured series of progressive small group activities to explore the issues of the sector and identify the prioritised skills needs. Five worksheets were designed to guide the deliberations of the small groups and capture brief written responses from the small group activities. The structured activities were as follows:

- **Activity 1:** Define 3-4 main challenges that impact the growth and development of the sector (a problem statement)
- **Activity 2:** Identify new opportunities and untapped potential to be explored
- **Activity 3:** Formulate goal statements to address the challenges and/or seize the identified opportunities for the sector
- **Activity 4:** Identify occupations needed for the sector to address challenges, seize opportunities and achieve goals
- **Activity 5:** What should the training for the identified occupation look like?

Analysis of the written and verbal outputs of each meeting triangulated what the participants wrote down, what they presented and responded in small groups, and any other response or critique of the participants.

1.4.6 Skills supply methodology

The data supplied by MoE, MoHESR and MoLSA, and data accessed from CSO, have significant weaknesses in terms of sufficiency and adequacy for estimating the supply of skills to each economic sector in this study.

The minimum information required for a results-oriented evaluation of a TVET system generally includes enrolment by level and programme, retention, progression, completion, success, graduation and employment rates of graduates. Ideally, this information would be routinely collected by all providers and uploaded to a central TVET Management Information System (MIS). However, in Iraq, routine, standardised, continuously updated and centrally managed TVET data collection does not routinely occur, nor is there any systematic use of skills supply data to inform enrolment planning.

Weakness in the data available for estimating the skills supply included:

- The data obtained from various sources was a mix of enrolment numbers and graduate numbers. It included these variations for each specialisation and programme:
    - Enrolment in each year of a three-year programme.
    - New enrolment in the first stage of a programme each year for a 3-4-year period.
    - New enrolment for two years (2014 and 2016) over a 3-year period.
    - Graduates over a period of three years.
- In some cases, two spreadsheets provided at the same time, by the same organisation, were contradictory in some respects (e.g. different totals), which raised more questions than answers

- Spreadsheets provided by ministries included adding and formula errors (e.g. vertical summation contradicted horizontal summation). Tables provided in Word format were especially prone to this kind of error
- In some cases, much data processing effort has been devoted to inputs (e.g. number of workshops held, number of teaching and training staff, and other matters which are of exclusive interest to supply management) or issues of low significance, with little or no attention given to investigating outcomes and issues relevant to the labour market
- There appears to be no indicators or benchmarks to guide (i) what units of analysis and data are required to evaluate the quality and effectiveness of skills supply and (ii) how to recognise data which are causes for concern or require further analysis, and which data are within an agreed normal range, and do not require further analysis.

Because of the limitations of the data, it was decided that both average student cohort size and average graduate cohort size by specialisation will be used as proxies for skills supply. This means that the estimation of skills supply can only be regarded as a rough guide.

Generally, student cohort size is larger than graduate cohort size, because some students do not graduate (i.e., they fail and/or drop out). There is not enough information available to estimate a drop out-rate to apply to student cohorts at all levels. The only reported drop-out rate (5% reported by CSO in 2015) is for vocational (school) education. Longer programmes at non-compulsory levels generally have much higher drop-out rates than short or compulsory school programmes. With no scientific basis for estimating drop out and failure rates, no adjustments could be made to the average cohort size to allow for failure and drop out.

It is possible that an overestimated proxy for supply (average cohort size) is somewhat balanced out by (i) the absence of any data in this study for NGO training (mainly for refugees and IDPs) or private providers (very few), and (ii) the exclusion of informal apprenticeship training, which is unrecorded but may be substantial, especially in fields like construction. This is, of course, an assumption without any evidence.

Calculating average cohort size is valid when enrolment seems steady (when the difference from one year to another is negligible), but not when there is a significant difference. A dramatic difference suggests either (i) a new or discontinued programme or (ii) some kind of external shock, such as temporary closure of a specialist institution due to the ISIL/Da'esh incursion. In the few cases where averaging does not seem to give a correct reflection of the skills supply, this is noted in the Chapter 4 tables by an asterisk (*).

In some parts of Iraq, colleges and institutes have closed. This appears to have inflated enrolment in other colleges and institutions (with big differences between 2014-2015 and 2015-2016 cohorts). Information provided by the MoHESR was incomplete for 2015-2016. In many cases, only one enrolment figure is available. Therefore, for all Technical Foundation University programmes, the 'cohort size' is the last known enrolment (see Chapter 4 tables, noted by an asterisk*).

As can be seen from the discussion above, at best the figures provided in this report for skills supply are indicative. However, since there has been no previous study on this scale to quantify the supply of skills to the specific sectors of the economy, this assessment can provide a benchmark estimation based on the best evidence available. For the first time in this study the unit of analysis is not the institution or the governorate which *supplies* the skills, but the economic sector which *demands* the skills.

1.4.7 Enterprise Survey methodology

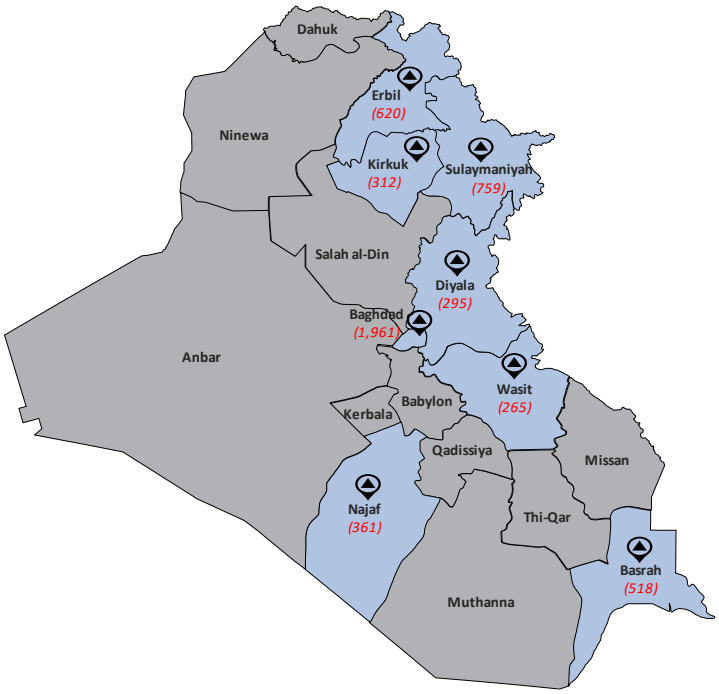
The survey was carried out so that it can inform reforms to the TVET system i.e. to make it more demand driven. In view of this, firms were surveyed (excluding for the informal sector) regarding the number and kind of employees at present, with consideration of labour requirements for the future. The goal of the survey was to enable a view into the future skill needs of Iraq's economy so that relevant capacity could be built to fulfil such needs, in terms of offering the relevant TVET training programmes at TVET institutions.

Sample design

The sample was chosen from the *CSO (Central Statistical Organization) Business Register*. Established in 2009, the Register contains all firms in Iraq found during a census survey, numbering 490,080 across the 18 governorates of Iraq and KR-I. It is developed at the establishment level, meaning that all units of a firm (the headquarters as well as all subsidiaries) are identified within the Register ('population frame'). This is presented in Appendix 1.

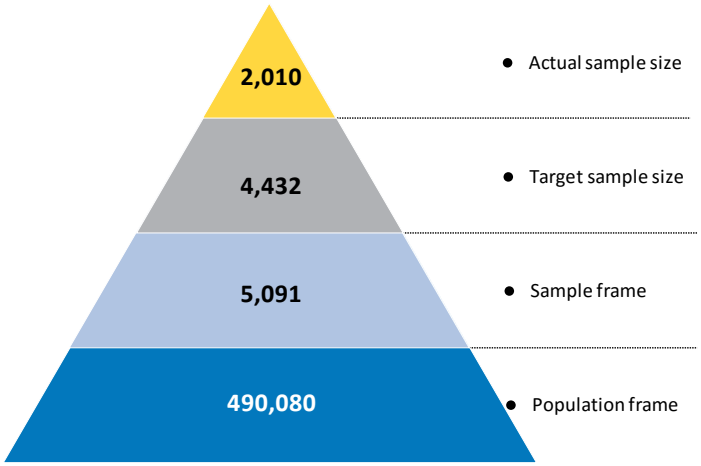
The sample taken aimed to assess the needs of firms, with 10 or more employees, within the 8 selected governorates. From the Register ('population frame') there are 5,091 such firms ('sample frame') in total, which can be seen below in Figure 6. A complete breakdown of the sample frame can be found in Appendix 2.

Figure 6: Sample frame for the Enterprise Survey



The Register was stratified by both 27 subsectors (across the seven ISIC selected economic sectors) and the 8 selected governorates. A simple random sampling method (each firm equally likely to be selected) was used for each of the 216 strata (27x8) with the goal of minimizing the margin of errors within each stratum. The result was a target sample size of 4,432 firms of which 2,010 were surveyed ('actual sample size'). More details on the sample sizes are provided in Figure 7 and in the following sections.

Figure 7: Enterprise Survey population and sample frames & target and sample sizes



Sample size

The determination of the sample size depended on the:

- Types of questions being asked (i.e. population parameter of interest)
- Degree of desired confidence and precision of final estimates
- Anticipated response rate.

In this survey, the questions of interest had 3 possible responses (multinomial response). For example, asking a company how important (not important/somewhat/very) is having relevant technical skills is in the occupation. In this case, the parameters of interest are the proportion of firms that place importance on technical skills (not/somewhat/very). Therefore, the target sample size should be calculated to ensure that these proportions are accurately estimated by the sample.

As is typical, a 5% margin of error, and 95% confidence level were selected. This means that the sample size was calculated so that the estimated proportions are within 5% of the true proportions 95% of the time. That is, we want the 95% confidence interval for the proportions of each response to have a width at most of 0.05 (5%). These confidence intervals are calculated as the proportion plus or minus the margin of error:

$$p \pm e,$$

where the margin of error is dependent on the sample size.

For example, if 'very important' was answered to the above question 80% of the time, then we would like a large enough sample size, so that we would be 95% sure that the true proportion of firms who value technical skills as 'very important' is between 75% and 85%.

The response rate was estimated to be 95%, indicating that 95% of firms sampled were expected to answer the survey questionnaire.

As mentioned in the preceding section, the sample was selected to allow for analyses within each stratum. Therefore, required sample sizes were calculated for each stratum, with the total target sample size being the sum of the stratum sample sizes. The benefits of sampling this way are two-fold. Firstly, this approach ensures that each stratum is represented sufficiently to allow accurate analyses at that stratum level. Secondly, by minimizing the margin of errors within each stratum, the overall margin of error of the survey is greatly reduced.

Based on the above assumptions, the sample size within each strata was calculated as:

$$n_h = \left(\frac{z^2 p(1-p)}{e^2 + \frac{z^2 p(1-p)}{N_h}} \right) x \frac{1}{1 - NR}$$

Where:

n_h : the required sample size in stratum h

p : the proportion of firms that select a particular response within a given question

z : the value (z-score) associated with a 95% confidence level (z = 1.96)

e : the margin of error

N_h: the number of firms in the CSO Business Register in stratum h

NR: the anticipated non-response rate

For example, for the telecommunication firms in Baghdad, there are N_h= 120 firms in the Register of size 10 or more employees. To find the sample size required for a margin of error of 5% (e = **0.05**) with a 95% confidence level (z=**1.96**) and 5% non-response rate (NR =**0.05**) we need only to determine a value of p to use in the above formula. Often, previous surveys or pilot data are used to determine an approximate value for p. Since no pilot data exists for a survey of this kind, we want to use a value of p that will result in a conservative value of n_h. In this case, n_h in the formula above is largest when p =**0.5**. Therefore, we use p =**0.5** to ensure that the value of n_h will be sufficiently large to estimate any true value of p .Inserting all these values into the above formula gives a stratum sample size of n_h=**97**. A similar calculation was done for all 216 strata. The result was a total target sample size of 4,432 to ensure the 5% margin of error for each stratum. The complete breakdown of the target sample size can be found in Appendix 3.

In the above formula, the calculated target sample size applies to estimating the proportion of a single response to a question, i.e., the possible responses are treated as binary for the purpose of calculation (the single response/not). For example, if we are interested in the needed sample size to estimate the proportion of firms who answered 'very important' to the 'technical skills' question, then for the purpose of the calculation, the possible responses are treated as 'very important' and 'any other response'. As mentioned above, the case that requires the largest sample size is when the proportion of firms answering 'very important' is 50% (p = 0.5). Therefore, p = 0.5 is used in the above formula to determine the sample size needed to accurately estimate the proportion of firms answering 'very important'. To determine the sample size needed to estimate the 'somewhat important' and 'not important' categories an analogous approach is taken. Since we use p = 0.5 in all 3 cases, we get the same result from the above formula. This means that the same value for n_h is sufficient to estimate each of the 3 proportions accurately.

Since in the above we set each of the 3 proportions to be 50% (p= 0.5) for the purpose of the calculations, we are ignoring the fact that the 3 proportions must sum to 100%. That is, we are treating the 3 proportions as independent when in reality they depend on each other. Ignoring this dependency is not of concern as the calculation leads to having a sufficient sample to ensure each question is answered to within the specified margin of error independently of one another.

Alternative methods that properly account for this dependence, such as those in Thompson (1987)[4], can be used to estimate the sample size. For reference, using this approach the total sample size for the stratum margin of errors to be 5% is 4,457. For this survey, the calculated total size of 4,432 (as outlined above) was used for the sample size as it is sufficient to ensure each question is answered to within the 5% margin of error within each stratum.

As discussed below, these sample sizes proved to be challenging to obtain, and in some strata replacement methods were required which still allowed for the analyses undertaken to find significant results. In total, 2,010 firms with 10 or more employees were surveyed (see Appendix 4 for breakdown). The fact that the Register has not been updated since 2009 makes it possible that these 2,010 firms represent a greater proportion of the population.

Design of the questionnaire

The survey explored information about the employers' current workforce and workforce management practices. In particular, it collected information about current and future employment opportunities; about occupations in employment; about the skills of current and prospective employees, and the hiring and service training practices of the firms (as illustrated in Figure 8).

Figure 8: Enterprise Survey lines of enquiry

[4] Thompson, S. "Sample Size for Estimating Multinomial Proportions," February 1987

Implementation of the survey

The Register is typically updated annually for medium (11-29 employees) and large (30+ employees) firms. However, given recent turmoil in Iraq with the dual crisis of decreased oil prices and the ISIL/Da'esh conflict, the Register has only been updated for large firms in the manufacturing sector since 2009. As a result, all other sectors in the Register were out of date, and many of the firms listed had ceased operations. Therefore, many of the initial firms randomly selected to be surveyed were no longer operational and replacement firms were identified by CSO regional offices. These replacements were selected from the same stratum in such a way as to ensure similar characteristics to the no longer operational firms.

In some strata, the CSO regional office could not identify a sufficient number of firms with 10 or more employees. In these cases, the threshold was lowered, first to 7 or more, and in some cases to 5 or more employees. This replacement was done in an attempt to maintain as closely as possible the original sample size, and stratum allocation.

Despite this replacement strategy, the final actual sample taken contains 2,010 firms with 10 or more employees, and an additional 643 firms with 5-9 employees (totalling 2,653). Since the original sample was chosen from the firms of 10 or more employees, the primary analyses focus on this group only. This allows for the most accurate representation of the target population, and most accurate calculation of the sample weights.

Although not included in the primary analysis, the 643 firms of size 5-9 have been analysed as an independent subset as to make best use of the data. These analyses are presented in Chapter 5.

Survey quality assessment

A subsample of the firms were interviewed and audit analysis was done to ensure that interviews had been completed. Information was also collected from interviewed firms selected for the monitoring exercise to evaluate the quality of the interviews and the understanding of the objectives of the survey and its usefulness. The proportion of firms to be interviewed was targeted at 10%.

As noted in Table 2 below, calls were made to a total of 583 of the total records reaching 448 which corresponds to a sample size of 18% of the total. Of the 448 contacted, 400 of the firms surveyed (89% of the sample) verified that interaction between a CSO/KRSO surveyor and a company representative took place.

Table 2: Enterprise Survey lines of enquiry

	Iraq	KR-I	Total
Total firms surveyed	1,787	866	**2,653**
Total calls made	412	171	**583**
Contact made	295	153	**448**
% Contacted	16.5%	17.7%	**16.9%**
Verified	260	140	**400**
% Verified	88%	92%	**89%**
Inconclusive survey respondents	34	14	**48**

Definition of Terms

- *Contact made: All respondents that were reached by phone. This group does not include wrong numbers where an individual was reached, or calls where a person was reached but language precluded identification.*
- *Verified: All respondents that were reached by phone and with whom an interview by a CSO or KRSO surveyor was determined to have been made.*
- *Inconclusive: All respondents that were reached by phone but whose participation in the survey could not be verified.*

As one would expect, the time spent on the survey varied between interviewers. Using time spent on individual survey interviews as a primary indicator of whether a valid survey was performed, the results show that more than 70% of respondents indicated that the interviewer spent at least 30 minutes doing the interview. This 30-minute benchmark was applied as the minimum time required based on the training conducted for both CSO and KRSO.

As a part of the planned monitoring process, field personnel were instructed to submit reports. However, some of the field personnel did not respect the reporting schedule. In some cases, information was not transmitted until the end of the survey collection period, eliminating the possibility of corrections and feedback to weaker interviewers.

While the results support the conclusion that the survey activity was completed successfully, based on the information provided by respondents, there are indications that the quality of survey results varied from interviewer to interviewer. Some surveys did not meet the benchmark minimum time needed, and interviewers may not have effectively communicated with the company representatives. This is further supported by the responses from several respondents indicating that they did not understand the reason for the survey.

Analysis of the data

From the initially planned sample of 4,432 firms, 2,010 (45.4%) completed the entire survey questionnaire. Although this response rate is lower than hoped, the fact that the Register has not been updated since 2009 makes the true population size difficult to estimate. Therefore, it is possible that these 2,010 firms represent a greater proportion of the population.

Margin of error. The non-response rate and degree of replacement varied by governorate and subsector. Therefore, the margin of errors within the strata can be expected to vary. For example, in the manufacture of food products subsector in Baghdad, the calculated sample size (based on 5% non-response rate) for a margin of error of 5% was to try sample 144 of the 211 total firms in this stratum. In the actual sample, only 81 were obtained (56.2%). Therefore the true non-response rate for this stratum was 44%. We use the following formula to compute the margin of error in each of these situations:

$$e = \left(\frac{z\sqrt{p(1-p)}}{\sqrt{n}}\right)\sqrt{\left(1-\frac{n}{N}\right)}$$

where $\boldsymbol{e}$ is the margin of error, $\boldsymbol{z}$ = 1.96 (for a 95% confidence level), n =0.5 is the assumed proportion of a specific answer (as in the 'Sample size' section above), $\boldsymbol{p}$ is the sample size, and N is the population sample size.

In the above example, if we sample the full 144, the margin of error is 4.6%. If the non-response rate was 5% (as originally assumed) then the sample size is 137 and the margin of error is 5%. Finally, if the sample size is 81 (actual), then the non-response rate is 43.8% and the margin of error is 8.5%.

The differences in the above margin of errors result in differences in the width of the confidence intervals for the survey estimates. Specifically, holding everything else fixed, the confidence intervals will be (in this case) 8.5%/5% = 1.7 times wider. For example, if 20% ($\boldsymbol{p}$=0.2) of firms answered 'very important' to technical skills question then in the above example with a sample size of 137 the 95% confidence interval would be [16%, 24%]. With the increased non-response rate (and therefore a higher margin of error) the confidence interval would be [13%, 27%].

Most results are available at the subsector and governorate level, however, given the small number of firms in some strata, it is important to verify the response rate for these strata before presenting the results. In all governorates, there was no responses to the survey in two subsectors (32 – Other manufacturing and 62 – Computer programming, consultancy and related activities). The target sample size was small in each of these two subsectors, which helps explain the no response rate. These subsectors are not included in the results.

In the firms that did respond, missing data was not a problem, and therefore imputation methods were not required.

Weighting. In a given sample, it is preferred that it represents the true population with respect to all variables under consideration in the survey. For example, if the sample contained 60% males in telecommunication firms and the true population contains 70% for a given stratum, population inferences can therefore only be made by appropriate weighting.

Sample weights for each stratum were calculated based on the Register. The strata weights were based on the inverse probability of selection for a given company in that stratum. That is, the weights were calculated as:

$$W_{h*} = N_h / n_h$$

where $\boldsymbol{N_h}$ is the number of firms in the Register of size greater than 10 for stratum h and $\boldsymbol{n_h}$ is the size of the sample of firms of size greater than 10 drawn from stratum h.

As non-response may cause some groups to be over- or under-represented, these weights were further adjusted to obtain final strata weights of:

$$W_h = W_{h*} \times \frac{n_h}{n_{hr}}$$

where n_{hr} is the number of respondents in stratum h.

For example, according to the Register, in Baghdad, there are 120 telecommunication firms of at least 10 employees of which 97 were selected to be sampled. Of these 97, 23 responded and were interviewed for the survey. Therefore, the weight for this stratum was calculated as:

$$\left(\frac{120}{97}\right) \times \left(\frac{97}{23}\right) = 5.22$$

Across all strata the average sample weight was 2.96.

The above weights are based on the Register from 2009 and are therefore subject to bias if the true population has changed significantly since then. Given this potential problem, the survey data is analysed both with and without weighting and the primary report includes only the unweighted data, as this is deemed less likely to introduce significant bias. As a result, inferencing is limited because of cases where, for example, there could be a high range of variation in responses and reliable conclusions cannot be drawn. Some cases include:

- Cross strata (e.g. technical workers are paid more in Governorate A than Governorate B)
- Aggregation across strata (e.g. how important are technical skills in the construction sector? That is, aggregation across all the construction subsectors).

For the firms of size 5-9, sample weights should be used with extreme care as the population strata sizes in the Register are quite large, and the sample sizes are quite small. Using sampling weights as outlined above could lead to situations in which 1-2 sampled firms are weighted to represent 100 or more firms in that stratum. Given these concerns, weights are not computed for the size 5-9 firms and only unweighted data is displayed.

Limitations and potential bias. There are several limitations in the interpretation of the survey results, many of which are a result of the lack of up to date population of firms to draw the sample from.

As previously mentioned, the Register was last updated in 2009 for small- and medium-sized and non-manufacturing large firms. Given the change in economic and societal conditions in Iraq during this time, it is unlikely that the Register provides an accurate representation of the population of firms in the 8 selected governorates. This potential weakness was identified prior to the survey, but given that the Register was the only national reference of firms available, it was determined that it was the best possible reference population.

This discrepancy between the Register and the true population of firms on the ground led to many cases where those firms selected for the sample were no longer operating. Therefore, CSO used the replacement strategy, outlined previously in Chapter 1, to attempt to maintain the needed stratum sizes. Since the firms selected as replacements were not from a national register and were the result of field knowledge from local CSO offices, there is the potential that these replacement firms do not constitute a random sample of the population. Therefore, depending on the true populations of the stratum, this replacement strategy may introduce bias towards those firms known to CSO and possibly larger firms.

Furthermore, in cases where there were insufficient number of firms of size 10 or more the inclusion criteria were reduced to include firms of 7 or more employees, and in some stratum 5 or more employees. There is a total of 643 such firms. Given that the sample was created based on those firms in the Register with 10 or more employees, these firms of smaller size are not representative of the population sampled from. Therefore, these 643 firms of size less than 10 have not be used in the primary analyses referring to firms of larger size.

In principle, these 643 smaller firms could be used to attempt to make inference about the population of firms sized 5-9, although this has several limitations. Most importantly, this sample size is too small to accurately represent the 12,952 firms of size 5-9 in the Register at the subsector level in each governorate.

Moreover, the selection of these 643 firms was non-randomly drawn from the 12,952 firms in the Register and their selection was highly dependent on stratum (as this replacement strategy was only used in strata where not enough larger firms were available). Nonetheless, these 643 firms may be used to provide a snapshot of possible needs of smaller firms, and the data resulting from them are presented in Chapter 5. No strong conclusions should be drawn from them, but the data may help inform future areas of research.

Despite these replacement strategies, the overall sample size (2,010 firms of 10 or employees, 643 of size 5-9) is still potentially low for making inference at the strata level. Therefore, the margin of errors within the strata may be higher than the pre-specified 5%. These margin of errors within the strata depend on both the number of firms sampled within strata, and the variability in the answers given and therefore are difficult to predict prior to analysis. In general, those strata where the sample sizes are lower will likely yield higher margin of errors.

Finally, as mentioned previously, the discrepancy between the Register and the true number of firms in operation makes the calculation of sampling weights problematic. As outlined in Chapter 1, the strata weights are based primarily on the probability of a firm being sampled from the Register. Therefore, since the Register is out of date and some firms were sampled (via replacement) that were not part of the 2009 Register, it is likely that the sampling weights are not calibrated to the true population. Nonetheless, they constitute the best available given the available information, but any analysis involving them should be interpreted with care.

Chapter 2: Introduction to the context for skills development

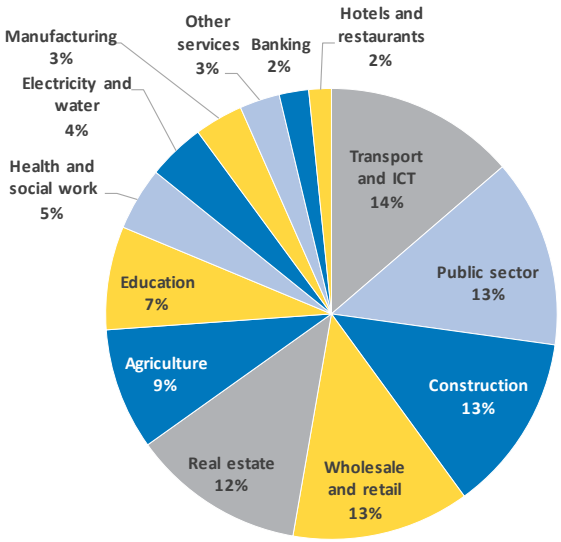
2.1 Overview of the economic sectors in Iraq and KR-I

Within the Middle East region, Iraq is a medium-sized economy, with a GDP of 574 billion USD in 2015, which is less than a third of the GDP of Turkey or Saudi Arabia and around half of Iran's or Egypt's, but much larger than the GDP of Jordan or Lebanon. The Iraqi population of around 38 million represents less than half of the population of Egypt, Iran or Turkey, similar to that of Saudi Arabia but much larger than Jordan or Lebanon. Standards of living are lower than the MENA average, with an income per capita of 15,780 USD in 2015, much lower than that of Gulf States, behind that of Turkey or Iran, but higher than Lebanon, Egypt or Jordan.

Business conditions are very low compared to the region, with Iraq ranking 165th, much lower than Gulf States or Turkey (69th), Jordan (118th), Iran (120th), Egypt (122nd) or Lebanon (126th). Iraq receives significant FDI, mainly in the oil sector, comparable in the past five years to that of Iran or Egypt, lower than that of Turkey or Gulf States but higher than Jordan or Lebanon. Life expectancy, at around 70 years, and literacy at around 80%, are far below those of neighbouring countries.

Like many large oil-exporters, the Iraqi economy is not very diversified and the government plays a key role in the economy. Indeed, oil activities represented between 45 and 55% of Iraqi GDP between 2010 and 2014, while oil accounts for over 90% of government revenues. In 2014, the largest non-oil economic sectors are transport, storage, information and communication (14% of non-oil GDP), the public sector (13%), construction (13%), wholesale and retail (13%) and real estate (12%).

Figure 9: Contribution to Iraqi GDP (non-oil economic sectors), 2014



The public sector accounts for over 60% of Iraq's production, both because of the size of public administration and of its control of large activities: oil, mines, electricity and water. In addition, two-thirds of the banking sector and one-third of the manufacturing sector are run by the state, and it finances most of the construction projects.

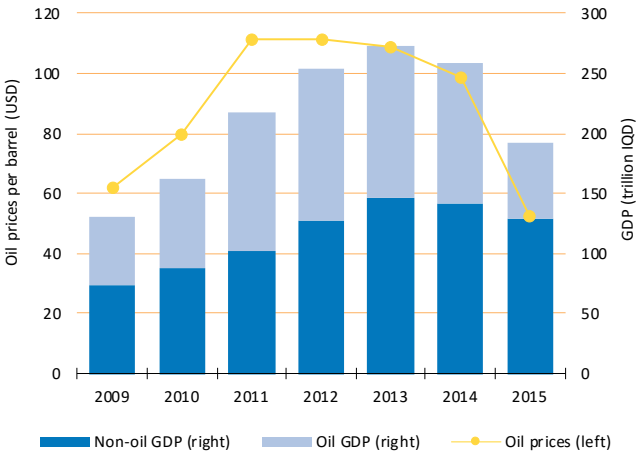
The government also has a monopoly on the purchase, sale and import of several agricultural and industrial goods, and it subsidizes consumption and investment of many goods.

KR-I represents around 11% of Iraqi non-oil GDP. The public sector is as important as in the rest of the country, representing 28% of the region's non-oil GDP, and construction accounts for nearly 20%. In parallel, the private sector plays a larger role in other business sectors.

Iraq relies very much on imports, importing over 15% of its GDP in most recent years. Iraq's main imports are machinery and mechanics, as well as electrical and electronic equipment, both accounting for 10-12% of total imports. China, Turkey and the UAE are its main suppliers. On the other hand, KR-I was responsible for 40% of Iraqi imports in 2014, purchasing mainly from Turkish, Iranian, Chinese and American suppliers.

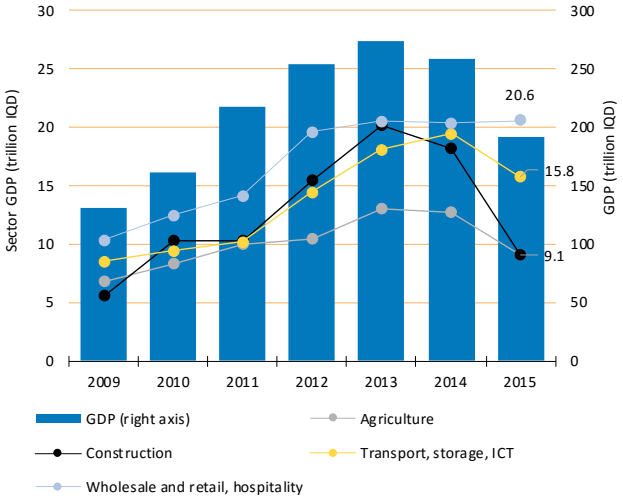
2014 marked a turning point. The ISIL/Da'esh insurgency in mid-2014 caused significant economic damage. Trade routes were closed, economic activities in the northern regions were held hostage, most notably the agricultural production of the largest Iraqi crops, wheat and barley, which severely declined. Military expenditure also increased substantially. Simultaneously, in 2014, oil prices were halved on international markets, drying up the government's main source of revenues and foreign currency. As a result, the government fiscal deficit more than doubled, from 5.6% of Iraqi GDP in 2014 to 13.7% in 2015. Meanwhile, the economic and political turmoil drove away tourism and foreign investment, which fell by around 30%.

Figure 10: Oil GDP, non-oil GDP and oil prices, 2009-2015



Iraq's real GDP fell modestly in 2014. In 2015, it grew by 2.4% because of a significant increase in oil production but the sharp fall in the value of that production caused Iraqi nominal GDP to fall by around 30% in 2015, triggering a severe economic recession across economic activities. Sectors in ISIL-held areas were more severely hit, as were sectors that relied extensively on public financing such as construction. Indeed, the sector lost half of its value in 2015, while other more resilient sectors, such as wholesale and retail, fared better. In 2016, growth resumed, with an estimated 11% increase in real GDP.

Figure 11: Selected sectorial GDP, 2009-2015



Upon normalization of the political situation, the country still faces a number of important challenges including economic diversification away from oil-related activities, fighting corruption, training and integrating youth and women in the labour force, building institutional capacity and reducing the size of the informal sector.

2.2 Overview of the demographics and the labour market in Iraq and KR-I

Table 3: Key demographic and labour market statistics

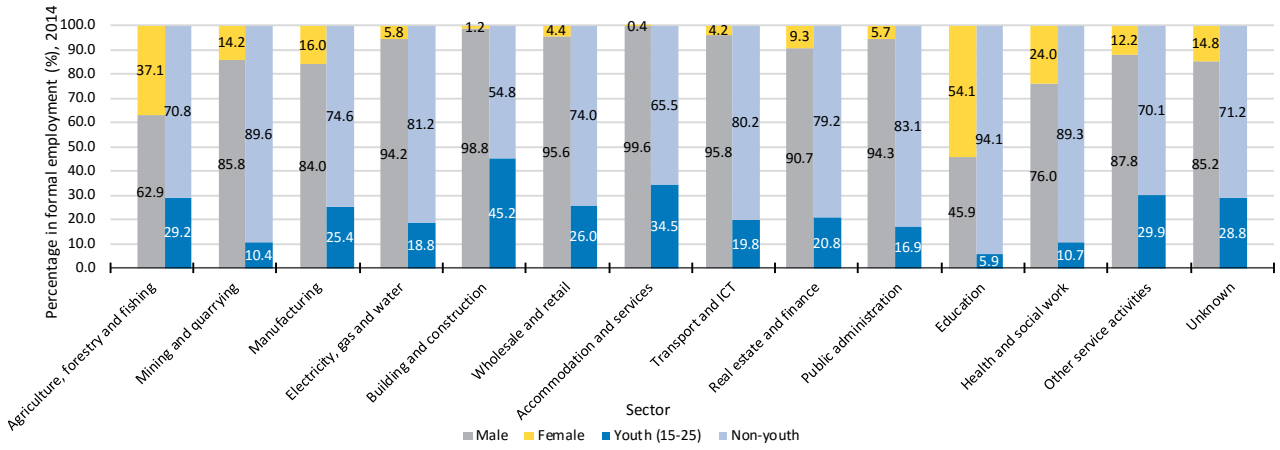
Population	• Estimated at approximately 38 million in 2016[5] • Growth rate estimated at 3.3%[6]
Age of the population	• Estimated 40.2% are under 15 years • Only 3.2% are over 65[7]
Gender of the population	Approximately 49% are female
Education level of the population	• In 2011 38% had no education[8] • Approximately 50% had primary and intermediate schooling. 11% had a diploma or above
Location of the population	Approximately 70% urban and 30% rural[9]
Working age population	21.5 million[10]
Economically active and inactive	• 42% of working age population was economically active in 2011[11] • National labour force: Estimated at 8 million (2011) to 10.5 million (2017)[12] • In 2014 76.2% of the economically inactive were female, 23.8% were male youth (15-25) represented 42.2% of the economically inactive[13] • In 2014 the formally employed labour force consists of 86.1% males, 13.9% females (12% in KR-I in 2012[14]). Youth (15-25) represented 24.5% of the formally employed[15]
Unemployment	• In 2014 67% of unemployed were males and 33% were females. 51.7% of unemployed were youth[16] • **National:** 34.1% of 15-19 year olds available for and actively seeking work are unemployed[17] • **KR-I:** in 2012 the unemployment rate for female youth was exceptionally high, at 48.3%, compared to 13.4% for young men[18]
Public Sector employment	• **National**: the government provides 40% of all jobs[19] and employs 60% of female workers • **KR-I:** in 2014 the public sector employed 80% of all employed women and 45% of all employed men[20]
Private sector employment	60-70% of jobs in formal and informal private sector employment
Oil employment	Oil accounts for 32% of GDP[21] and over 90% of government revenue, but only 1% of employment[22]

The population of Iraq is approximately 38 million, of which 70% live in urban areas. Around 40% of the population are children under 15 years, and the population is growing at a rate of 3.3% on average. Less than half of the working age population is economically active (i.e. working or looking for work).

[5] CSO
[6] UN Statistics Division
[7] CSO
[8] CSO; UN
[9] CSO
[10] CSO
[11] UN
[12] ILO
[13] CSO
[14] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG (2014)*
[15] CSO
[16] CSO
[17] CSO
[18] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG (2014)*
[19] UNDP
[20] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG (2014)*
[21] CSO
[22] UNDP

Figure 12 shows employment of male, female and youth workers by economic sector. The education and agriculture sectors have the biggest proportion of women in their workforce, followed by health & social work. Traditional male domains (such as construction) and public facing sectors such as accommodation & services, and wholesale & retail employ a very small proportion of women. Building & construction, and accommodation & services employ the largest proportion of youth (15-25), followed by agriculture, wholesale & retail, and other service services.

Figure 12: Formal employment in Iraq by economic sector and worker profile, 2014



Source: CSO

2.2.1 Public sector employment

For most MENA countries, including Iraq, the public sector is the largest formal employer. Typically, in these countries, the civil service has grown disproportionately large as a result of a social contract in the 1970s and 80s which effectively offered employment to all university and TVET graduates. Even though the public sector is no longer able to absorb growing numbers of these graduates, the public sector is by far the most preferred employer and almost all formal employment is still in the public sector. In some MENA countries (e.g. Jordan), there is a waiting list for public sector positions, and the informal sector is seen as a transition zone where young people wait for public sector administration jobs to be offered. In both Iraq and KR-I there are now measures in place to reduce the size of the public sector.

According to a Save the Children Assessment[23], the public sector in KR-I employs a larger percentage of the workforce, and a much larger proportion of working women than the national average shown in Table 3. Reportedly more than half of all employed people in KR-I work for the government. This number includes people who work directly for the government, a small number who work for state-owned enterprises, and a small number who work in mixed public-private enterprises. According to KRSO, approximately 80% of all employed women and 45% of all employed men work for the government.

The planned downsizing of the public sector in Iraq and KR-I has implications for the informal sector, since the private sector remains underdeveloped, and primarily informal in its operation. The private sector in Iraq consists largely of informal trade. The formal private sector is not ready to absorb the excess of the public sector as well as an estimated million new entrants to the labour market every year.

[23] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG* (2014)

2.2.2 Women in employment

87% of women in Iraq are economically inactive (not working or looking for work) and 78% are housewives.[24] In KR-I, only 12% of women are economically active. Of those who are economically active (working or looking for work) in Iraq, 13% are unemployed. In 2014 only 13.9% of all citizens who were formally employed were women.

Traditional societal norms cast women as mothers.[25] The working hours of other types of work, that might keep them out of the house after dark, or roles that require them to work with males not in their families, are barriers that contribute to females in Iraq and KR-I not working. However, the UN reported a change in attitudes, noting that 66% of youth, compared to 42% of older people, support women's right to work outside the home.[26] Nationally 60% of all female workers are employed by the government. In KR-I this number is reportedly closer to 80%. In 2011 only 2% of all private sector workers were women.[27] Female unemployment is reportedly lower in rural areas due to high female employment in agriculture.

2.2.3 Foreign workers in employment

Although, according to the Labour Law (under revision) there is no specific requirement for at least 50% of employees of companies to be Iraqi, this condition is part of the Investment Law. In both Iraq and KR-I, the Investment Law states that the investor may employ local and foreign manpower but should give priority to local manpower with an equal skill set.[28] In recent years, however, the government has stopped the granting of work permits for Arab and non-Arab expatriates workers in several instances.[29]

It is difficult for MoLSA to control the number of foreign workers since reportedly *Recommendation 46 (2012)* allows for employers to employ 50% foreign labour, and *Law 80 (2013)* allows foreign companies with government contracts to bring in their own labour without approval for one month. Some of these unregistered workers do not register, or return to their home country, and become illegal immigrants.

MoLSA in Iraq and KR-I issue work permits for 'domestic' and 'project' foreign workers. The cost to the applicant of obtaining a permit is insubstantial, and no disincentive. MoLSA does not have records of technical or professional level foreign workers. There is no complete record of the technical skills or qualifications of foreign workers. Classification and quantification of the skills of foreign workers would be a strong indicator of skills needed in Iraq and KR-I. Information from MoLSA KR-I shows that just over 10,000 foreign workers got permits for project and domestic work in 2015. Foreign workers originate mainly from many countries. In 2015 the largest numbers came from Nepal, Indonesia, India, Ghana, Georgia and Pakistan. Others have come from Iran, Syria, Turkey, the Philippines, Somalia, Ethiopia and Bangladesh. Positions as maids and nannies are often given to women from Bangladesh and Ethiopia.

Foreign labour can be found in all sectors of the economy, in both skilled and unskilled roles. In some sectors, foreign workers are preferred, for example in the hotel and construction industries. The HR

[24] CSO
[25] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG (2014)*
[26] UN Women in Iraq. Factsheet – CSO/KRSO/UNFPA/Pan Arab Project for Family Health, Iraqi Women Integrated Social and Health Survey (I-WISH 2011), 2012
[27] UN Women in Iraq. Factsheet (CSO/KRSO/UN) Iraq Knowledge Network, 2011
[28] Law No. 4/2006. Investment Law in the Iraqi Kurdistan Region
[29] http://www.tamimi.com/en/magazine/law-update/section-6/march-5/employment-of-expatriate-workers-in-iraq.html

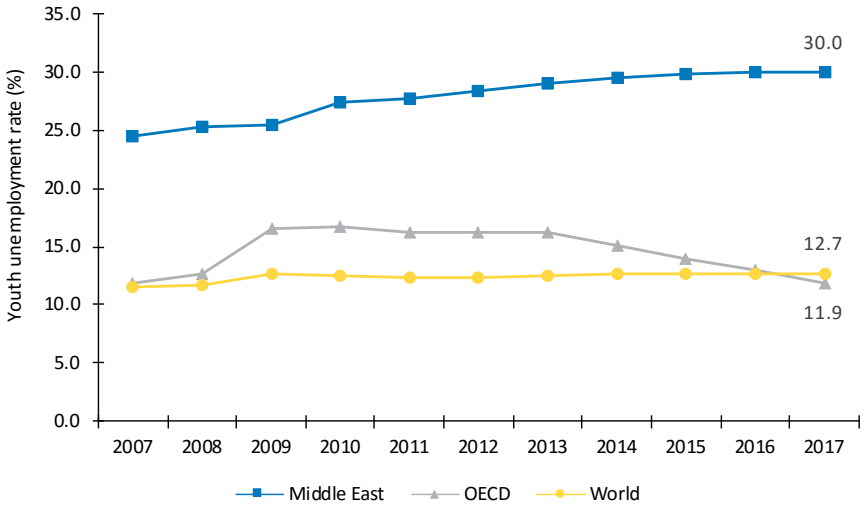
manager of a five-star hotel in Erbil reported in 2014 that of a staff of 303, only 55 were Iraqi Kurds, because Iraqi Kurds do not have the market-relevant skills needed and they lack the necessary command of English and Arabic.[30] Employers and policy makers who were interviewed for this report generally agreed that graduates of the TVET system in Iraq do not have enough practical experience to be useful on the job.

There is a perception amongst employers that foreign workers will work harder and for longer hours, for less money[31] , and make fewer demands on their employers. The typical transaction type described by a foreign labour recruitment agency is 'no questions asked' in exchange for low rates of pay. In 2014, it was reported that foreign labour will work for two-thirds the wage expected by Iraqi youth. Refugees will apparently accept even less than foreign labour. Because exchange rates have changed.

2.2.4 Youth unemployment in Iraq

According to the ILO, the Middle East region has the highest youth unemployment rate in the world at a level of 30% in 2017 (Figure 13). The youth unemployment rate for the Middle East has been more than twice the global and OECD youth unemployment rate since 2014. The OECD youth unemployment rate is reported at 12%, but some individual OECD countries (e.g. Spain, Italy and Greece) have higher youth unemployment rates than the regional rate for the Middle East.[32]

Figure 13: Youth unemployment rates for the Middle East, OECD and world, 2007-2017



Sustainable development indicators for decent work and economic development include substantially reducing the proportion of youth not in employment, education or training (NEET). Very high unemployment of youth is associated with poverty and social unrest.

The Save the Children Assessment of the Labour Market (2014) states that at the start of 2010, Iraq had the highest rates of unemployment in the Middle East: more than half of the country's young urban males were unemployed as well as the large majority of young women. The official national unemployment rate in Iraq is 11%[33] , youth unemployment stands at 18%, while female youth unemployment reaches 27%, against 17% for males.[34] Youth unemployment rates for KR-I are reported as 48.3% for young women and 13.4% for young men.

[30] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG (2014)*
[31] Ibid
[32] OECD
[33] UNDP
[34] CSO. Labour Force Factsheet (2011)

The youthfulness of the Iraqi population (40.2% are under 15 years) has implications as millions of new workers will enter the labour force in the next 20 years. In KR-I alone it is estimated that over the next 20 years between 850,000 and 1.1 million new workers will enter the labour market.[35] No comparable data was available for the whole of Iraq.

2.3 Overview of the skills supply in Iraq and KR-I

2.3.1 Planning for TVET

The National Development Plan (NDP) for Iraq 2013-2017 has been replaced with the new NDP 2018-2022. The NDPs include some objectives relevant to TVET reform. Other planning for TVET (vocational schools) is included in the National Strategy for Education and Higher Education in Iraq for 2012-2022. There is also a TVET Strategy (2014-2023) for Iraq and KR-I, which is a ten-year strategic plan developed by an inter-ministerial group with funding from the EU and support from the British Council. The TVET Strategy provides analysis of the challenges and opportunities and sets out objectives for eight axes which include these focus areas:

1. Legal and governance framework
2. Infrastructure and equipment
3. Enrolment and private sector participation
4. Quality of staff and recognition of graduates' skills (including NQF)
5. Labour market observatory and occupational standards
6. Research and innovation
7. Quality and accreditation
8. Funding.

In both Iraq and KR-I, the Ministries of Planning are at the centre of planning activities. The identified needs of districts and governorates filter upwards, through municipalities and governorates and other ministries to the Ministry of Planning. The Ministries of Planning work with development partners; commissioning and receiving studies; and co-ordinating and developing overarching planning agenda, in collaboration with the Ministry of Finance. Therefore, planning is an iterative process, which synthesises information from many sources, including 'bottom up' information from all parts of the country, and 'top down' information which is responsive to international developments and country and sector-wide analysis.

Some ministries have quantitative human resource development information which can feed straight into skills training and Human Resource Development planning (HRD). For example, the Ministry of Health in KR-I has produced detailed analysis of over- and undersupply (based on established norms of number of inhabitants per health professional) of all types of health personnel.

The development of a labour market information system has long been suggested and planned, and even attempted, but so far without significant advancement until the implementation of this UNESCO programme. Lack of labour market information has been a major inhibitor to any kind of structured HRD planning.

[35] Save the Children *Assessment of Youth Labour Market and Entrepreneurship Opportunities in the KRG (2014)*

CSO and KRSO (attached to the two Ministries of Planning) conduct surveys periodically. The last Household Survey was in 2011-12 with an update in 2014. The last Employment and Unemployment Survey was in 2008. Other surveys reviewed for this Sector Skills Analysis project include, for example:

- CSO Hotel and Tourist Accommodation Survey 2012
- CSO Survey of Household Industries 2012
- CSO Repair of Machinery, Equipment and Appliances Services Survey for 2012
- CSO Report on University Education 2013-2014
- CSO Report on Vocational Education 2014-15
- CSO/KRSO Survey of Street Vendors 2015.

Both CSO and KRSO periodically collect and publish data on the productive sectors of the economy, such as crops in agriculture, building and construction, manufacturing and trade. Typically, CSO and KRSO reporting on survey data is descriptive but not analytical. The reader must derive the meaning from the data provided in the tables. The data does not seem to be collected to satisfy specific lines of enquiry, relevant to planning and decision making.

From the interviews conducted for this Sector Skills Analysis Project it does not appear that CSO and KRSO work plans are based on the commissioning of specific surveys and reports by the Ministry of Planning or by other ministries specifically to inform planning. CSO and KRSO operations are based on commitment to updating existing information; so that planners can help themselves to statistical data which exist, as it seems relevant to their purposes.

2.3.2 Financing TVET

Interviews held in Iraq and KR-I suggested that specific budget allocations for education and training are subsumed within the overall budget for ministries' running costs.

Each ministry negotiates its annual budget based on its own perceived short term operating and capital development needs, within parameters which are based on previous budget usage. The MoHESR, for example, will negotiate for a budget slightly larger than the previous budget, irrespective of the development plans of other ministries, which may have implications for HRD.

Ministries (such as MoE, MoHESR and MoLSA) have a budget for the delivery of their core business services, irrespective of the number of students trained. Interviews in Iraq and KR-I suggested that the allocation of funding from the ministries to their education and training institutions is based on historical operating costs, with no mechanisms which enables budgetary consideration to be given to changes in the number of students, or running cost implications of delivering new or amended programmes. There is no per full-time-equivalent student cost formula which provides a baseline for different types and specialisations and levels of education and training.

There is no TVET levy fund in Iraq or KR-I. In many countries education and training is partially funded by a levy on private sector business. Different countries have developed different approaches, and the levy can be based on a percentage of taxable income, payroll or work permits. Contributors to the levy fund also have access to education and training for their local staff.

Education and training at all levels is fully subsidised by the state for those students who meet the required academic entry criteria. Students receive living allowances and other subsidies.

Many countries have found full state-funding of all tertiary education unsustainable in the context of the ”massification” of tertiary education, and have introduced various cost sharing schemes. Full government subsidy of all students does not discriminate between those that need financial assistance and those who could afford to contribute to their own education and training. In some countries where all the living expenses of students are fully funded by the government, students prefer to remain enrolled for as long as possible, since study with benefits is preferable to unemployment.

MoHESR is able (by decision of the Council of Ministers) to supplement the state budget allocation through the ‘parallel system’ of fee-paying students who did not quite meet the criteria for state sponsorship. This provides another source of income for polytechnic and technical universities. Separate streams of government funded students (who got good grades at school) and privately funded students (who did not get good enough grades to meet the entry requirement) are common in some post-Soviet countries. This practice is associated with some risks such as compromising the quality of the qualification by lowering the entry requirement, and institutions may be tempted to raise the official entry requirement for the purpose of generating more income. There may be other ways for institutions to generate income (such as education with production) which are less discriminatory and less compromising.

The mandate of MoLSA is to provide training to people who are registered umemployed. Nevertheless, there is some evidence of private sector companies requesting professional development training for their employees on a per-student fee basis from MoLSA training centres, such as the Swedish Academy in Erbil. Engagement of the private sector in requesting and paying for training seems to be uncommon. In general, social demand, rather than labour market demand, is the driver of enrolment. Numbers of students enrolled are only constrained by space in the classrooms.

2.3.3 Demand for TVET

Social demand for education and training is largely dictated by society values and beliefs. Within such values and belief systems, in many developing countries including Iraq, there may be a strong belief in a hierarchy of occupational status, in which young people with the “best” results should become doctors, and those with the next best grades should, for example, become lawyers or engineers. This is reinforced by the post-secondary admission system that limits entry into programmes which lead to such occupations. In this way, many young people train for the highest status occupation for which they can meet the entry requirement, rather than the occupation which suits them in terms of their aptitude or the occupation for which there is labour market demand.

Another factor which determines enrolment behaviour in Iraq, and in many other developing countries, is the historical legacy of public service employment, which was permanent and pensionable with many benefits. Even though the governments of Iraq and KR-I no longer absorb all graduates, and plan for mandatory downsizing of the public service, the idea of being qualified to work in the public service is still a very compelling option for young people and their families.

Certain occupations are very low down in the occupation hierarchy, such as hospitality services, and ‘dirty jobs’ such as blue-collar jobs in construction. Working in the private sector is unattractive, since it is believed that the work in the private sector offers lower pay, less job security and little or no social security. The private sector is very small as well as underdeveloped (mostly informal), and therefore offers less opportunities than the public sector.

2.3.4 Employment of graduates

As a result of these dynamics of preference, there may be a surplus of graduates for high status occupations such as engineers, and "white-collar, high security" jobs such as administrators, bankers and statisticians, and these graduates may be more likely to face unemployment than their peers. However, since there is no practice, in any of the education and training providers, of systematically following up TVET graduates (tracer studies) to find out how well their training prepares them to enter the workforce or pursue further study, there is only anecdotal evidence about employment and unemployment of graduates in each field of work.

Interviews with the Vice President and the Career Development Advisor of a Polytechnic University in KR-I, and with MoHESR and MoLSA in Iraq and KR-I, confirmed that there is no surveying of graduates (tracer studies), and despite the strong direction in the TVET strategy, there is still very little meaningful interaction between employers and training institutions.

Many countries which have experienced extreme regime changes (like post-Soviet countries), seem in some respects, to have "thrown out the baby with the bathwater" in their drive to distance themselves from the past. In Iraq, there is sense that some of the systems of the past had merit and should not have been discontinued without anything to replace them.

One example of a discontinued good practice from the past is the practice of surveying graduates. Even though the intention to survey graduates is still current and even recently renewed, it was not possible, over the course of several interviews, to locate a single example of a past or current graduate survey instrument.

2.3.5 Relationships between TVET providers and employers

Good practices of the past which were impacted negatively, and even completely disrupted, by political and social upheaval include the practices of close relationship between training providers and (often adjacent) production sites including factories, farms and service providers. These relationships offered easy access to work-based practice experiences, continuous employer feedback on student and graduate skills, and employment opportunities for graduates.

Another loss is the practice of "training-with-production," which includes actual production of goods and services for sale (revenue steam for the institution and the 'workers') and actual work experience for trainees, within the concept of training. More recently there is a small resurrection of this concept in the form of 14 "experimental" agriculture "training-with-production" programmes (MoE Iraq) with financial benefits for all parties, including trainees.

Many of the interviewees and pilot Sector Council participants, in both Iraq and KR-I, made the point that the training in technical fields which is currently offered in the institutes and colleges of MoHESR is very theoretical in nature, and is designed to prepare people for desk jobs in ministries. This is reportedly true of most fields of training, including those which would be expected to lead to practical work, such as agriculture and highway engineering. The Contractors Union reported that despite the availability of graduates in construction trades, the standard practice of building contractors is to hire unqualified labour or unskilled labour, and train them on the job.

The concept of 'summer training' which is intended to provide work experience for TVET students during 'vacation' periods is an example of a potential enhancement of the training to increase the practical skills and employability of graduates. The fact that educators are not paid to supervise

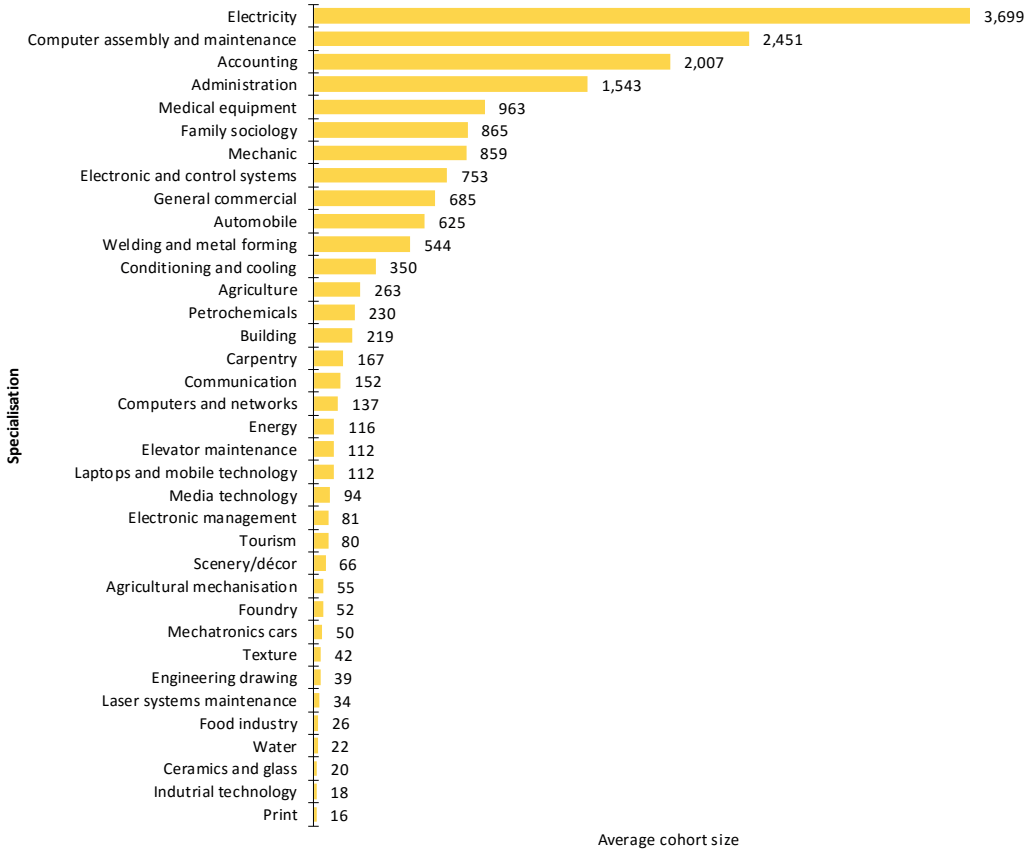
summer training is certainly a contributing factor to the failure of the concept to provide meaningful work experiences for learners. Supervision of work-place-based work experiences should be part of the assigned workload of educators and trainers. Work experiences need to be designed with close alignment to the competencies (learning outcomes) to be achieved, and closely supervised and monitored to ensure that learners have sufficient range of opportunities to practice and demonstrate their competence. Work experience should be a meaningful and worthwhile experience which is valued by learners, as well as a 'credit-bearing' component of the training programme.

An example of good practice for 'summer training' was provided by the Ministry of Transport (MoT) which offers 'summer training' to over 750 students each year. Experience with public universities is not positive (students don't show up), but MoT has good experience with some private universities (e.g. Al Mansour). Their students are supervised by University staff and can be sent to the field (i.e. they have useful skills) and the University requests a report on each student. This successful experience can provide a model of good practice.

2.3.6 Provision of vocational preparatory education by MoE

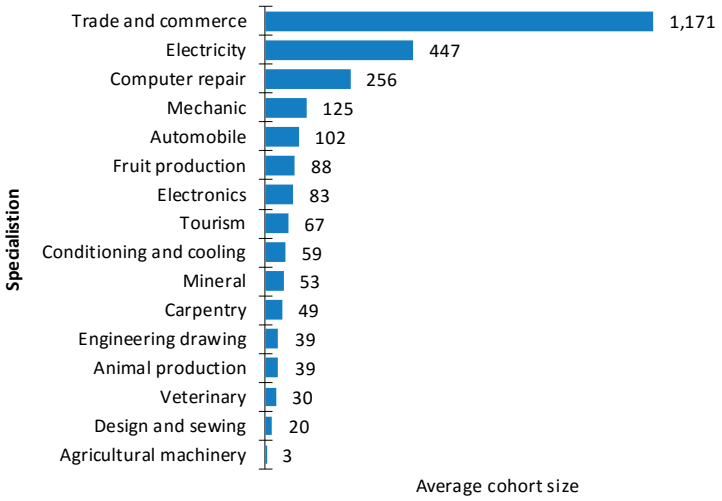
Vocational preparatory education consists of 3-year programmes (equivalent to Years 10, 11 and 12) in vocational schools and institutes. Over 400 schools and institutes offer these programmes in Iraq and KR-I with a total enrolment of just under 60,000 students (over 50,000 in Iraq and around 8,000 in KR-I). More specialisations are offered in the governorates of Iraq than in KR-I (as shown in Figures 14 and 15). In Iraq, electricity and computer maintenance are the most popular vocational specialisations. In KR-I, student enrolment in trade and commerce programmes (accounting, administration, and commercial and tourism management) account for approximately half of all MoE vocational education enrolment.

Figure 14: Vocational education average cohort size by specialisation in Iraq, 2015-2017



Source: Author compiled from tables provided by MoE Directorate of Vocational Education, February 2017

Figure 15: Vocational education average cohort size by specialisation in KR-I, 2015-2016



Source: Author compiled from tables provided by MoE Directorate of Vocational Education, January 2017

2.3.7 Provision of technical education by MoHESR

TVET programmes are offered in institutes and colleges. Institute programmes are 2-year programmes leading to diploma qualifications and college programmes are four years long, leading to bachelor degree qualifications.

In Iraq, there are 4 technical universities with 29 institutes and 16 colleges (total 45 institutions). Data received from MoHESR for this report are insufficient to estimate an average cohort size, and numbers are affected by closure of some institutes and colleges in areas which were under ISIL/ Da'esh control.

Table 4: Total enrolment in Iraq technical universities, 2014-2015

Technical university	Total enrolment 2014-2015	New intake 2014-2015
Northern Technology University	8,708	2,870
Central Technology University	40,169	12,200
Middle Euphrates Technology University	27,323	9,227
South Technical University	21,360	5,606
Total	**97,560**	**29,903**

In KR-I, there are 3 polytechnic universities with a total of 36 institutes and colleges, and total estimated enrolment of 12,341 students each year.

Table 5: Total enrolment in KR-I polytechnic universities, 2013-2016

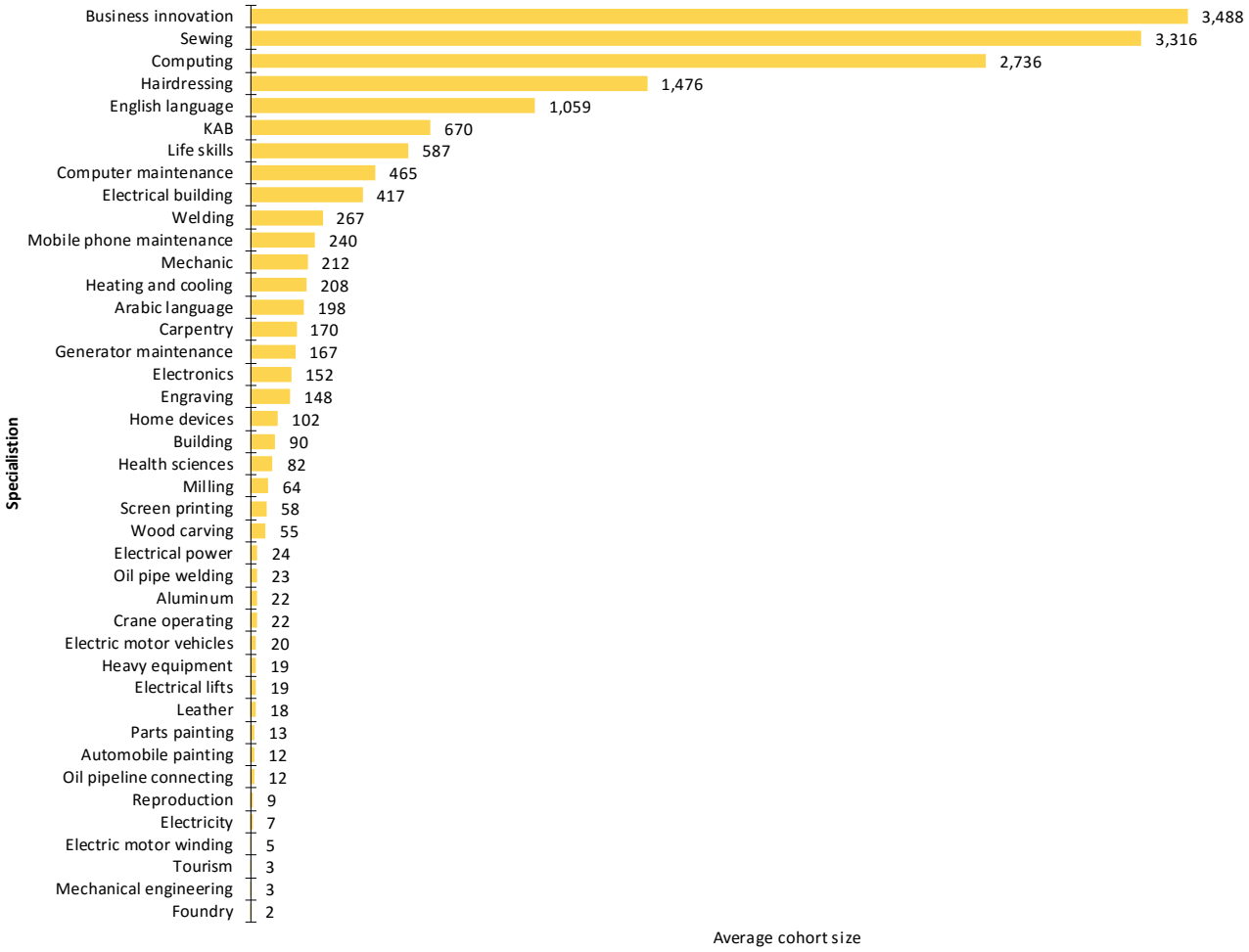
Polytechnic university	Total enrolment over the period 2013-2016	Average cohort size per year
Duhok Polytechnic University	9,648	3,216
Erbil Polytechnic University*	14,295*	4,765
Sulaymaniyah Polytechnic University	13,082	4,360
Total	**37,025**	**12,341**

*One of EPU's submission had an incorrect total of 13,981

2.3.8 Provision of vocational training by MoLSA

In Iraq, there are 38 MoLSA training centres with an average annual MoLSA cohort size of 16,659. Students are 66% female. The largest enrolment in this group is in business innovation (which may be linked to small loans) and is followed by the next four largest specialisations of sewing, computing, hairdressing, and English language. These top 5 specialisations make up over 70% of total enrolment (Figure 16).

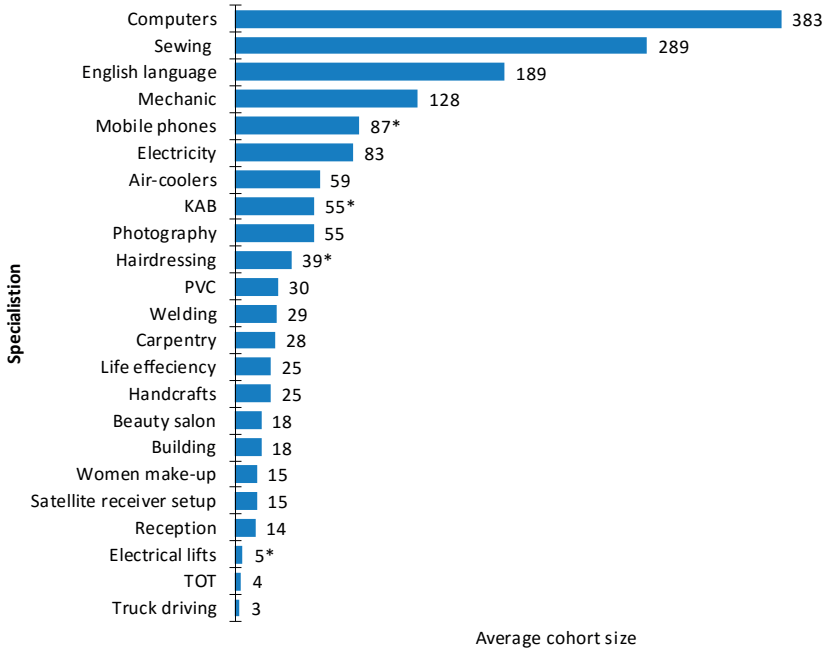
Figure 16: MoLSA Iraq vocational training average cohort size by specialisation, 2013-2015



Source MoLSA Iraq

In KR-I there are 7 MoLSA training centres. Total enrolment was 1,504 in 2014 and 1,414 in 2016. The data from MoLSA KR-I shown in Figure 17 below is an amalgamation of three data sets with data cleaning modifications. Computer, sewing and English language courses have the biggest share of enrolment (over 50%). MoLSA KR-I students are 55% male and 45% female. Dahuk has by far the largest share of MoLSA enrolment in KR-I (34% of enrolment) and Erbil has the second highest share (18%).

Figure 17: MoLSA KR-I vocational training average cohort size by specialisation, 2014-2016



Source: MoLSA KR-I, and Swedish Academy enrolment for 2015

*Note: * represents adjusted figures*

2.3.9 Provision of technical and vocational training by other ministries

Tourism and Hospitality

The nine tourism and hospitality institutes in Iraq provide pre-service training in four programmes each of three years duration with a total enrolment of 756 students in 2015-2016. The institutes are as follows:

- Baghdad Center for Tourism & Hospitality, Rasafah (3 branches)
- Najaf Center for Tourism & Hospitality
- Karbala Center for Tourism & Hospitality
- Ninive Center for Tourism & Hospitality
- Dkar Center for Tourism & Hospitality
- Basra Center for Tourism & Hospitality
- Muthana Center for Tourism & Hospitality.

Data from the Board of Tourism Iraq includes both enrolment and graduation rates but it is not possible to extrapolate a sensible graduation rate from these data (graduate cohorts appear to be more than 100% of the relevant enrolment cohort which may indicate a high repetition rate). What is clear from both enrolment and graduation data is that numbers of enrolment have more than doubled since 2012 and the number of graduates is nearly four times the number in 2012.

Four specialities (cooking, hotel management, accommodation, and reception) are offered in 3-year programmes. The three years of training are organized as follows: two years of theoretical and practical training and a year of internship in a reputable touristic establishment (public or private).

Information on new enrolments in 2015-2016[36] (189 for accommodation and 202 for reception) suggests that in the future there will be more graduates in these two areas, whereas enrolment for cooking (182) and hotel management (183) suggest little expected growth in skills supply in those two areas.

The KR-I Tourism Training Centre has a training and production kitchen, restaurant, canteen and hotel rooms. However, currently the facility is substantially used by the Ministry of Municipality and Tourism for office space, since the delivery of programmes is not expected to start until a future date.

Agriculture

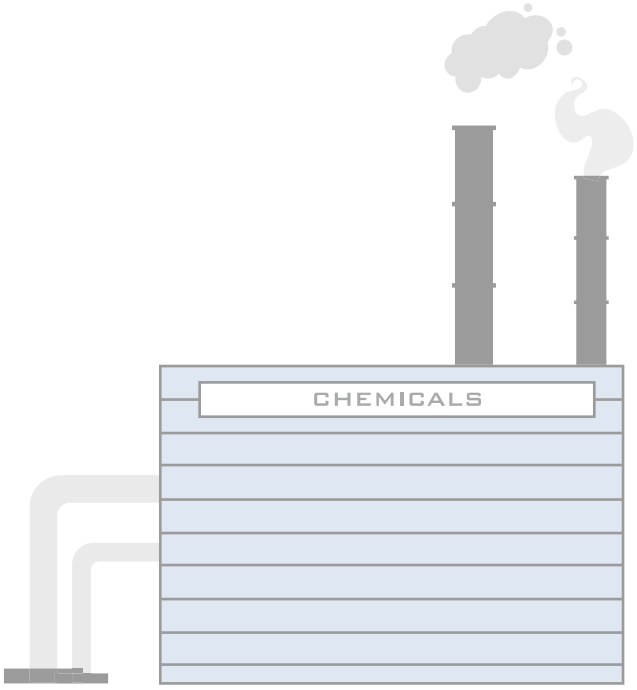
The Ministry of Agriculture Iraq has 78 training centres all over the country for professional development of farmers and Ministry staff. Specialised training includes focus on rural women and rural youth.

Communication

The Ministry of Communications (MoC) Iraq offers training through its Higher Institute for Communications and Post.

Transport

The Ministry of Transport's Department of Training and Development coordinates three existing training centres for civil aviation (two campuses), sea port and railways, which are partially operational.



[36] Board of Tourism Iraq

Chapter 3: The manufacturing sector in Iraq and KR-I

3.1 Key statistics and overview of the sector

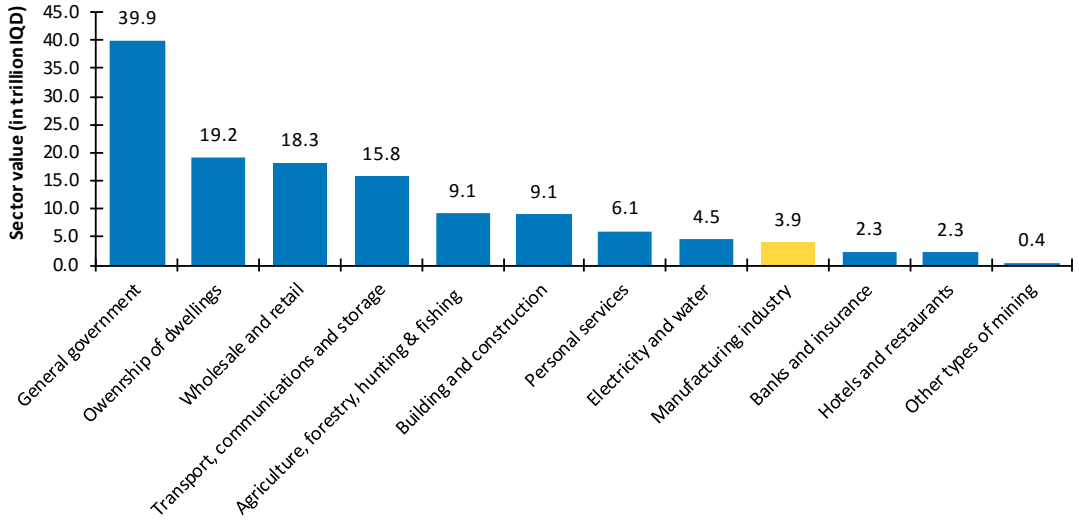
Table 6: Key statistics of the manufacturing sector[36]

Size of sector	Approximately 3.9 billion IQD in 2015
Importance of sector	• 3% of non-oil GDP in 2015 • 9th largest non-oil sector in 2015
Employment	• Employment in the sector is 8-10 % of total employment • Employment is 84% male and 25% youth (15-25 years old)
Share of the private sector	• Mostly private in KR-I • Mostly public in the rest of Iraq
Largest subsectors	• Coke and refined petroleum products • Mineral product manufacturing (mostly cement) • Food and beverage manufacturing
Main governorates active	• Northern governorates (Ninewa, Kirkuk, KR-I) • Central governorates (Baghdad, Babylon, Kerbala)
Current conjuncture	• Increase in value between 2009 and 2012 • Decrease in value between 2012 and 2015
Main challenges	Low diversification

The manufacturing sector in Iraq faces a number of significant barriers to further growth. Nonetheless, it continues to produce goods that are used by Iraqis every day. Notable subsectors within Iraqi manufacturing are food and beverage production, refined petroleum products, and non-metallic mineral products such as cement.

In 2015, the manufacturing sector was valued at 3.9 trillion IQD. Representing 3% of non-oil GDP in 2015, it was the 9th largest economic sector right after the 'electricity and water' sector (Figure 18).

Figure 18: Components of non-oil GDP in Iraq including KR-I, 2015 (current prices)

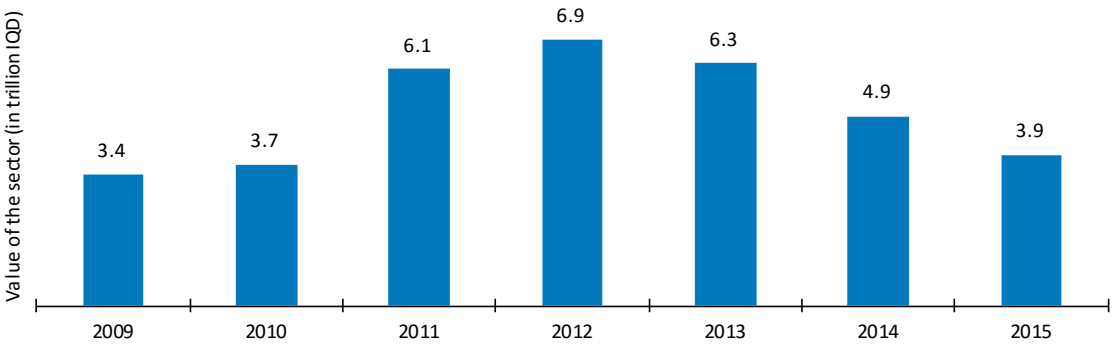


Source: CSO

[36] CSO

As with other sectors of the economy, the manufacturing sector grew significantly between 2009 and 2012 growing nearly 27% on average per annum (Figure 19), a period during the value of the sector doubled, only to shrink by 43% between 2012 and 2015.

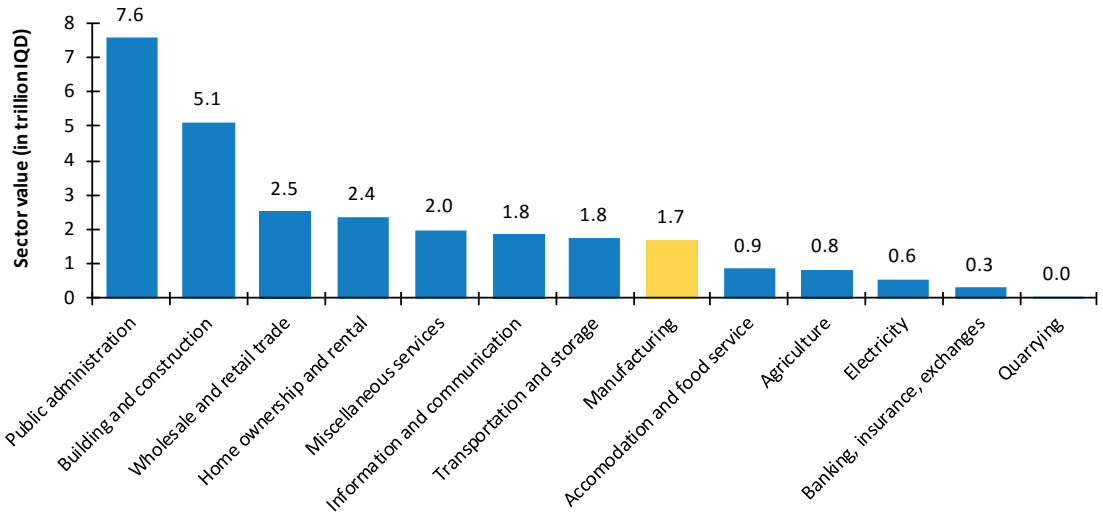
Figure 19: Evolution of the manufacturing sector in Iraq including KR-I, 2009-2015



Source: CSO

Manufacturing activities are relatively more important in KR-I in which it accounted for 6.2% of manufacturing activity in 2012 in KR-I (Figure 20). The sector had a total value added of 1.7 trillion IQD.

Figure 20: Components of non-oil GDP in KR-I, 2012 (current prices)



Source: Abramzon et al.

Events of 2014, most notably the rise of ISIL/Da'esh, had a substantial negative effect on the manufacturing sector. Economic activity in the areas controlled by ISIL/Da'esh fell significantly, and the military campaign diverted public expenditures from other sectors. Meanwhile, oil revenues fell significantly on international markets, drying up a crucial source of financing and foreign reserves. For example, refined petroleum product output decreased by 20%, ammonia production decreased by 28%, and urea production decreased by 38%.[37]

Difficulties in the manufacturing sector, however, also pre-date these events. Imports have significantly increased over the last ten years, and have flooded the Iraqi consumer market with

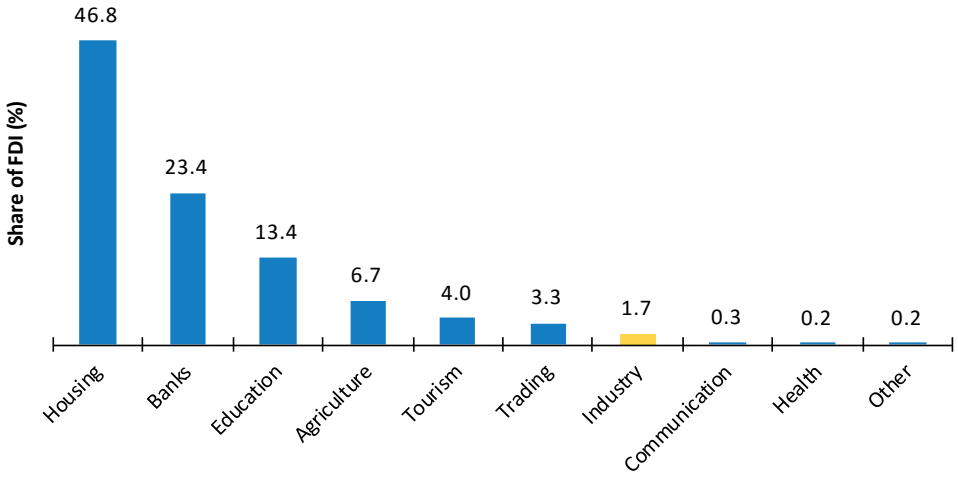
[37] Abdulameer. "2014 Minerals Yearbook: Iraq," August 2016, p. 58.2

foreign products that are cheaper than products the Iraqi manufacturing sector is currently capable of producing. Very few manufactured goods are exported by Iraqi producers.

One success story in the manufacturing sector is crude steel production which reached one million tonnes for the first time in 2014, owing to two new facilities going into production, one in Erbil and one in Basrah.[38]

There is little foreign direct investment in the Iraqi industrial sector, which is led by domestic public and private actors. While data for the whole of Iraq is not available, in KR-I FDI in the industrial sector represented less than 2% of total FDI between 2006 and 2011 (Figure 21).

Figure 21: Share of foreign direct investment by sector in KR-I, 2006-2011



Source: Hansen et al. "Strategies for Private-Sector Development and Civil-Service Reform in the KR-I," 2014

The manufacturing sector cannot be analysed in isolation, as its development is closely related to that of other economic sectors, most notably the agricultural sector and the oil and mining sector which provide inputs that are transformed by the manufacturing sector, as well as the retail and wholesale sector through which manufactured products are sold to firms and consumers. There are also strong linkages and dependencies between different manufacturing sub sectors. For instance, the production of machinery and chemical products serves the manufacture of other types of goods such as metals, plastics or food products.

3.2 Structure of the sector and types of enterprises

Major stakeholders of the sector include:

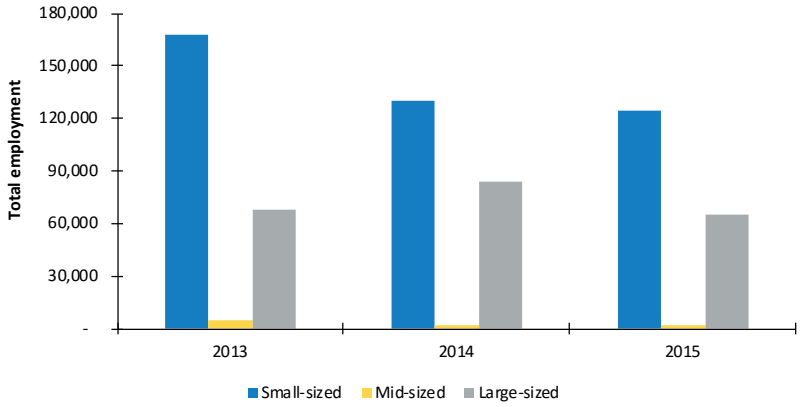
- Ministry of Industry and Minerals (Iraq), including public companies under its purview
- Ministry of Trade and Industry (KR-I)
- Central Organization for Standards and Quality Control (agency of the Government of Iraq)
- Iraqi Federation of Industries
- Federation of Chambers of Commerce and Industry (KR-I)
- Large private manufacturers such as Mass Group Holding and Lafarge Iraq
- Small- and medium-size manufacturers.

Activity in Iraq's manufacturing sector is dominated by firms either large (>30 employees) or small (< 10 employees), with mid-size firms making up a minuscule portion of employment in the sector.

[38] Abdulameer. "2014 Minerals Yearbook: Iraq," August 2016, p. 58.2

Figure 22 shows total employment in the industrial sector by firm size.

Figure 22: Employment in the manufacturing sector by firm size, 2013-2015



Source: CSO

Prior to the 2003 coalition invasion, the public sector dominated the manufacturing sector. For example, a 1988 report by the Library of Congress stated that 80% of workers in the sector worked for public companies.[39] The public sector remains the dominant actor in manufacturing in Iraq (excl. KR-I), but efforts have been made to increase the private sector's role in manufacturing.

In 2014, 65% of manufacturing GDP was realised by the private sector.[40] Amongst large firms in 2013, there were five times as many private firms as public ones, but the public firms employed about four times as many workers total.[41]

In Iraq (excl. KR-I), the public sector is still the main actor in the manufacturing sector. Table 7 below shows the share of the private sector in production of large firms reported by CSO. While food and beverages, rubber and plastics and mineral products manufacturing is largely run by the private sector, the private sector is almost non-existent in all other industries. It is important to note that the data contained in Table 7 is for large firms, while small firms are more likely to be run by the private sector.

Table 7: Share of private sector manufacturing production from large firms by industry in Iraq (excl. KR-I), 2014

Industry	Share of private sector in Iraq
Food products	85%
Rubber and plastics	82%
Mineral products	81%
Beverages	61%
Chemicals and chemical products	30%
Motor vehicles	5%
Printing	4%
Coke and refined petroleum	3%
Furniture	2%
Machinery and electrical appliances	2%
Basic metals	1%
Textile	0%
Tobacco	0%
Transport equipment	0%
Machines, accounting machines and computers	0%

[39] Library of Congress. "Iraq: A Country Study," 1990
[40] CSO
[41] Number of firms: 101 (public), 554 (private); Total employees: 127,573 (public), 31,741 (private)

Industry	Share of private sector in Iraq
Machinery and equipment	0%
Leather	0%
Manufactured metal products	0%
Total	30%

Source: CSO

Table 8 below shows the percentage of production of manufacturing firms by size and industry in Iraq (excl. KR-I). Almost in all the industries production is completely done by large firms except in food and beverage manufacturing, metal products and furniture.

Table 8: Share of manufacturing production by industry and firm size in Iraq (excl. KR-I), 2014

Industry	Small	Medium	Large
Refined petroleum	0%	0%	100%
Food and beverage	36%	3%	61%
Mineral products	13%	2%	85%
Metal products	82%	0%	18%
Machinery and electrical appliances	0%	14%	86%
Furniture Industry	93%	0%	7%
Chemicals and chemical products	0%	5%	94%
Motor vehicles and trailers	1%	0%	99%
Basic metals	1%	0%	99%
Printing	1%	0%	99%
Rubber and plastics	8%	11%	81%
Textiles	19%	0%	81%
Machinery and equipment	1%	1%	98%
Tobacco	0%	0%	100%
Total	19%	2%	79%

Source: CSO

In KR-I, the public sector is nearly absent and manufacturing activities is more characterised by private enterprises, as shown in Table 9 below. It is important to note that the data contained in the table is for large firms in 2013, while small firms are even more likely to be run by the private sector.

Table 9: Share of private sector manufacturing production from large firms by industry in KR-I, 2013

Industry	Share of private sector in KR-I
Beverages	100%
Leather products	100%
Wood products	100%
Rubber and plastic	100%
Mineral products	100%
Electrical equipment	100%
Motor vehicles and trailers	100%
Furniture	100%
Manufactured metals	94%
Coke and refined petroleum	90%
Food products	85%
Paper products	49%
Basic metals	46%

Industry	Share of private sector in KR-I
Printing	26%
Textile	0%
Total	90%

Source: KRSO. "Statistics of large industrial establishments," 2015

In KR-I, large firms account for most of the manufacture of beverages (96%), leather (94%), wood products (84%), paper products (97%), coke and refined petroleum (89%), mineral products (85%), basic metals (100%), electrical equipment (94%) and cars (91%) (Table 10).

Meanwhile, medium-size firms account for all the production of chemical products, and small firms account for most of the production of food products (79%), textiles (96%), wearing apparel (100%), printing (87%), rubber and plastic products (74%), metal products (83%) and furniture (83%).

Table 10: Share of manufacturing production by industry and firm size in KR-I, 2013

Industry	Small	Medium	Large
Food products	79%	13%	8%
Beverage	3%	1%	96%
Textiles	96%	0%	4%
Wearing apparel	100%	0%	0%
Leather and related products	6%	0%	94%
Wood and wood and cork products	16%	0%	84%
Paper and paper products	3%	0%	97%
Printing	87%	3%	11%
Coke and refined petroleum	0%	11%	89%
Chemicals and chemical products	0%	100%	0%
Rubber and plastic products	74%	2%	24%
Mineral products	0%	15%	85%
Basic metals	0%	0%	100%
Metal products	83%	3%	15%
Electrical equipment	0%	6%	94%
Motor vehicles, trailers and semitrailers	0%	9%	91%
Furniture Industry	83%	10%	7%
Other manufacturing	100%	0%	0%
Total	38%	10%	52%

Source: KRSO. "Statistics of large industrial establishments of the Kurdistan Region for the year 2013," 2015; KRSO. "Statistics of medium industrial establishments of the Kurdistan Region for the year 2013," 2015; KRSO. "Statistics of small industrial establishments of the Kurdistan Region for the year 2013," 2015

3.3 Types and distribution of products and services

3.3.1 Categories of manufacturing activity

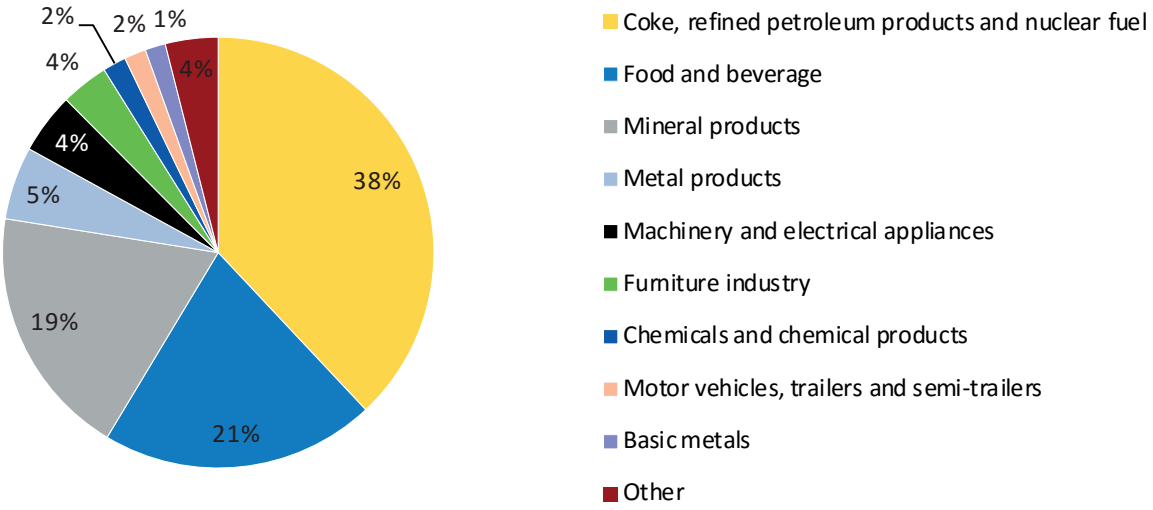
Table 11 below displays the selected manufacturing activities of focus, according to the International Standard Industrial Classification (ISIC) of activities.

Table 11: ISIC-4 Classification of activities in manufacturing

Section: C (Manufacturing)	
10	Manufacture of food products
11	Manufacture of beverages
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
22	Manufacture of rubber and plastics products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
32	Other manufacturing

The manufacturing industry in Iraq (excl. KR-I) is dominated by petroleum (38%), food and beverages (21%) and mineral products (19%), which together account for nearly 80% of the sector. Figure 23 below shows the distribution of the manufacturing sector by industry in Iraq (excl. KR-I). There is also significant manufacturing activity in metal products (5%), machinery and electrical products (4% and furniture (4%).

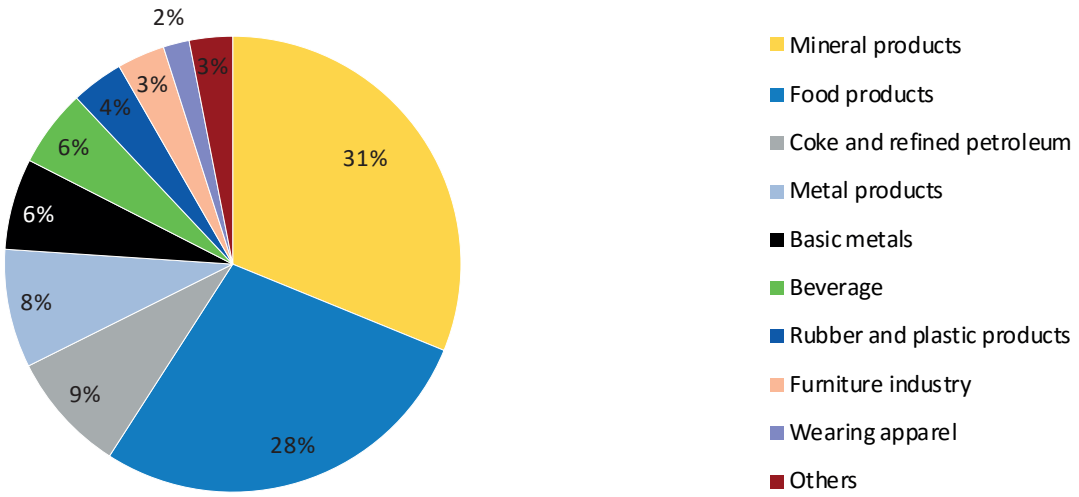
Figure 23: Manufacturing production in Iraq (excl. KR-I) by sector, 2014



Source: CSO

In KR-I, manufacturing is dominated by mineral products (31%) and food products (28%), which together account for nearly 60% of manufacturing. Figure 24 below shows the distribution of the manufacturing sector by industry in KR-I. There is also significant manufacturing activity in coke and refined petroleum (9%), metal products (8%), basic metals (6%) and beverages (6%).

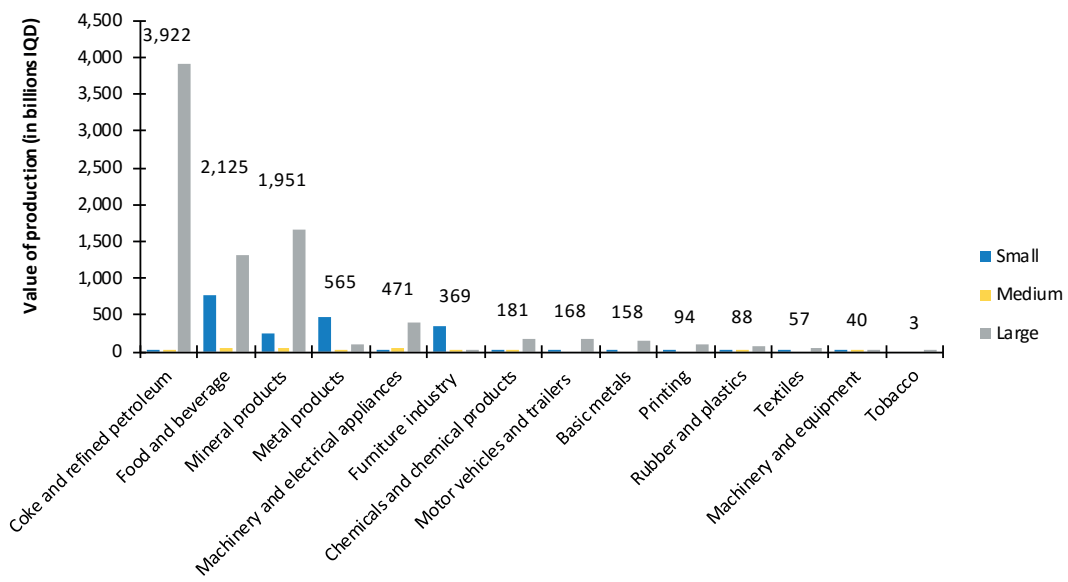
Figure 24: Manufacturing production in KR-I by sector, 2013



Source: KRSO. "Statistics of large industrial establishments," 2015; KRSO. "Statistics of medium industrial establishments," 2015; KRSO. "Statistics of small industrial establishments," 2015; author calculation

Figure 25 provides an overview of the manufacturing sector in Iraq (excl. KR-I). It shows that the manufacturing sector is dominated by large firms. According to CSO, large firms represent 79% of manufacturing production in Iraq.

Figure 25: Manufacturing production in Iraq (excl. KR-I) by industry and firm size, 2014



Note: the number displayed is the total production value in the industry, regardless of firm size
Source: CSO

Nearly half (48%) of the production of large firms is coke, refined petroleum products and nuclear fuel, which is hardly surprising considering the size of the oil sector in Iraq. The next most important subsectors are the mineral industry, which accounts for 20% (cement, sand and gravel, ceramics, clay, etc.) and the beverage industry (12%), each producing between 1 and 2 trillion IQD in 2014. There is also significant production of machinery and electrical appliances, food, chemical products, motor vehicles and metals.

Table 12: Manufacturing production by large sized firms in Iraq (excl. KR-I), 2014

Industry	Value of production (in billions IQD)[42]
Coke and refined petroleum products and nuclear fuel	3,912.7
Other non-metallic mineral products	1,651.6
Beverage	1,018.8
Machinery and electrical appliances	404.4
Food	287.7
Manufacture of chemicals and chemical products	170.9
Manufacture of motor vehicles, trailers and semi-trailers	166.6
Manufacture of basic metals	157.3
Composite metal products, except machinery and equipment	100.4
Total	8,184.8

Source: CSO

Medium-size firms represent a very small fraction, around 2%, of overall manufacturing activity. There main industries of activity are machinery and electrical products (65 Billion IQD), mineral products (45 billion IQD) and food and beverage (39 billion IQD).

Small firms account for 19% of Iraq's (excl. KR-I) production in 2014. Four industries account for 95% of that production (Table 13). Food and beverage represents 40% of the production, with 762 billion IQD in production. Metal products account for 24% of production (464 billion IQD), furniture for 18% (343 billion IQD), and mineral products for 13% (254 billion IQD).

Table 13: Manufacturing production by small sized firms in Iraq (excl. KR-I), 2014

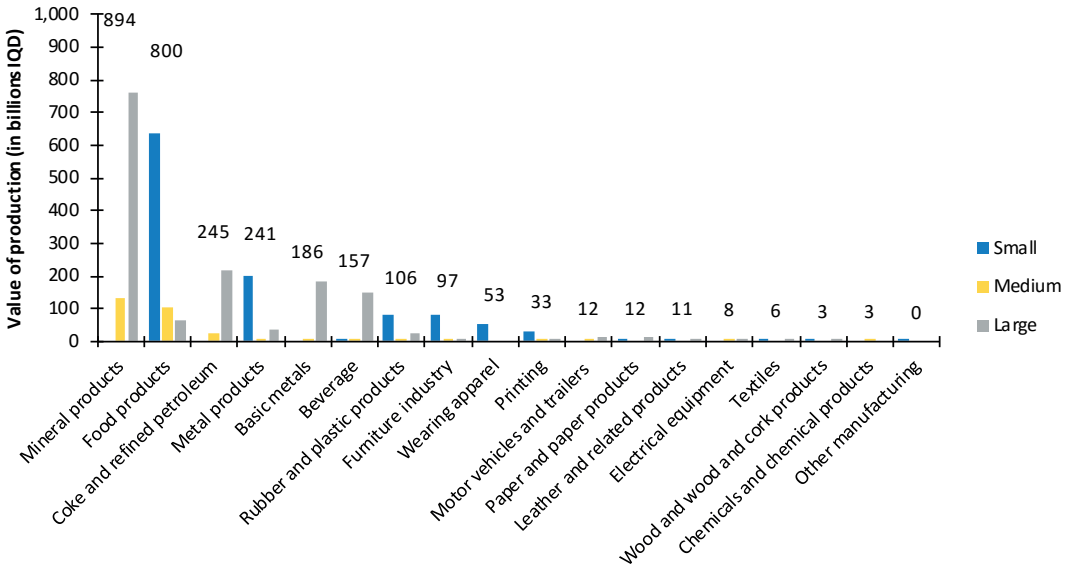
Industry	Value of production (in billions IQD)[43]
Food and beverage	762.0
Composite metal products, except machinery and equipment	463.7
Furniture	343.4
Other non-metallic mineral products	253.9
Total	1,925.0

Source: CSO

Figure 26 provides an overview of the manufacturing sector in KR-I. It shows that both large and small firms are important in KR-I where large firms realize 52% of the manufacturing production in KR-I, while small firms account for 38% and medium firms for 10%.

[42] Only industries with a production over 100 billion IQD are shown
[43] Ibid

Figure 26: Manufacturing production in KR-I by industry and firm size, 2013



Source: KRSO. "Statistics of large industrial establishments," 2015; KRSO. "Statistics of medium industrial establishments," 2015; KRSO. "Statistics of small industrial establishments," 2015

More than half of the production of large firms in KR-I is of mineral products (51%), as shown in Table 14. Most (88%) of that production is of cement, lime and plaster and 9% is concrete, cement and plaster products. Coke and refined petroleum, of which 72% is refined petroleum, represents 15% of the production of large firms in KR-I. Iron and steel (the only metal production in KR-I) accounts for 12% large firm production, while non-alcoholic drinks and bottled water (beverage) accounts for 10%.

Table 14: Manufacturing production by large sized firms in KR-I, 2013

Industry	Value of production (in billions IQD)[44]
Mineral products	762.1
Coke industry and refined petroleum products	218.2
Basic metals	185.0
Beverage	150.8
Total	1,493.4

Source: KRSO. "Statistics of large industrial establishments," 2015

In KR-I, medium-size firms (Table 15) are almost only active in the production of mineral products (46% of their production), of which 87% are concrete, cement and plaster products, and in food products (36%), of which two-thirds of the production is in producing animal food.

Table 15: Manufacturing production by medium sized firms in KR-I, 2013

Industry	Value of production (in billions IQD)[45]
Mineral products	131.3
Food products	102.8
Total	287.2

Source: KRSO. "Statistics of large industrial establishments," 2015

[44] Only industries with a production over 100 billion IQD are shown
[45] Ibid

Nearly 60% of small firms in KR-I are active in food manufacturing (Table 16). However, they are not well diversified, as 88% of these firms are bakeries, while 6% produce sweets (cocoa, chocolate and sugar confectionery). Metal products account for 18% of metal products manufacturing, of which 91% are construction metal products, and 9% are tanks and metal containers.

Table 16: Manufacturing production by small sized firms in KR-I, 2013

Industry	Value of production (in billions IQD)[46]
Food products	633.4
Metal products	199.2
Total	1,084.8

Source: KRSO. "Statistics of large industrial establishments," 2015

The following looks at the types of manufacturing activities by classification.

Food and beverage products (classification 10 and 11)

In Iraq, production of food and beverages reached 2.1 trillion IQD in 2014, and 2.5 trillion IQD in 2015. In KR-I, it reached 1 trillion IQD in 2013, with over 80% of food products. The private sector is the main actor in Iraq (excl. KR-I) and in KR-I. Large firms dominate in Iraq but not in KR-I where small firms are the main actors, mostly bakeries.

In 2009, the United Nations undertook a comprehensive survey of the agro-industrial sector in Iraq, and found that seven governorates had about two-thirds of all facilities in the country: Baghdad, Erbil, Dahuk, Babylon, Sulaymaniyah, Ninewa, and Kirkuk.

The largest vegetable oil factory in the world near the city of Hillah in Babylon governorate, with a production capacity of 3,200 tons daily started production in 2017.

Coke and refined petroleum products (19)

In Iraq (excl. KR-I), the production of coke and refined petroleum products produced in 2014 was valued at 3.9 trillion IQD, and this represented 37% of all manufacturing production. Meanwhile KR-I produced coke and refined petroleum products valued at 245 billion IQD in 2013, or 9% of its manufacturing production. Production is mostly from large and public firms.

Unfortunately, the events of 2014 had a significantly negative impact on the sector, with production of refined petroleum products dropping 20% from 2013 to 2014, largely a result of the ISIL/Da'esh capture of the Baiji refinery.

The Ministry of Oil is looking to build four new refineries in the near future, seeking outside investment to do so, and announced in March 2017 that the Kirkuk refinery will increase its output by 10,000 barrels a day. They hope to add another 10,000 barrels in production by the end of the year. Additionally, the Ministry of Oil announced in February 2017 that the Gar Refinery in Erbil would increase its refining output to 40,000 barrels a day to compensate for the loss of production in Baiji.

Chemicals and chemical products (20)

In Iraq (excl. KR-I), production of chemicals and chemical products was valued 181 billion IQD in 2014, which represented 2% of all manufacturing production. Meanwhile KR-I produced 2.6 billion IQD of chemicals and chemical products in 2013. Production is mostly from large and public firms in Iraq (excl. KR-I) and medium-size private firms in KR-I.

[46] Only industries with a production over 100 billion IQD are shown

Basic pharmaceutical products and pharmaceutical preparations (21)

CSO and KRSO do not report any pharmaceutical manufacturing activity. Before 2003, the Ministry of Health had exclusive control over the drug market in Iraq. Since the 2003 coalition invasion, the Ministry of Health has taken steps to open up the market to the private sector. In 2011, there were 23 registered licensed pharmaceutical manufacturers in Iraq.[47] A number of scandals have occurred over the last several years in the pharmaceuticals sector in Iraq, as discussed below in the section on legal factors affecting manufacturing in Iraq.

Rubber and plastics products (22)

In Iraq (excl. KR-I), there was 88 billion IQD in production of rubber and plastic products in 2014, around 1% of the manufacturing output. Meanwhile KR-I produced rubber and plastic products worth 106 billion IQD in 2013, around 4% of its manufacturing production.

Rubber and plastic production in the whole of Iraq is mainly done by the private sector; by large firms in Iraq (excl. KR-I) and by small firms in KR-I. In Iraq (excl. KR-I), a public company, the General Company for Rubber and Tire Production, produces rubber products, as do private companies.

The city of Basrah announced a project in 2016 to recycle plastics, with the goal of spurring economic development and dealing with the accumulation of trash in the city.

Other non-metallic mineral products (23)

Non-metallic mineral products include cement, sand and gravel, ceramics, and clay, among many others. Iraq has a modest minerals industry relative to its reserves.

In Iraq (excl. KR-I), there was nearly 2 trillion IQD in production of mineral products in 2014, around 19% of the manufacturing output. Meanwhile KR-I produced for 894 billion IQD in 2013, around 32% of its manufacturing production.

In KR-I, cement and cement products account for over 95% of mineral production. In the whole of Iraq, cement production is mainly done by large, private firms, although some medium-size firms seem to be active in that sector in KR-I.

Lafarge was Iraq's largest producer of cement as of 2013, and in that year was responsible for 24% of Iraq's domestic production. They have large operations in Sulaymaniyah and Kerbala governorates.

While Iraq had previously imported significant amounts of cement, import of cement was officially banned in 2016.[48]

The ISIL/Da'esh insurgency has had a significant impact on this sector. For instance, in 2014, a bentonite plant was under construction in Fallujah to process locally sourced bentonite. The plant was 85% complete, but its status following ISIL's control of the city and its subsequent recapture by the Iraqi government is not clear.[49]

Basic metals (24)

Base metals include most non-precious metals, and can include iron, steel, copper, nickel, aluminum, lead, zinc, tin, and others.

[47] Ministry of Health. "Iraq Pharmaceutical Country Profile," 2011
[48] Iraq Trade Link News. "Banning cement imports saved 1 billion for Iraq," 25 January 2017
[49] Abdulameer, W. "2014 Minerals Yearbook: Iraq," August 2016

In Iraq (excl. KR-I), there was 158 trillion IQD in production of mineral products in 2014, around 2% of the manufacturing output. Meanwhile KR-I production was valued at 186 billion IQD in 2013, around 7% of its manufacturing production.

Production of basic metals is realised in large firms. While in Iraq (excl. KR-I) there are reportedly no private firms in the sector, in KR-I almost half of them are private. In KR-I, iron and steel represents almost all of the sector's output. No data disaggregated by industry is available for the rest of Iraq.

In 2013, the State Company for Iron and Steel announced a partnership with the Turkish company U.B. Holding to produce a million tons a year of rebar (reinforcing bars) to supply the Ministry of Oil's pipeline production and laying in the Basrah governorate.[50] Revenues would be split between the governorate (1%), the Ministry of Industry and Minerals (14%) and U.B. Holding (84%). The project has experienced delays in getting started.[51]

Mass Group Holding operates the largest iron and steel production plant in the Middle East, located in Sulaymaniyah.[52] The plant cost between 400 million and 1 billion USD to complete (different sources cited different numbers), which was raised through investment.[53]

Iraq also has a long tradition of copper production and artisan work. Baghdad was once one of the most important centers for copper products, but the industry has almost entirely collapsed, with imports replacing handmade products that were traditionally available in the market. A small industry of artisans remains, but over the last several decades it has severely declined.[54]

Fabricated metal products, except machinery and equipment (25)

Fabricated metal products include cutlery, hand tools, hardware, boilers, tanks, shipping containers, nuts, bolts, screws, springs, wires, and others.

In Iraq (excl. KR-I), there was 565 billion IQD in production of metal products in 2014, around 5% of the manufacturing output. Meanwhile KR-I produced for 241 billion IQD in 2013, around 9% of its manufacturing production. Production is realised by small firms, although they tend to be private in KR-I, and public in the rest of Iraq.

Computer, electronic and optical products (26)

In Iraq (excl. KR-I), there was 94 billion IQD of production of "office machines industry and accounting machines and computer mail", none by private firms. No production is recorded in KR-I.

Electrical equipment (27)

In Iraq (excl. KR-I), there was 471 billion IQD in production of electrical products in 2014, around 4% of the manufacturing output. Meanwhile KR-I produced electrical products valued at 8 billion IQD in 2013. Production is realised by large firms, although they tend to be private in KR-I, and public in the rest of Iraq.

[50] Farhan, H. "Iron and Steel Decides to Join with Global Company to Meet the Ministry of Oil's needs for Pipes."
[51] Abdulameer, W. "2014 Minerals Yearbook: Iraq," August 2016, p. 58.3
[52] Al-Daoud, T. "Mass Group Holding Iraq: 1.25 Million Tons of Steel Production, and Future Expansion," 7 June 2014. As of 2016, Middle East Economic Digest: "Selected Projects Planned or Underway in Kurdistan" listed phase II and III of the Sulaymaniyah Smelter and Steel Plant owned by MASS Group Holding as underway. OECD Steel Making Capacity Data, last updated 31 December 2015, lists the Sulaymaniyah plant as underway and operating
[53] KRG. "Sulaymaniyah: Largest Iron and Steel Plant in Iraq and the Middle East Will Soon Start Production," 12 May 2014; Abdulameer, W. "2014 Minerals Yearbook: Iraq," August 2016, p. 58.3
[54] Redha, U. "Glory days are over at Iraq copper market," 5 August 2009; Al Jazeera: "Iraq`s copper artisans slowly dying out," 20 September 2016

Machinery and equipment (28)

In Iraq (excl. KR-I), there was 41 billion IQD of production of machinery and equipment in 2014, while none is reported in KR-I. Large, public firms are the main producers.

3.3.2 Geographical distribution of manufacturing

Figures 27, 28 and 29 show the geographic concentration of industrial facilities. Large firms are found the most in the Diyala governorate, followed by Ninewa, Babylon, Missann and Muthanna. Medium-size firms are found most in the northern governorates (Ninewa, Kirkuk, Salah al-Din), in Baghdad and in KR-I. Small firms are more common in Baghdad, Kerbala and Sulaymaniah. 2013 is the latest year for which data was available for most governorates, and importantly shows the distribution of the industry before the rise of ISIL/Da'esh in 2014.

Figure 27: Distribution of large manufacturing firms, 2013

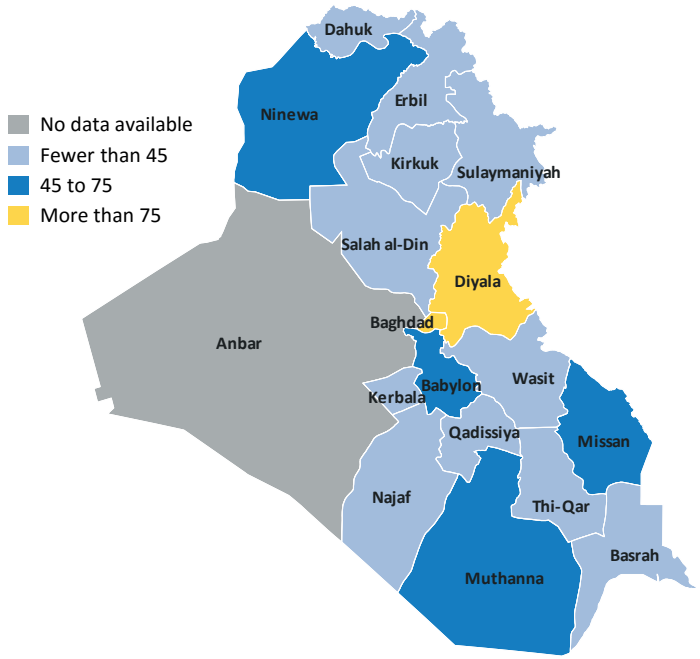


Figure 28: Distribution of medium manufacturing firms, 2013

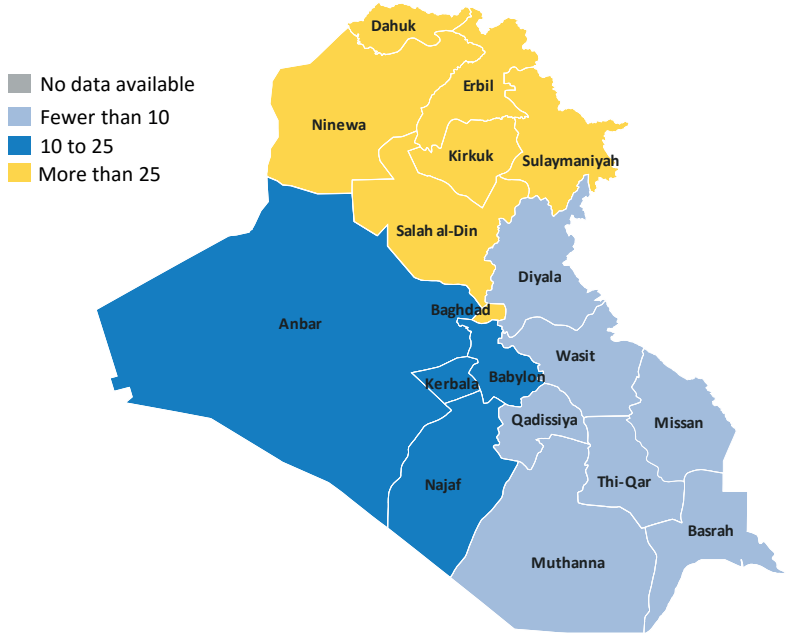
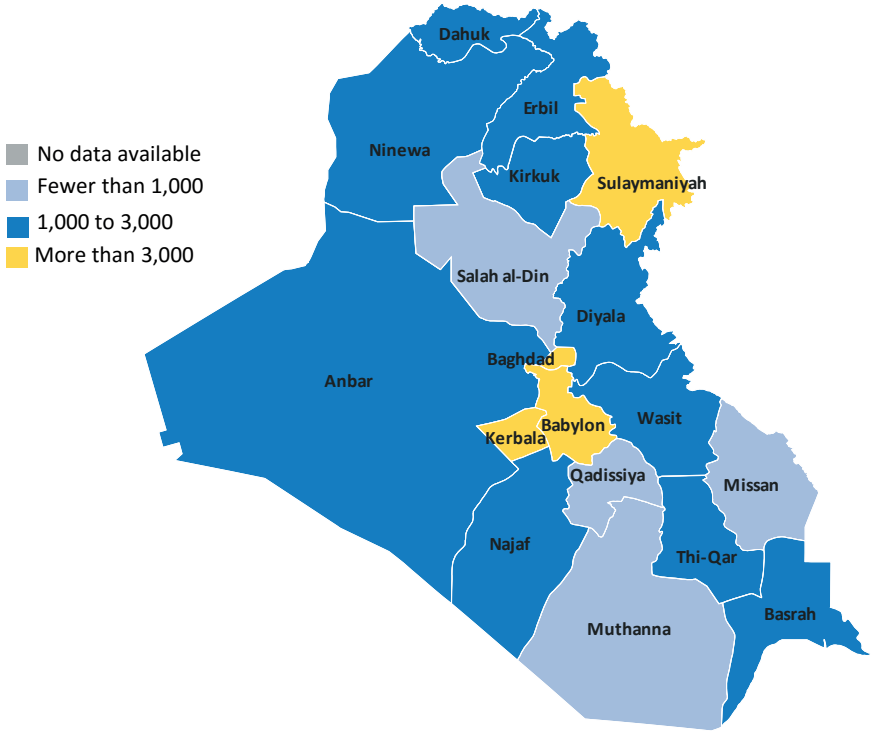


Figure 29: Distribution of small manufacturing firms, 2013



Source: CSO

3.4 International trade and investment

3.4.1 Import and export

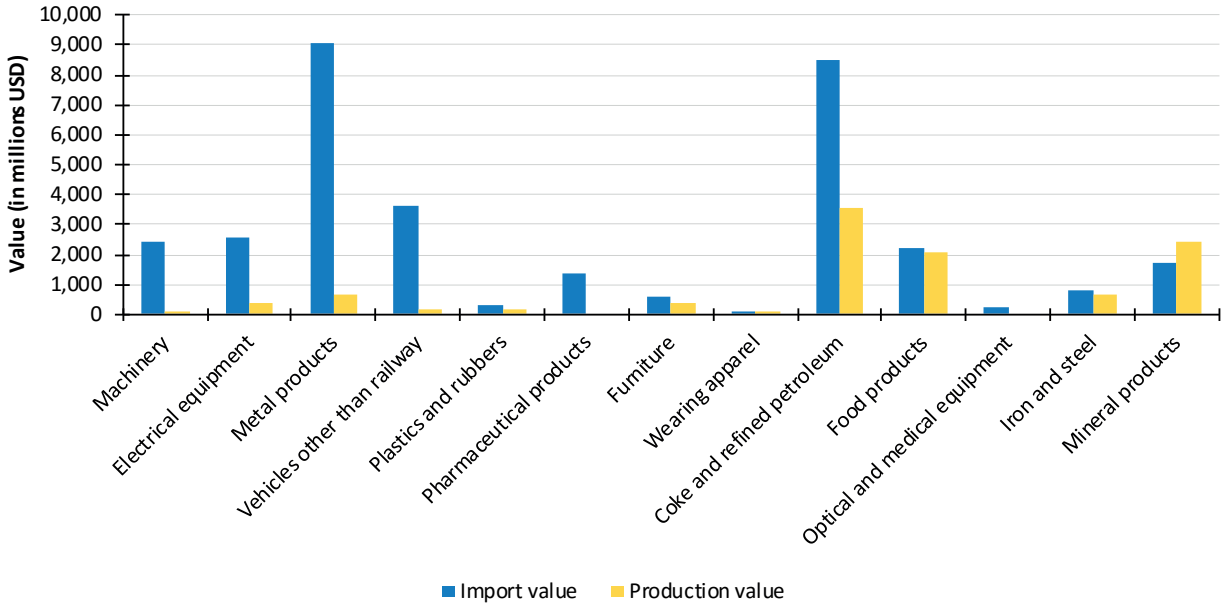
Iraq's export market is dominated almost entirely by crude oil. In 2016, Iraq's crude oil exports were valued approximately 46.7 billion USD, while total exports valued approximately 47.7 billion USD, making oil worth around 98% of total exports. Most of the remainder (0.8 billion USD) are gold exports. Between 2014 and 2016, oil exports increased enormously, from 107 million to 168 million tons (+57%), although the value of those exports fell significantly (-45%) because of the fall in oil prices.[55]

Conversely, imports into Iraq increased over the period 2013 to 2015. Turkey and China were the largest suppliers to Iraq, accounting for about one-quarter of total Iraqi imports each. Iran, the United States, South Korea, India, Germany and Italy were the other main partners of Iraq, accounting for less than 10% of Iraqi imports each.

Figure 30 below shows Iraq's main imports and production in 2014. It provides an overview of the products that are used by Iraqis but not produced enough domestically; and serves to identify the manufacturing sector's largest opportunities.

[55] International Trade Center. "Trademap."

Figure 30: Import and production values by largest manufacturing sectors, 2014



Source: International Trade Center. "Trade Map"; CSO; KRSO; author calculations

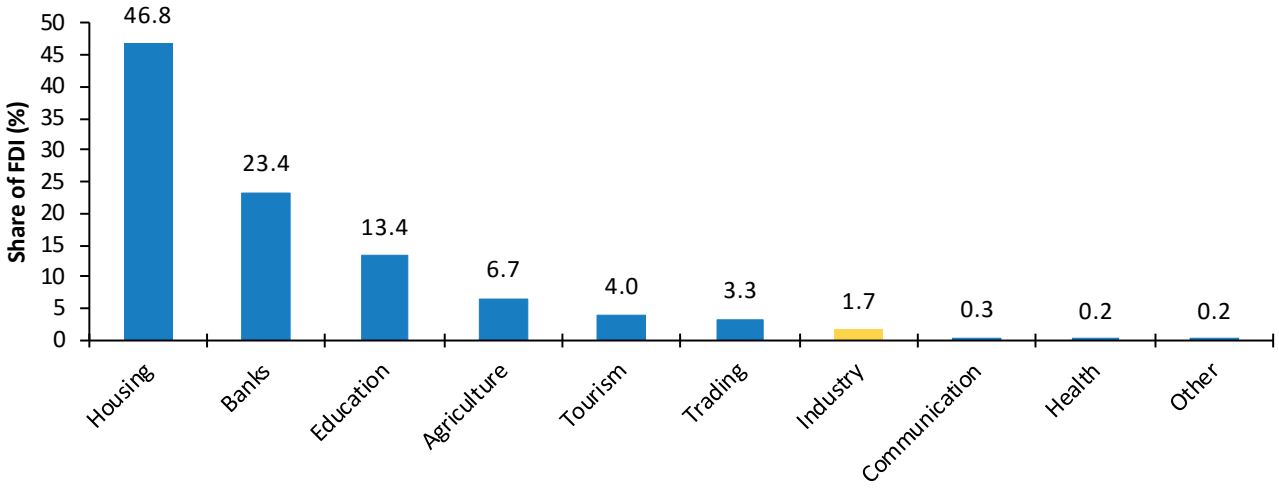
These numbers are outdated, and they represent broad estimates. Imports have increased substantially following the ISIL/Da'esh insurgency which destroyed a large part of agricultural output and industry in the affected areas. Conversely, Iraq has substantially raised its petroleum production since 2014. Nonetheless, Figure 30 shows that in all manufacturing activities, Iraq still imports a large share of its domestic consumption.

3.4.2 International investment

Although there is limited data on international investment, the presence of large foreign manufacturing firms such as Lafarge and lack of significant presence of Iraqi manufacturing firms abroad suggests that Iraq is a net recipient of foreign direct investment in Iraq.

Nevertheless, there seems to be some foreign investment in the sector in Iraq. Data shows that between 2006 and 2011, the manufacturing sector received less than 2% of total FDI in KR-I.

Figure 31: Share of foreign direct investment by sector in KR-I, 2006-2011



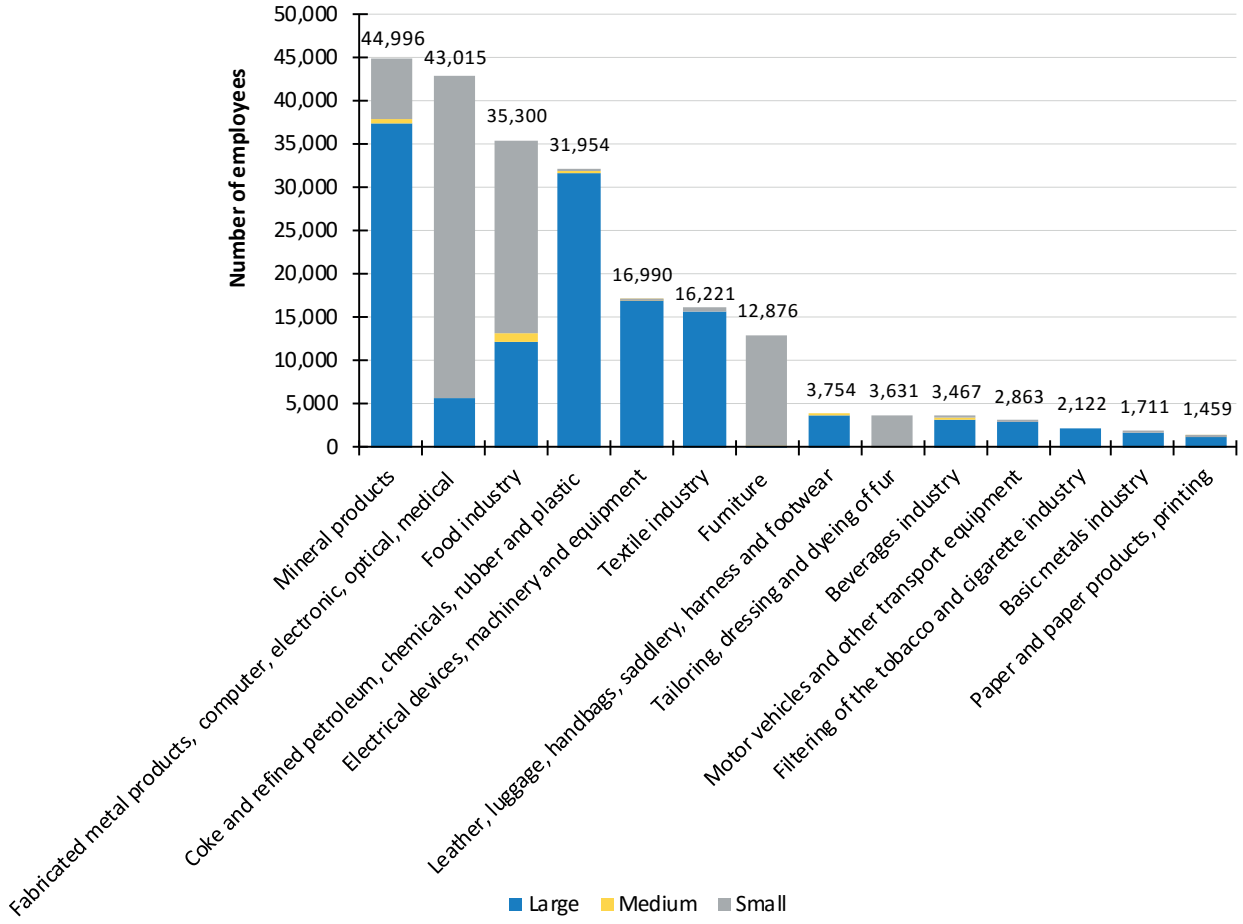
Source: Hansen et al. "Strategies for Private-Sector Development and Civil-Service Reform in the KR-I," 2014

3.5 Employment in the sector

Employment in manufacturing represented 8-10% of Iraqi employment in 2011. The 2012 household survey by CSO found that there were almost 600,000 wage workers employed in manufacturing in 2012, of about 7.3 million employees in Iraq. The sector employed 12.1% of men and 5.1% of women. Over 80% of these workers lived in urban areas, versus under 20% in rural areas. CSO statistics show that in 2014 the workforce of the manufacturing sector consisted of 84% males, 16% females and 26% of the total was youth (15-25).

Although no comprehensive data on the distribution of manufacturing activities by activity is available, CSO computed the number of employees in manufacturing by broad subsector. The largest manufacturing employers are the mineral products industry (cement, sand and gravel, ceramics, clay, etc.), the fabricated metals, computers, electronics, optical and medical equipment industries, the food industries and the coke, refined petroleum, fuel, chemicals, rubbers and plastic industries. Figure 32 also shows the employment by firm size. In four subsectors employment is mainly in small firms, and in large firms for the remainder of subsectors.

Figure 32: Employment by manufacturing sub sector and firm size in Iraq (excl. KR-I), 2014

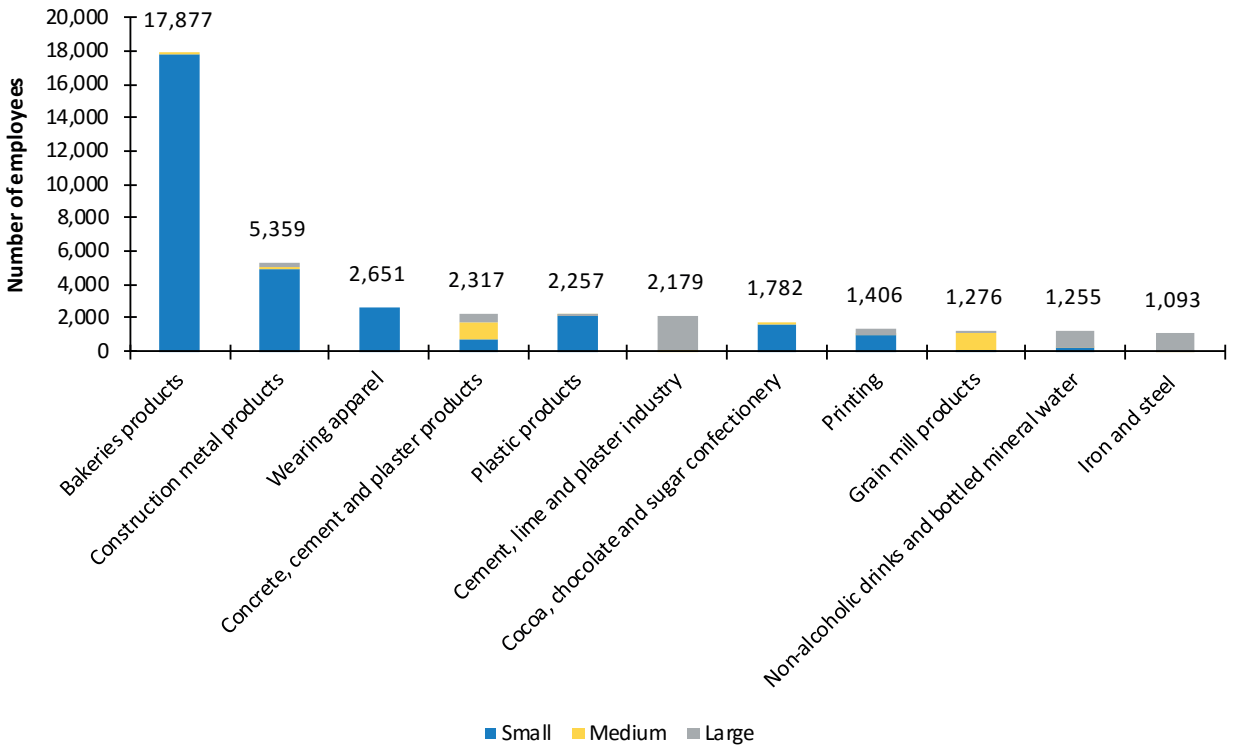


Source: CSO

Workers in factories or plants represented 2.9% of employment in KR-I in 2012.[56] For KR-I, data is more disaggregated, as shown in Figure 33. Workers in bakeries make up most of food manufacturing employment, followed by construction metal workers and wearing apparel workers, all active in small firms.

[56] KRSO. "Labour Force Report for Kurdistan Region," 2012

Figure 33: Employment by manufacturing sub sector and firm size in KR-I, 2012



Source: KRSO

Female employment in the manufacturing sector varies across subsectors. The most women-friendly sectors are the textile industry; leather, bags and shoes; the paper product industry and cigarette manufacturing, which all have above 30% of women employees. The manufacture of metals, motor vehicles, furniture and beverages, however, all have less than 10% of women in their workforce (Table 17).

Table 17: Share of women employment in manufacturing firms in Iraq by subsector (excl. KR-I), 2014

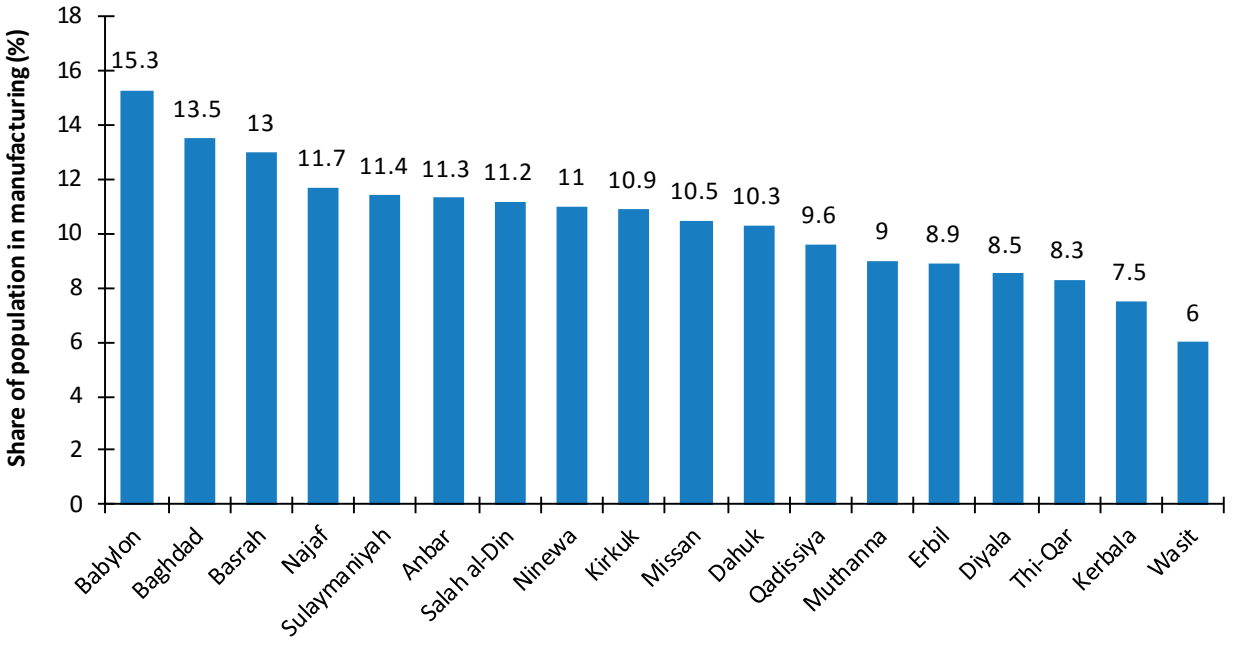
Industry	Share of female employment (%)
Textile	32.6
Tanning and dressing of leather, manufacture of luggage, handbags and saddlery, harness and footwear	30.5
Paper and paper products industry, printing, publications, copying	30.2
Filtering of the tobacco and cigarette	30.2
Electrical devices and machinery and equipment not classified elsewhere	17.6
Food	16.2
Other non-metallic mineral products	14.7
Metal products, computer, electronic, optical, medical devices	13.8
Coke, refined petroleum, nuclear fuel, chemical, rubber, plastic	11.0
Basic metals	9.8
Motor vehicles and other transport equipment	7.7
Furniture and products not classified elsewhere	7.0
Beverages	3.2
Total	16.1

Source: CSO

Child labor is not uncommon in manufacturing. According to CSO, 6.3% of workers aged 10 to 14 worked in manufacturing. Although no data are available as evidence, it is likely that there is a large share of foreign workers in the manufacturing industry.

Employment in the manufacturing sector is mostly wage-based, although significant portions of occupations may be non-wage. The central and southern governorates of Iraq have a relatively larger industrial workforce, as shown in Figure 34 below.

Figure 34: Share of population in manufacturing by governorate, 2012



Source: CSO. "IHSES 2012," 2013

For most occupations in manufacturing, education and training at secondary vocational education level is required. A RAND study, citing the KR-I Labour Force Survey, finds that only 13% of occupations in the sector required tertiary education, while 72% required secondary vocational education level and 15% of occupations did not require any sort of formal education.[57]

3.6 Classifications of occupations in the sector

In this Sector Skills Analysis report several classification systems for occupations and education are relevant. Table 18 provides a schematic illustration of how the levels of these different systems are related to each other. It also provides the context in which the classifications of ISCO (International Standard Classification of Occupations) and ASCO (Arab Standard Classification of Occupations) specific to manufacturing (Table 19) can be understood.

[57] Constant et al. "Improving TVET in KR-I," 2014

Table 18: Relationships between different classification and levelling systems

ISCO	ISIC		ISCED	ASCO	EQF	Example qualifications
3-4	**01**	**Managers**	5 and 6	1 Professional	8	PhD
4	**02**	**Professionals**	5a and 6		7 6	Masters Bachelor
3	**03**	**Technicians**	5b	2 Technician	5	Diploma
2	**04**	**Clerical workers**	4	3 Craftsman	4	Certificates
	05	**Service and sales workers**				
	06	**Agriculture and Fisheries workers**	3	4 Skilled worker	3	Preparatory School Cert.
	07	**Craft and related trade workers**				
	08	**Plant and machine operators**	2	5 Semi skilled	2	Certificates
1	**09**	**Elementary occupations**	1	Foundation skills	1	Basic Education

Table 19 shows the potential range of specialised occupations in the manufacturing subsectors, as classified in the ISCO, with cross referencing to ASCO.

Table 19: Occupations and ISCO/ASCO classifications

Level	ISCO classification and name	ASCO classification	ASCO description
1 Managers	1321 Manufacturing managers	1321	مديرو الإنتاج والعمليات في التصنيع والمناجم
2 Professionals	2141 Industrial and production engineers	2141	المهندسون الصناعيون
	2144 Mechanical engineers	2144	المهندسون الميكانيكيون
	2145 Chemical engineers	2145	المهندسون الكيميائيون
	2151 Electrical engineers	2151	المهندسون الكهربائيون
3 Technicians and Associate Professionals	3115 Mechanical engineering technicians	3115	فنيو الهندسة الميكانيكية
	3116 Chemical engineering technicians	3116	فنيو الهندسة الكيميائية
	3131 Power production plant operators	8161	مشغلو محطات توليد الطاقة
	3134 Petroleum and natural gas refining plant operators	8155	مشغلو معدات مصافي البترول والغاز الطبيعي
	3135 Metal production process controllers	3141	فني كفاءة إنتاجية
	(3119) Industrial Engineering Technicians	3141	
	3122 Manufacturing supervisors	1512	الناظرون (المشرفون) في المقالع والتصنيع
4 Clerical workers	4322 Production clerks	4322	كتبة الإنتاج
7 Craft and related trades	7211 Metal moulders and core-makers	7211	العاملون في السباكة (صهر وصب المعادن)
	7212 Welders and flame-cutters	7212	العاملون في اللحام بالقوس الكهربائي والأكسي أستلين
	7213 Sheet-metal workers	7213	العاملون في أشغال الصفيح
	7214 Structural-metal preparers and erectors	7214	العاملون في الإنشاءات المعدنية
		7215	العاملون في حدادة المباني (أبواب وشبابيك معدنية)
	7221 Blacksmiths, hammer-smiths and forging press workers	7221	الحدادون ومشغلو مكابس التشكيل
	7223 Metal working machine tool setters and operators	7222	الخراطون والفرّازون

Level	ISCO classification and name	ASCO classification	ASCO description
7 Craft and related trades	7224 Metal polishers, wheel grinders and tool sharpeners	7223	المجلّخون
	7233 Agricultural and industrial machinery mechanics and repairers	7236	ميكانيكيو المعدات والآليات الزراعية
	7311 Precision instrument makers and repairers	7311	ميكانيكيو أجهزة القياس
	7315 Glass makers, cutters, grinders and finishers	7322	صانعو المنتجات الحرفية الزجاجية
	7511 Butchers, fishmongers and related food preparers	7411	الجزارون والقصابون والسماكون
	7512 Bakers, pastry-cooks and confectionery makers	7412	الخبازون وصانعو المعجنات والحلويات
	7513 Dairy-products makers	6124	العاملون في إنتاج منتجات الألبان للأغراض التجارية
	7514 Fruit, vegetable and related preservers	7413	عمال تصنيع وحفظ الفواكه والخضراوات والبقوليات
8 Plant and machinery operators and assemblers	8112 Mineral and stone processing plant operators	8112	مشغلو معدات معامل تعدين الخامات المعدنية والصخور
	8114 Cement, stone and other mineral products machine operators	8212, 8213, 8214	مشغلو آلات تشكيل الحجر والرخام مشغلو آلات تصنيع الطوب والبلاط الإسمنتي والرملي مشغلو آلات تصنيع الطوب والبلاط الإسمنتي والرملي
	8122 Metal finishing, plating and coating machine operators	8121, 8122, 8123	مشغلو معدات درفلة المعادن مشغلو معدات المعاملات الحرارية للمعادن مشغلو معدات سحب وبثق المعادن
	8131 Chemical products plant and machine operators	8151-8154	مشغلو معدات الجرش والطحن والخلط مشغلو معدات المعالجة الحرارية الكيميائية مشغلو معدات الترشيح والفرز مشغلو معدات التقطير والمعاملات الكيماوية
	8214 Metal, rubber and plastic products assemblers	8284	عمال تجميع المنتجات المعدنية المطاطية والبلاستيكية
	8160 Food and related products machine operators	8276, 8277	مشغلو آلات تصنيع الزيوت النباتية مشغلو آلات تصنيع منتجات البن والمكسرات
	8181 Glass and ceramics plant operators	8131	مشغلو مصانع الزجاج
	8183 Packing, bottling and labelling machine operators	-	
	8211 Mechanical machinery assemblers	8281	عمال تجميع المعدات الميكانيكية
	8212 Electrical and electronic equipment assemblers	8282	عمال تجميع المعدات الكهربائية
	8342 Earthmoving and related plant operators	8341	سائقو الآليات الثقيلة
	8343 Crane, hoist and related plant operators	8342-44	سائق/ مشغل ونش
9 Elementary occupations	9321 Hand packers	9322	عمال التغليف في المصانع
	9333 Freight handlers	9333	عمال الشحن

3.7 Factors impacting on the growth and development of the sector

3.7.1 Political factors

As with every sector in the Iraqi and KR-I economies, ISIL/Da'esh's rise has had a devastating effect on the manufacturing sector.

The Baiji oil refinery was responsible for over a third of Iraq's domestic oil production before 2014. ISIL/Da'esh took control of the facility during their 2014 offensive, and they mostly destroyed the refinery in 2015, as government forces moved in to retake the facility.[58] This will have a long-lasting, negative impact on domestic refining capacity in Iraq.

3.7.2 Economic factors

Manufacturers in Iraq, particularly small manufacturers, complain about the poor economic conditions for working in the country.[59] The Iraqi Federation of Industries identifies the following factors as some of the most important in preventing Iraq's manufacturing sector from effectively competing with imported goods:

- High wages compared to neighbouring countries
- Advanced technologies used by foreign producers
- Competition of foreign products of both good and poor quality, whereby poor-quality products have flooded the market and reduced diversity and quality in the range of products available
- A poor work environment – lack of security and services, and chronic absenteeism from work
- The refusal of the Ministry of Oil to provide small industry with fuel, forcing them to buy it on the market
- The transformation of many industrial facilities in Baghdad into storage for foreign products, which is more profitable than using the facilities for manufacturing
- Lack of innovation among Iraqi producers, whereby most imitate foreign manufacturing practices and products
- Loss of expertise within the manufacturing sector, particularly to the public sector
- Lack of control of the national borders, allowing for smuggling
- Lack of a national policy that supports industry, unlike neighbouring countries.[60]

[58] Snyder, S. "An Iraqi oil refinery that was too important to destroy has just been destroyed," PRI, 27 May 2015
[59] Al-Ansary, K. "Iraq's moribund manufacturing sector appeals for help," Reuters, 22 June 2011
[60] Iraqi Federation of Industries

3.7.3 Social factors

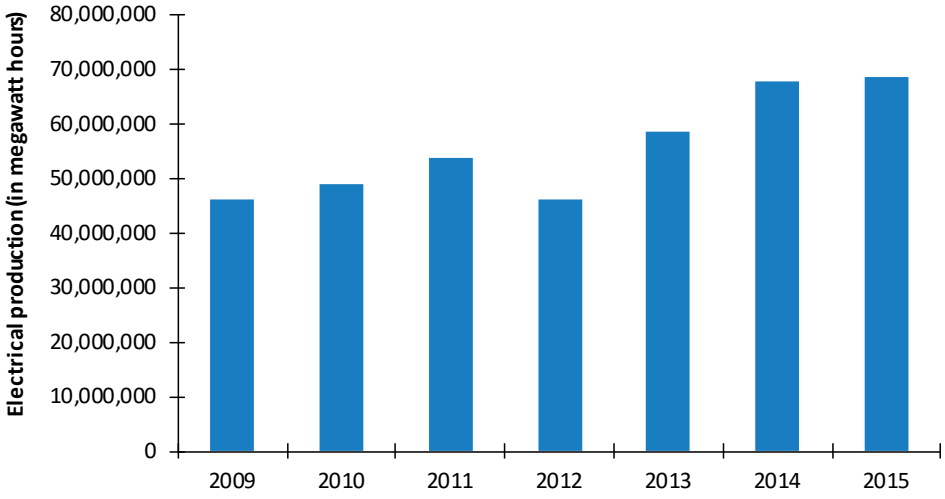
UNICEF estimates that more than 575,000 Iraqi children are working, twice as many as were working in 1990.[61] Within the manufacturing sector, the United States Department of Labour reports that children in Iraq make bricks, and work in steel and plastic factories, though they did not specify the number of children involved in these activities.[62]

Almost a quarter of all people employed in the manufacturing sector are young people (15-25 years of age).[63] The manufacturing sector is heavily dominated by men. According to CSO, more than 90% of those employed in manufacturing are men.[64]

3.7.4 Technological factors

Iraq's electricity shortage has been a burden on the manufacturing sector since the 2003 coalition invasion, though the issue goes back further than 2003. A reported 35,000 factories have shut down over the last twenty years owing to electricity shortages.[65] While Iraq's overall electricity output has increased in the past several years, as shown in Figure 35, the industrial sector's share of electricity consumption has decreased, meaning that other sectors (e.g. public administration) have benefited most from the increase in electricity supply.[66] A steady electricity supply would significantly benefit the manufacturing sector, and Iraq ranks 133rd in the World Bank Doing Business "Access to Electricity" measure.[67]

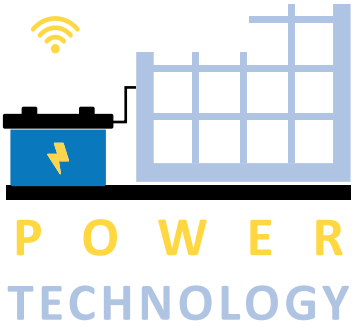
Figure 35: Electricity production in Iraq, 2009-2015



Source: CSO

[61] UNICEF. "A heave price for children," June 2016, p. 7
[62] US Department of Labor. "2015 Findings on the Worst Forms of Child Labor," 2015
[63] CSO
[64] Ibid
[65] Al-Salhy, S. "Shortage of electricity in Iraq cripples economy, sparks protests," al-Monitor, 6 August 2015
[66] International Monetary Fund. "Iraq: Selected Issues," August 2015
[67] World Bank Group. "Doing Business 2017 – Country Profile – Iraq," 2017

Much of the manufacturing sector in Iraq relies on outdated technology. As mentioned above, the Iraqi Federation of Industries cited lagging technology as a factor contributing to Iraq's inability to compete with foreign imports. According to UNIDO's 2009 report on agro-industries, for example, there is also a large gap in computerisation between small firms and large and medium firms. Only 3% of small manufacturers had computerised equipment, whereas large and medium firms had 19% computerised equipment.[68]



3.7.5 Environmental factors

The manufacturing sector is a major contributor to Iraq's environmental crisis. In 2012, the Ministry of Environment put forward a five-year national strategy for addressing environmental issues in Iraq, including those caused by the manufacturing sector. Proposed solutions included moving manufacturers away from residential areas, using cleaner and more efficient sources of fuel, and preventing random burning of waste produced by factories.[69]

In an undated report, the Ministry of Environment looked at the cement-manufacturing sector specifically and found that local cement production did not sufficiently follow environmental best practices for a number of reasons:

- Lack of understanding of the negative environmental effects of cement production
- Lack of consultation with the Ministry of Environment
- Lack of sufficient electricity from the national grid, resulting in the use of heavily polluting generators
- An increase in population which meant that residential areas were encroaching on industrial areas
- Competition from imported cement, forcing manufacturers to reduce costs, often at the expense of good environmental practices.[70]

Given the tenuous state of Iraqi manufacturing, it will be difficult to address these environmental effects without pricing Iraqi manufacturers out the market vis-à-vis foreign imports. However, the environmental situation in Iraq necessitates action on both the public and private level to prevent further damage to an already damaged environment.[71]

3.7.6 Legal factors

Alcohol ban

In October 2016, Iraq's parliament passed a comprehensive ban on the sale, import, or production of alcohol.[72] While Iraq's alcohol production industry is modest, and most alcoholic beverages are

[68] UNIDO. "Survey of Agro-industries in the Republic of Iraq," 2009, p. 19
[69] Ministry of Environment. "The National Environmental Strategy and Action Plan for Iraq 2013-2017," 2012
[70] Ministry of Environment. "The Environmental Reality of Cement Factories in the Provinces of Basra, al-Muthanna, Najaf, Babil, and Karbala. Environmental Problems and Solutions"
[71] Deutsche Welle: "Environmental Pollution: A Slow Death Threatens Iraqis' Lives" 12 August 2011
[72] Associated Press: "Iraq's parliament passes law banning alcohol," 23 October 2016

imported, this ban will nonetheless have a negative effect on the existing, very small, alcohol industry, and was seen by the Christian community as an infringement upon their rights. The Federation of Industries, which represents small manufacturers, stated that there are just four beer brewers and eleven wine makers operating in the country.[73] The ban is not enforced in KR-I where officials have strongly condemned the move.[74]

Pharmaceuticals

According to a 2011 joint report by the Ministry of Health and the World Health Organization (WHO), Iraq has legal provisions in place to grant patents for pharmaceuticals, laboratory supplies, medical supplies, and medical equipment.[75]

The Iraqi pharmaceutical industry has experienced a number of scandals in recent years. In 2011, the British drug company GlaxoSmithKline (GSK) announced it would begin partnering with a local company, Modern Drug Industries, to produce GSK drugs locally in Iraq.[76] GSK's Iraq operation was subsequently accused of corruption, with allegations that they hired government officials to work as sales representatives in order to boost sales.[77]

The Rudaw media outlet, based in KR-I, reported in an investigation in February 2017 that nearly half of all medicine in the KR-I is smuggled into the region, and some consumers travel abroad to buy medicines because of the high number of low-quality medicines found in the KR-I's pharmacies.[78]

Protective measures

The government has occasionally enacted temporary protectionist measures in an attempt to boost domestic manufacturing. For example, in 2013, they banned the importation of cement from Iran, though the ban was almost immediately rescinded.[79] A ban on all cement imports was reinstated in 2016.[80] These bans can have unintended consequences, but are reflective of the heavy competition that Iraqi manufacturers face from foreign imports.

[73] Iraqi Federation of Industries
[74] Van Wilgenburg, W. "Kurdish officials reject Iraqi alcohol ban, say Baghdad should focus on real problems," 24 October 2016
[75] Ministry of Health: "Iraq Pharmaceutical Country Profile," 2011
[76] Ensor, J. "Glaxo to manufacture drugs in Iraq," 6 August 2011
[77] Neate, R. "GlaxoSmithKline holds Iraq inquiry after fresh bribery allegations," The Guardian, 7 April 2014
[78] Rudaw. "Smuggled, substandard medicine floods Kurdish market," 4 February 2017
[79] Taib, M. "2013 Minerals Yearbook: Iraq," 2015
[80] Iraq Trade Link News. "Banning cement imports saved 1 billion for Iraq," 25 January 2017

Chapter 4: Skills supply to the manufacturing sector

4.1 Skills supply to the manufacturing sector

In this analysis of skills supply to the manufacturing labour market, the estimated cohort size is a proxy for the number of new entrants to the labour market with the skills relevant to work in the economic sector.

This is only a rough indicator since skills supply for the sector offered through the professional development short training courses of employers or private providers is not included.

In the following tables skills supply is organised by skill area, irrespective of the level or duration of education and training.

- MoLSA courses are short duration training offered at lower levels. These do not currently lead to the award of any recognised qualification
- MoE Vocational Preparatory School is three years in duration
- Diplomas awarded after successful completion of a two-year programme by institutes (referred to as 'technical' in the tables)
- Bachelors are awarded after successful completion of a 4/5-year programme by colleges.

Manufacturing skills are organised as follows:

- Mechanical skills
- Machinery and equipment
- Oil related industries
- Chemical industry
- Clothing industry
- Other manufacture related skills.[81]

Table 20: Manufacturing skills in Iraq

Institution	Name of specialisation	Estimated cohort size (or last known intake*)
Retail and marketing		
MoE vocational school	Commercial stream	1,370
MoLSA	Know about business	670
Technical / Kirkuk	Marketing management	174*
Faculty of Applied Arts	Advertising techniques	102*
Materials management		
Technical Basrah	Materials management techniques	311*
Technical / Kufa	Materials management techniques	123*
Technical / Hawija	Materials management techniques	316*
Technical / Kirkuk	Materials management techniques	68*
Administration of Rusafah[82]	Materials management techniques	572*
Management / Technical	Materials management techniques	102*
Technical / Anbar	Materials management techniques	0*

[81] Note that Electronics is included in the report on the ICT Sector
[82] As named in the original data from Central Technical University

Institution	Name of specialisation	Estimated cohort size (or last known intake*)
Technician / Baquba	Materials management techniques	725*
Technical / Kut	Materials management techniques	195*
Technical / Babylon	Materials management techniques	418*
Technical / Diwaniya	Materials management techniques	400*
Technical / Architecture	Materials management techniques	153*
STU Technical / part of[83]	Materials management techniques	277*
Automotive skills		
MoE Vocational Schools	Cars	625
	Mechatronics cars	50
MoLSA	Mechanical motor vehicles	212
	Electricity motor vehicles	20
	Painting of motor vehicles	12
	Part painting	13
	Motor winding	5
Baghdad Technical College	Engineering of automotive techniques	39*
College of Technology/ Najaf	Engineering of automotive techniques	58*
Mechanical skills		
Vocational schools	Mechanical	859
MoLSA	Mechanical engineering	3
Technical / Babylon	Mechanical techniques	98*
Technical / Mosul	Mechanical techniques	0*
Technical / Hawija	Mechanical techniques	142*
STU Technical / role	Mechanical techniques	56*
Technical / Kirkuk	Mechanical techniques	78*
Technology Baghdad	Mechanical techniques	154*
Technical / Anbar	Mechanical techniques	0*
Technician / Baquba	Mechanical techniques	126*
Technical / Kut	Mechanical techniques	71*
Technical / Essaouira	Mechanical techniques	120*
Technical / Kufa	Mechanical techniques	68*
Technical / Najaf	Mechanical techniques	35*
Technical / Musayyib	Mechanical techniques	25*
Technical / Diwaniya	Mechanical techniques	209*
Technical / Kerbala	Mechanical techniques	142*
Technical / Samawa	Mechanical techniques	136*
Technical Basrah	Mechanical techniques	169*
Technical / Architecture	Mechanical techniques	29*
STU Technical / part of	Mechanical techniques	60*
Technical / Nasiriyah	Mechanical techniques	104*
Preparation of technical trainers	Mechanical techniques	68*

[83] As per the original data from Southern Technical University

Institution	Name of specialisation	Estimated cohort size (or last known intake*)
Machinery and equipment		
Technical / Hawija	Machinery and equipment	73*
Technical / Kirkuk	Machinery and equipment	99*
Preparation of technical trainers	Machinery and equipment	97*
Technology Baghdad	Machinery and equipment	98*
Technical / Anbar	Machinery and equipment	0*
Technician / Baquba	Machinery and equipment	76*
Technical / Kut	Machinery and equipment	46*
Technical / Essaouira	Machinery and equipment	48*
Technical / Kufa	Machinery and equipment	20*
Technical / Babil	Machinery and equipment	139*
Technical / Najaf	Machinery and equipment	45*
Technical / Musayyib	Machinery and equipment	26*
Technical Basra	Machinery and equipment	136*
Technical / Architecture	Machinery and equipment	43*
STU Technical / part of	Machinery and equipment	75*
Technical / Mosul	Machinery and equipment	0*
Oil related industries		
Vocational schools	Petrochemical Industries	230
College of Technology / Kirkuk	Engineering of fuel and energy technologies	22*
Technical College / Basrah	Fuel and energy technologies engineering	80*
Technical College / Basrah	Petrochemical engineering techniques	71*
Chemical industry		
Technical / Mosul	Chemical industries	0*
Technical / Kirkuk	Chemical industries	108*
Technology Baghdad	Chemical Industries	53*
Technical / Anbar	Chemical industries	0*
Technical Basrah	Chemical industries	157*
Clothing industry		
Applied Arts Baghdad	Technology of the garment industry	46*
Technical / Najaf	Clothing industry techniques	44*
Technical / Nasiriyah	Garment industry technologies	35*
Technical / Kirkuk	Technology of the garment industry	82*
Other manufacture related		
MoE vocational schools	Industrial technology	18
	Maintenance of laser systems	34
	Food Industry	26
MoLSA	Maintenance of generators	167
	Aluminium	22
	Heavy equipment	19
	Leather industry	18
	Engraving	148
	Milling	64
	Print Screen	58

Institution	Name of specialisation	Estimated cohort size (or last known intake*)
Baghdad Technical College	Materials technology engineering	37*
College of Technology / Mosul	Engineering of medical device technologies	0*
Electrical and electronic technology[84]	Engineering of medical device technologies	104*
College of Technology / Kirkuk	Environmental techniques and pollution	26*
Technical College / Basrah	Environment & pollution technologies engineering	56*

* Figures with (*) show where the estimation was based on adjusted figures, or on only one cohort. Technical University figures are based on one intake only due to incompleteness of the data submitted

Table 21: Manufacturing skills in KR-I

Institution	Name of specialisation	Estimated cohort size (or last known intake*)
Mechanical skills		
Vocational schools	Mechanical	125
Technical College of Engineering	Mechanic and energy engineering	50
Erbil Technology Institute	Mechanic technology	57
Oil related		
Technical College of Engineering	Petrochemical	39
Zaxo Technical Institute	Petroleum	54
Other manufacture related		
Vocational schools	Mineral	53
Technical College of Applied Science	Food industry	246
Technical College of Engineering	Production and metallurgical engineering	201

4.2 Implications of the data

This may be the first thematic study of the provision of technical and vocational programmes in the country which looks at common and differentiated offerings of the providers. As shown in the previous tables above, for example, there is clearly a need for rationalisation in some areas to reduce duplication and gain economies of scale. The recommendations in Chapter 6 may influence decision-makers to rationalise the programmes currently being offered i.e. reduce or discontinue provision in some fields and develop and/or increase in others. In many countries rationalisation has been guided by the desire to differentiate provision and create 'centres of excellence'. An advantage of increased specialisation is concentration of expertise and expensive equipment and other resources. A disadvantage is that students need to travel away from their home town in order to pursue specialised training. Information on the provision of programmes (skills supply) is indicative and should be used to supplement the qualitative and quantitative information on the demand for skills which is presented in Chapter 5.

[84] This appears to be the name of a college

Chapter 5: Demand for skills in the manufacturing sector

Information on the demand for skills comes from two main sources: the meeting of the pilot Sector Council and the Enterprise Survey. The outcomes of the Sector Council meeting and Enterprise Survey provide this information in the form of qualitative and quantitative data, respectively, and is presented in the following sections.

5.1 Outcomes of the Manufacturing Sector Council meeting

The pilot Sector Council, representing the leadership of the sector, was established by nominations based on information gathered in fieldwork interviews and during desk research, and drawing on professional networks and databases.

A demand-led TVET system requires that the leadership of the sectors is organised into representative bodies to advise on the training needs of their sector. Thus, in the future, permanent sector councils will need to be formally established through legislation.[85] The membership of formally and legally established sector councils will need to be decided by the sector itself, probably in consultation with the members of the original pilot Sector Council.

The pilot Manufacturing Sector Council meeting was held in Erbil on 2-3 May 2017. The meeting was attended by public and private representatives of the sector from Iraq and KR-I. Unfortunately, although many private sector representatives from KR-I were invited, and four accepted, no private sector representatives from KR-I attended the meeting.

5.1.1 Challenges of the manufacturing sector

According to the participants from Iraq, teaching staff do not have links with the industry, or experience of the standards or methods of delivery in other countries, for comparison or benchmarking. There is no performance management of teaching staff in the public education system, and civil servants cannot be fired. Apparently, teachers fear that they will lose out on promotions if their students fail, so they ensure that they pass, irrespective of the standard of the students' work.

The content of programmes and the methods of teaching are out-of-date, and equipment and technologies are old fashioned and not relevant to today's manufacturing industries. Local graduates are considered poorly prepared for work and their qualifications have low credibility; whereas the qualifications of foreign workers are more valued by manufacturing employers. The perceived lack of skilled and motivated workers available for recruitment, and the low productivity of workers, is at least partly attributed to failures of the education and training system. KR-I participants felt that some of these issues are already being addressed in KR-I, particularly as a result of learning from and adopting aspects of the Swedish approach to TVET.

The participants expressed concern that finance is misused; in particular, that funding is channelled to non-performing institutions with poor outcomes. In this connection, they criticised MoLSA for its system of offering entrepreneurship training to unemployed people, linked to small loans, as they felt that the recipients of such loans are too inexperienced, and their businesses fail.

Summer training has the potential to be extremely beneficial in terms of preparing young people

[85] In the document 'Government Restructuring for the TVET Sector in Iraq', developed under the UNESCO TVET Reform Programme for Iraq and KR-I, 'Sector Council' is referred to as 'Sector Skills Advisory Coordination Services (SACS)' bodies as their role includes the development and validation of respective sector national occupational skills standards and qualifications

for the labour force, but the potential value of these experiences is mostly unfulfilled, as summer training is not taken seriously enough by all concerned. School field trips should be used to inspire young people for fields of work and motivate them with ambitions and career plans, but these are no longer common practice.

Participants criticised the lack of robust data collection systems, and the lack of high quality analysis of data to inform decision making. Participants were very sceptical about the accuracy of CSO data and the credibility of CSO data analysis. One reason for poor data is thought to be of result of employers avoiding taxes by mis-representing the number of their employees.

Public sector companies are apparently massively overstaffed, with as much as five times the needed number of staff, with very high staff costs, and disempowered management, who are not able to reduce their number or manage their performance. Staff of these companies are reportedly appointed not on merit, but as a result of partisan practices and nepotistic and tribal pressures. Local workers are reportedly chronically absent from work, and unproductive in comparison with foreign workers

Pensions for private sector workers are significantly less than the pensions of civil servants, and both employers and employees resent the contributions to be made to these schemes and would rather avoid them. Participants would like to see equitable pension arrangements implemented, so that work in the private sector is more attractive.

Employers in the manufacturing sector complain about a confusing lack of full and consistent implementation of existing laws and regulations, and lack of co-ordination between ministries in terms of their compliance and reporting requirements.

The manufacturers feel that the government does not invest in their success. No subsidies for fuel, lack of tax exemptions and increasing tax on industrial products all contribute to high production costs, and uncompetitive prices. There is insufficient protection of local products.

Requirements for bank loans and high rates of interest in Iraq make it difficult for businesses to access finance. In one example given, the guarantee for the requested loan was more than double the value of the loan, and interest rates were 12-14%. Conditions for industrial bank loans in KR-I are much more conducive, with no guarantees required and no interest payments. In the view of these participants, banks should be involved in new developments as partners and not as money lenders or shareholders. Currently the law (2004 Article 27) may not allow banks to invest.

5.1.2 Opportunities identified by the Manufacturing Sector Council

Establish private sector industrial cities

The concept of industrial cities is not new, as there has been some development in this area, for example in Basrah, where the development is unfinished, and in Baghdad, where it has reportedly been fully taken over by the government. Apparently, a draft law to regulate industrial cities has been developed with the support of UNIDO, but in the opinion of these participants the draft should be amended to give a bigger share to the private sector. The participants envisage fully privately owned and controlled industrial cities with their own generation of electricity.

Re-vitalise business incubators

Business incubators is also not a new concept as MoHESR has a department for business incubators but it has no legal basis or funding support, and educators have no time for incubators. Reportedly

there is no real vision or capability to support the development of business ideas, with facilities, supervision and mentoring; with sale of products and meaningful relationship with manufacturers or markets. The Ministry of Industry and MoLSA also have business incubators, with facilitation of small loans. Another related concept is sometimes called 'education with production', where small groups of students work together under supervision to develop and sell products.

Development of innovative and sustainable responses to changing conditions

A number of ideas were generated including making better use of natural resources, green building materials, sustainable solutions for cooling houses in summer (e.g. using hot and cold water sources, like Sweden), developing renewable energy (solar and wind), roof gardens, using gas from biological treatment plants, modern technologies.

5.1.3 In-demand occupations identified by the Manufacturing Sector Council

Table 22: In-demand occupations identified by the Manufacturing Sector Council

ISCO	ASCO	Occupation
2141	2141	Industrial and production engineers
2144	2144	Mechanical engineers
2151	2151	Electrical engineers
3115	3115	Mechanical engineering technicians
3113	3113	Chemical processing plan controllers
3135	3141	Metal production process controllers
4322	4322	Production clerks
7221	7221	Blacksmiths, hammer-smiths and forging press workers
7233	7236	Agricultural and industrial machinery mechanics and repairers
7311	7311	Precision instrument makers and repairers
8112	8112	Mineral and stone processing plant operators
8131	8221-8223	Chemical products plant and machine operators
3131	8161	Power production plant operators
8183	-	Packing, bottling and labelling machine operators
9321	9322	Hand packers

5.2 Results of the Enterprise Survey for the manufacturing sector

The following sections provide both top-level and in-depth information into the labour market outlook and educational/training needs of medium- (10-29 employees) and large-sized (30+ employees) firms across the selected six governorates in Iraq and two in KR-I.

Firms were drawn in a stratified manner (by governorate and subsector) from CSO's 2009 Business Register and in some cases based on CSO field offices' knowledge of the labour market. Given the outdated Register and the significant changes in the country during the years since 2009, the Register is not thought to accurately represent the current labour market. Therefore, in all proceeding analyses, the data is not weighted according to the Register, and instead the raw results are presented. In cases where firms' responses are quite varied by strata, this approach may lead to some strata being under- or over-represented in the total counts, but nonetheless characterises the more reliable presentation of the survey results.

5.2.1 General overview of the sampled firms from the Enterprise Survey

In total, 876 firms were sampled from the manufacturing sector. Firms from 12 subsectors in the manufacturing sector were sampled during the implementation of the survey. Though 4 firms were

initially targeted in the subsector 'other manufacturing' no firms were sampled due to logistical constraints. Of the 876 firms sampled, 662 (76%) were in Iraq and the remaining 24% (214) were in KR-I.

Of the 876 firms, 632 were medium sized (10-29 employees) and 244 were large (>30 employees). The numbers in brackets in Table 23 indicate the number of medium (10-29 employees) and large-sized firms (30+ employees), respectively. The governorates with the largest number of firms sampled were from Baghdad (243), Sulaymaniyah (145), Najaf (129) and Diyala (110). The subsectors with the largest number of firms sampled were in 'manufacture of non-metallic mineral products' (397) and 'manufacture of food products' (252).

Table 23: Number of manufacturing firms sampled by governorate and subsector

Subsector	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Manufacture of food products	81 (63 medium, 18 large)	25 (18,7)	27 (10,17)	23 (16,7)	11 (10,1)	57 (49,8)	20 (15,5)	8 (8,0)	252 (189,63)
Manufacture of beverages	12 (9,3)	5 (4,1)	5 (5,0)	4 (2,2)	11 (4,7)	6 (6,0)	7 (4,3)	1 (1,0)	51 (35,16)
Manufacture of coke and refined petroleum products	0	9 (8,1)	3 (3,0)	6 (6,0)	2 (0,2)	0	10 (6,4)	0	30 (23,7)
Manufacture of chemicals and chemical products	10 (6,4)	1 (1,0)	0	1 (0,1)	1 (1,0)	5 (4,1)	4 (3,1)	4 (3,1)	26 (18,8)
Manufacture of basic pharmeceutical products and preparations	4 (2,2)	0	0	1 (0,1)	0	0	0	0	5 (2,3)
Manufacture of rubber and plastics products	10 (8,2)	3 (2,1)	0	5 (4,1)	4 (2,2)	7 (6,1)	9 (6,3)	0	38 (28,10)
Manufacture of other non-metallic mineral products	116 (71,45)	25 (23,2)	74 (47,27)	16 (10,6)	19 (19,0)	46 (41,5)	70 (61,9)	31 (13,18)	397 (285,112)
Manufacture of basic metals	1 (0,1)	1 (0,1)	0	0	1 (1,0)	2 (1,1)	1 (1,0)	0	6 (3,3)
Manufacture of fabricated metal products	5 (4,1)	8 (6,2)	0	12 (8,4)	5 (5,0)	5 (4,1)	20 (11,9)	1 (1,0)	56 (39,17)
Manufacture of computer, electronic and optical products	0	0	0	0	0	1 (0,1)	0	0	1 (0,1)
Manufacture of electrical equipment	4 (1,3)	2 (2,0)	0	0	0	0	1 (1,0)	0	7 (4,3)
Manufacture of machinery and equipment	0	0	1 (1,0)	1 (1,0)	1 (1,0)	0	3 (1,2)	1 (1,0)	7 (5,2)
Total	243 (164,79)	79 (64,15)	110 (66,44)	69 (47,22)	55 (43,12)	129 (112,17)	145 (109,36)	46 (27,19)	876 (632,244)

The size of firms ranged from 10 up to 1,338, with a median size of 15 employees. There were 44 firms with more than 100 employees, and 4 with more than 500. In total there were 31,727 employees, with 88% being male, the majority of which were permanent employees (Table 24).

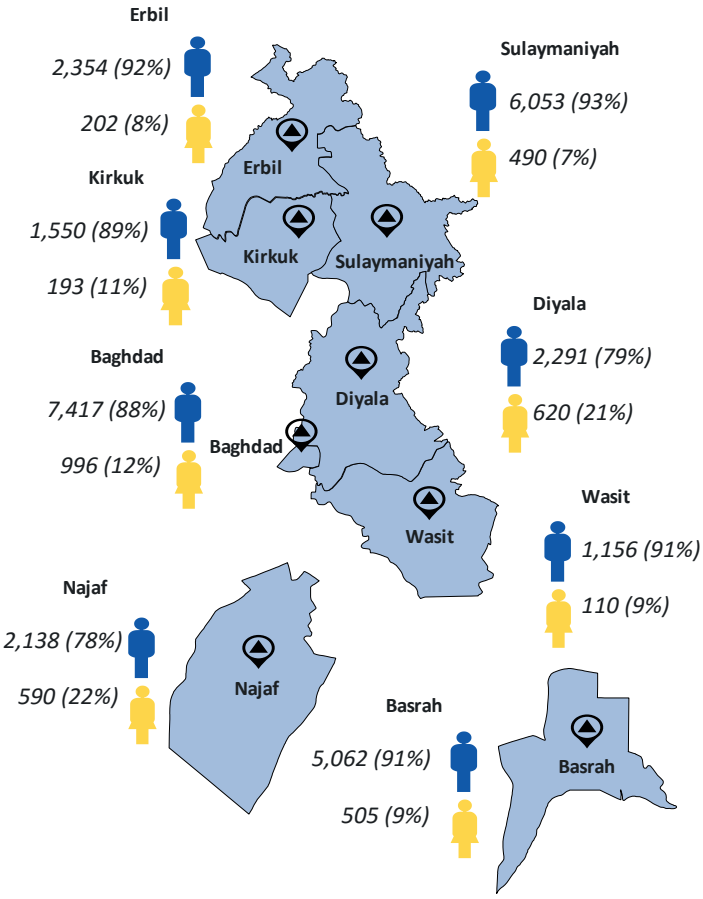
By governorate, the gender breakdown was heavily dominated by men with all the governorates, except Diyala (79%) and Najaf (78%), with over 80% men (Figure 36). This approximates the finding of the

desk research in Chapter 3 that the sector is 84% male dominated. However, there are numerous opportunities in the sector to which women might be willing to undertake such as corporate service managers and accountants; both occupations which were found in the survey to be in the top ten of occupations in manufacturing.

Table 24: Employee type by gender

Type	Male	Female	Total
Permanent	20,535 (90%)	2,377 (10%)	22,912
Temporary	3,721 (85%)	646 (15%)	4,367
Daily	3,765 (85%)	683 (15%)	4,448
Total	28,021 (88%)	3,706 (12%)	31,727

Figure 36: Number of employees by gender in selected governorates



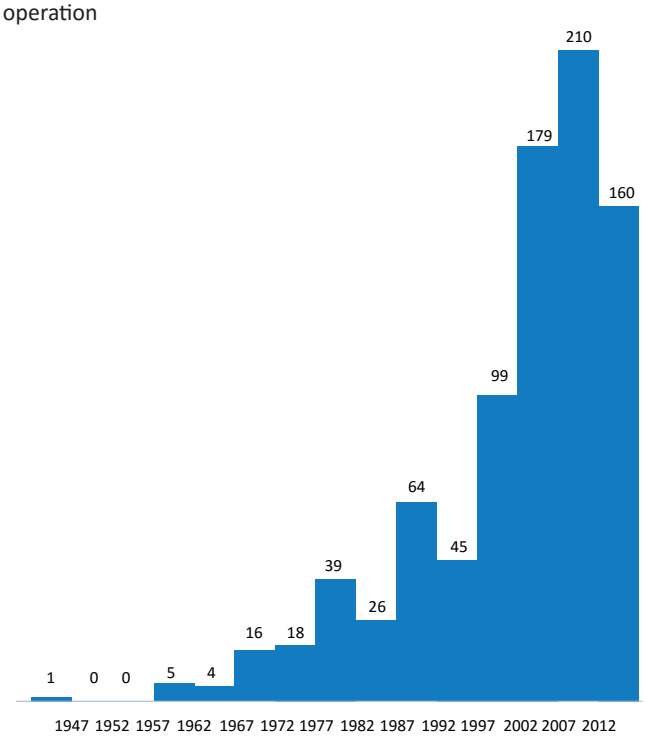
As expected, given the nature of the sector, of the 876 firms, 64 (7%) of firms were providing services, while 767 (88%) produced goods and 45 (5%) firms did both. The legal status of firms was mostly individually owned, indicating high rates of entrepreneurs (Table 25).

Finally, the majority of firms were started after the year 2000 (Figure 37), but there was a significant proportion during the 1990s (nearly 15%) and some firms dated back to the 1960s, and in one case to 1947. The older companies are generally larger in which these large firms represent some of the most mature firms sampled in the survey.

Table 25: Legal status of firms

Subsector	Individual ownership	Limited company	Joint stock company	Not stated
Manufacture of food products	154 (61.1%)	61 (24.2%)	11 (4.4%)	26 (10.3%)
Manufacture of beverages	29 (56.9%)	15 (29.4%)	3 (5.9%)	4 (7.8%)
Manufacture of coke and refined petroleum products	10 (33.3%)	9 (30%)	NA	11 (36.7%)
Manufacture of chemicals and chemical products	13 (50%)	6 (23.1%)	3 (11.5%)	4 (15.4%)
Manufacture of basic pharmeceutical products and preparations	2 (40%)	2 (40%)	NA	1 (20%)
Manufacture of rubber and plastics products	23 (60.5%)	6 (15.8%)	2 (5.3%)	7 (18.4%)
Manufacture of other non-metallic mineral products	263 (66.2%)	41 (10.3%)	1 (0.3%)	92 (23.2%)
Manufacture of basic metals	1 (16.7%)	1 (16.7%)	1 (16.7%)	3 (50%)
Manufacture of fabricated metal products	32 (57.1%)	14 (25%)	2 (3.6%)	8 (14.3%)
Manufacture of computer, electronic and optical products	NA	1 (100%)	NA	NA
Manufacture of electrical equipment	2 (28.6%)	2 (28.6%)	1 (14.3%)	2 (28.6%)
Manufacture of machinery and equipment	2 (28.6%)	4 (57.1%)	0 (0%)	1 (14.3%)

Figure 37: Firms starting year of operation



5.2.2 Analysis of occupations in the manufacturing sector

Each company was asked to list the top 7 occupations (based on frequency) in their workforce as well the qualification levels of people in the occupations. The classification of qualification levels are based on these descriptions:

- Basic-skilled Worker (no diploma or a certificate for primary or middle education)
- Semi-skilled Worker (has followed some vocational training)
- Skilled Worker (professional secondary education/vocational training certificate)

- Professional Technician (diploma from a technical institute)
- Professional Academic (diploma from a higher education institute)
- Technical Specialist (bachelor degree from a technical faculty/university)
- Academic Specialist (bachelor degree from a faculty/university)
- Higher Technical Specialist (technical master degree or equivalent)
- Specialist Technical Expert (technical doctorate degree or equivalent)
- Specialist Academic Expert (doctorate degree or equivalent).

The RAND study based on KRSO data in KR-I[86] in 2014 found that only 13% of occupations in the sector required tertiary education but in this sample of the top occupations, 26% had tertiary education. This may be accounted for (in part) by the disproportionate representation of management in the top ten manufacturing occupations (see Table 27).

The spread of qualifications in the manufacturing sector is generally as expected with mostly basic and vocational qualifications in the lower level artisan jobs. 91% of the manufacturing sector workers in 'B' level occupations (basic-skilled, semi-skilled and skilled) were found to possess basic and vocational qualifications, with 50% having basic-skilled qualifications, 11% semi-skilled and 30% skilled.

However, while higher-level jobs were mostly in the hands of people with tertiary qualifications, there is some evidence of under-qualification in the higher-level jobs (i.e. 'A' level occupations with low qualified incumbents) 32% in 'A' level occupations (professional and technical) were done by people with the qualification level of a skilled worker (professional secondary education/vocational training certificate). This suggests that qualification is not a primary factor in recruitment decision, and this is largely confirmed in Table 31, which shows that age, gender, interview behaviour and practical experience are all more important factors in recruitment decision making than formal qualifications.

Table 26: Occupation level by qualification

Occupation level	Basic-skilled	Semi-skilled	Skilled	Prof. Technician	Prof. Academic	Tech. Specialist	Acad. Specialist	Higher Tech. Specialist	Specialist Tech. Expert	Specialist Acad. Expert
'A' level	71 (4%)	18 (<1%)	616 (32%)	216 (11.5%)	162 (9%)	210 (11%)	517 (28%)	32 (2%)	32 (2%)	2 (<1%)
'B' Level	1,996 (50%)	435 (11%)	1,203 (30%)	170 (4%)	57 (1%)	41 (1%)	88 (2%)	1 (<1%)	1 (<1%)	0 (0%)

Table 27 below shows the top ten manufacturing-related occupations found in the survey (in order) in 2017 in employment across the sector in Iraq and KR-I, respectively.

There are two reasons why food processing and mineral products are the two subsectors most visible in the top ten occupations. Firstly, as shown in Chapter 3, the most productive subsectors overall and the biggest employers are coke and refined petroleum; food products; mineral products; and metal products. In KR-I manufacture of mineral products and food products are the most productive. Secondly, it should be noted that the sample of manufacturing firms in the survey consisted of 45% mineral and 29% food manufacturers and only 26% of the sample represented all the other manufacturing subsectors.

[86] Constant et al. "Improving TVET in KR-I," 2014

Seven of the top ten occupations appeared in both Iraq and KR-I:

- Manufacturing manager
- Cement, stone and other mineral product machine operator
- Security guard
- Earthmoving and related plant operator
- Cook
- Corporate service manager
- Accountant.

Table 27: Top ten most frequent occupations by region

Rank	1	2	3	4	5	6	7	8	9	10
Iraq	Manufacturing managers	Cement, stone and other mineral product machine operators	Security guards	Handpackers	Food and related products machine operators	Earthmoving and related plant operators	Cooks	Corporate service managers	Account-ants	Freight han-dlers
KR-I	Manufacturing managers	Corporate service managers	Account-ants	Cement, stone and other mineral product machine operators	Earthmoving and related plant operators	Mechanical engineering technicians	Sales and marketing managers	Security guards	Cooks	Crane, hoist and related plant oper-ators

Of the top ten manufacturing occupations, these four are non-sector specific occupations: corporate service managers, accountants, sales and marketing managers and security guards.

Freight handlers are also found in the top ten in the transport sector; earthmoving; related plant operators are in the top ten for the construction sector; and cooks are in the top ten for hospitality.

The manufacturing sector seems top heavy, with more manufacturing managers than any other manufacturing occupation. In table 26 above, one third of the top 10 jobs are 'A' level occupations (managerial, professional and technical). The construction sector was found to be similarly top heavy. It is possible that during economic downturn lower level workers maybe have been laid off and higher-level professionals were retained.

The most striking gaps in this list of top ten occupations are the process controllers and plant and machine operators listed by the pilot Manufacturing Sector Council as high demand occupations. In a fully functional manufacturing sector these are the occupations that man the production process.

5.2.3 Analysis of job skills in the manufacturing sector

One of the main purposes of the survey was to assess the skills that employers value, and need more of in their firms. To assess this, each firm was asked to provide the following for 12 key job skills (description of skills can be found in Appendix 5):

- Importance (not, somewhat or very important)
- Satisfaction (not, somewhat or very satisfied).

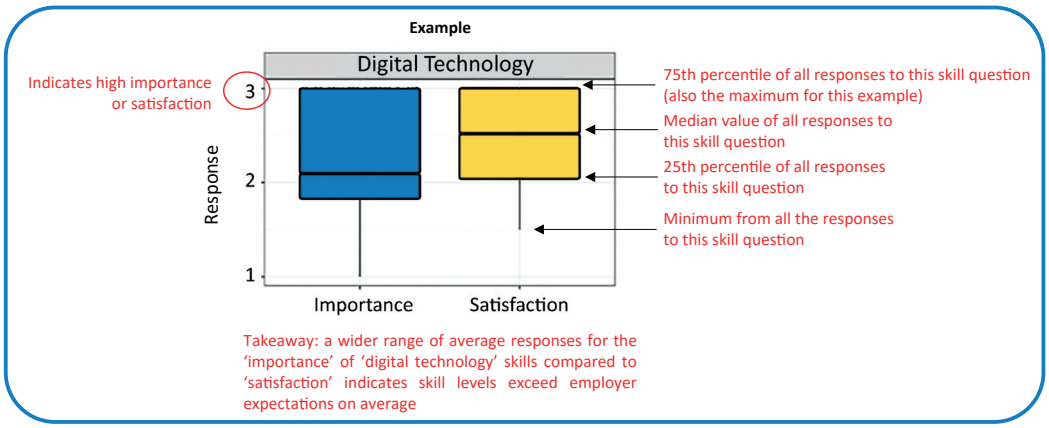
These questions were answered by each firm for each of their seven most common occupations. In order to better understand the gaps in skills in the relevant manufacturing-related occupations we focus our analysis on the gap between how important a skill is thought to be, and how satisfied employers are of their workers in having this skill.

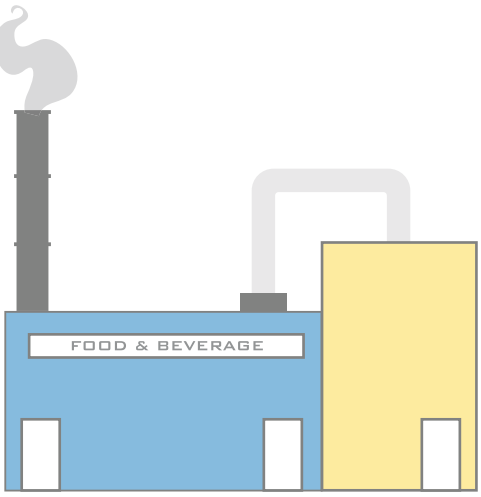
To assess the overall response to these questions, the average answer of importance and satisfaction were calculated for each occupation. These values were then placed via side-by-side boxplots in Figures 38 (Iraq) and 39 (KR-I). A value of '1' on the y-axis indicates low perceived importance or satisfaction, while 3 indicates high importance or satisfaction. The horizontal black line in each box indicates the median value, while the bottom and top of the box indicate the 25th and 75th percentile, respectively. Black dots indicate outliers (in this case occupations with exceptionally low scores). This representation allows both the overall patterns in response and the identification of potential gaps between importance and satisfaction of the sector at a high-level. This view is only indicative for the sector as a whole, and not specific occupations.

In both Iraq and KR-I employers in the sector were found to highly value the importance of general knowledge, technical skills, and communication and teamwork skills. However the level of satisfaction in these skills (except communication and teamwork skills in KR-I) is on average lower than the level of importance indicating potential gaps between employer needs and employees' skills.

There appears to be more variability in the perceived importance of many skills in Iraq than in KR-I. In Iraq, the importance of advanced and specialised knowledge, creative thinking, foreign languages, digital technologies and continuous skills were not as high as they are in KR-I.

Figure 38: Side-by-side boxplots of the average importance and satisfaction of 12 key skills in manufacturing-related occupations in Iraq





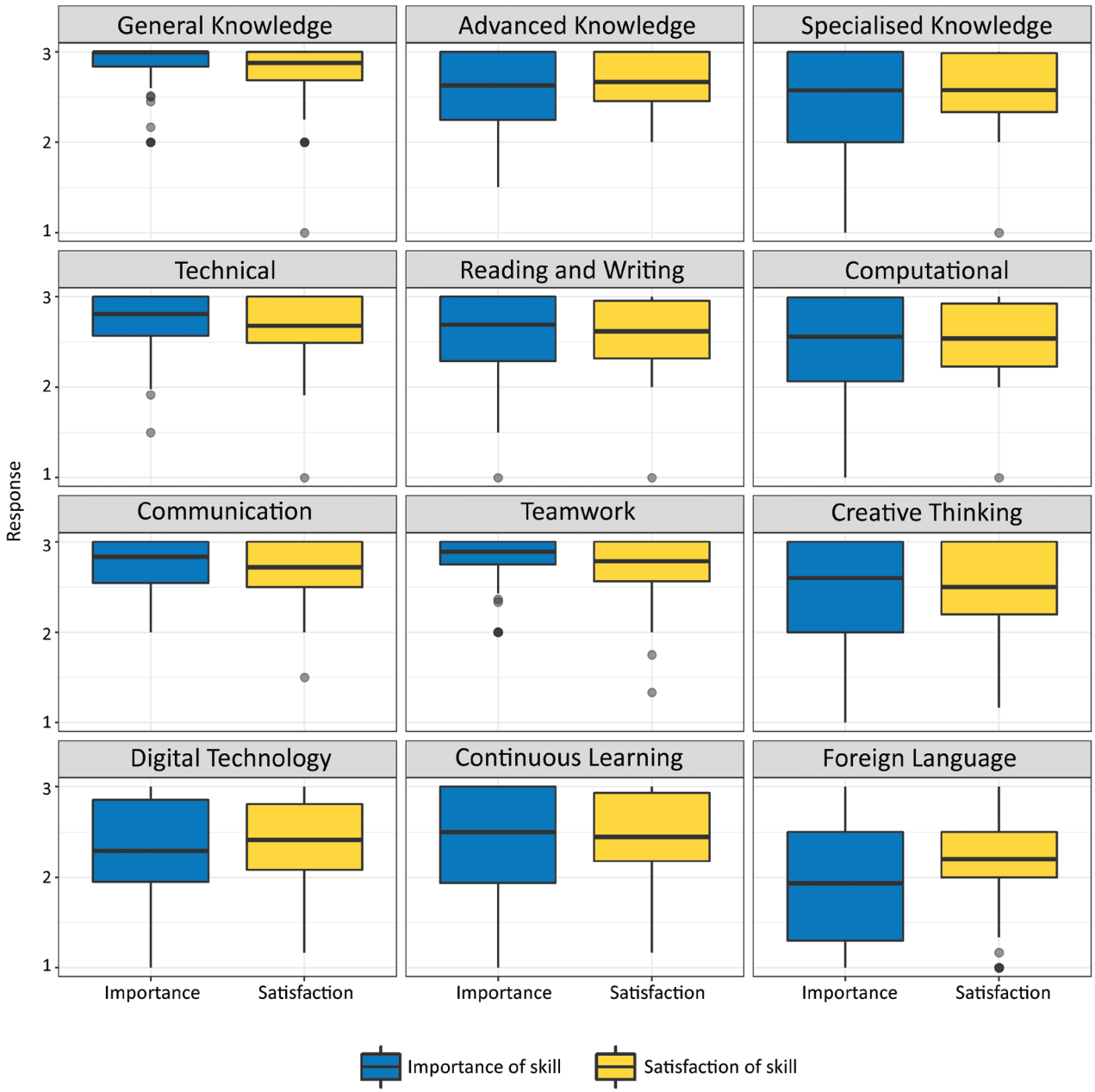
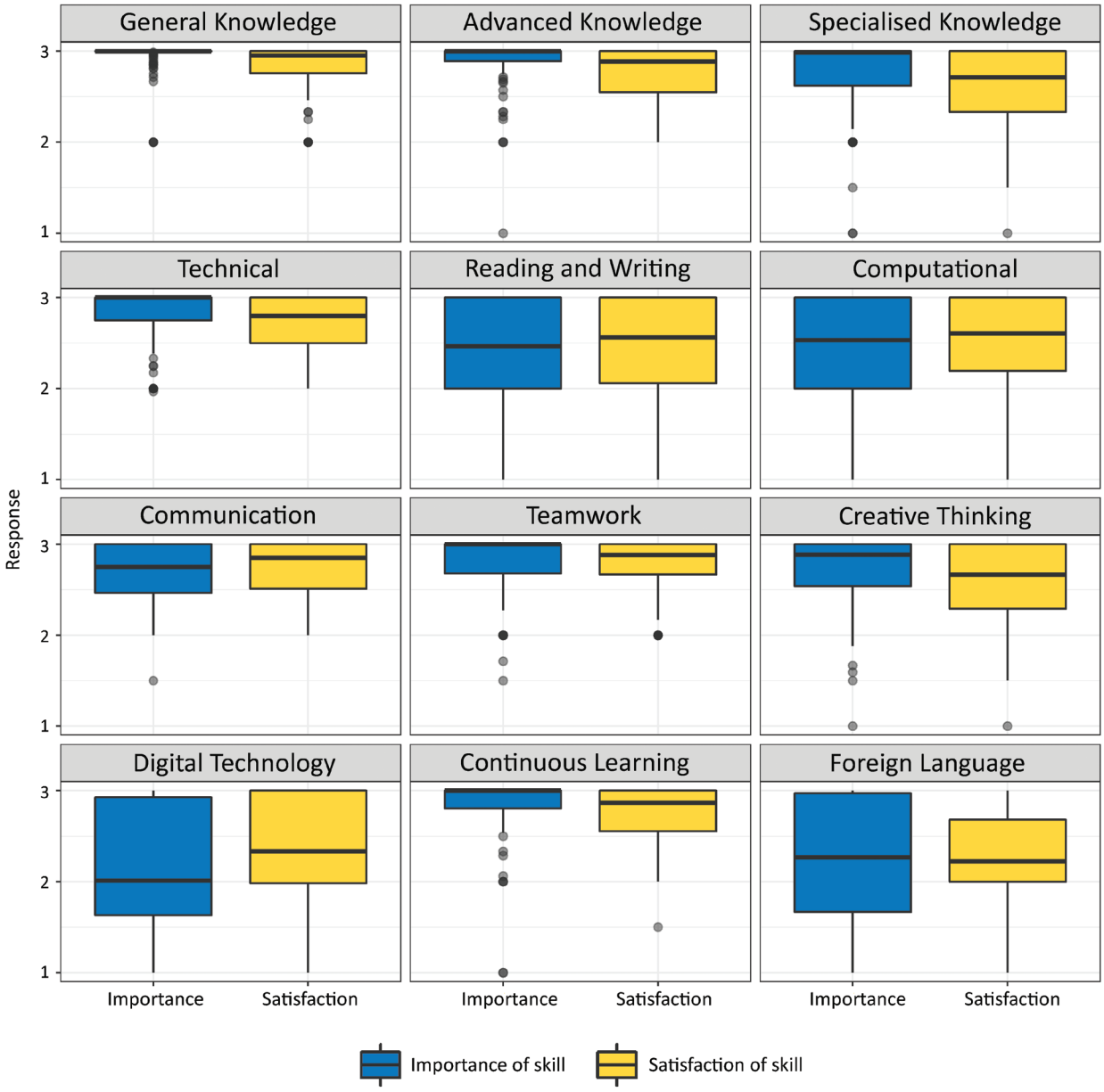

General Knowledge
Advanced Knowledge
Specialised Knowledge
Technical
Reading and Writing
Computational
Communication
Teamwork
Creative Thinking
Digital Technology
Continuous Learning
Foreign Language
Response
3
2
1
Importance
Satisfaction
Importance of skill
Satisfaction of skill

Figure 39: Side-by-side boxplots of the average importance and satisfaction of 12 key skills in manufacturing-related occupations in KR-I



To understand potential significant skill gaps in a more granular way, we analysed the top ten manufacturing-related occupations in the sector reported in Table 27 above and plotted the average differences between importance and satisfaction (Figure 40 and 41). A complete list of manufacturing-related occupations and their average levels of importance and satisfaction are presented in Appendix 6, including manufacturing-related occupations found in other sectors as part of this Sector Skills Analysis (SSA) Project.

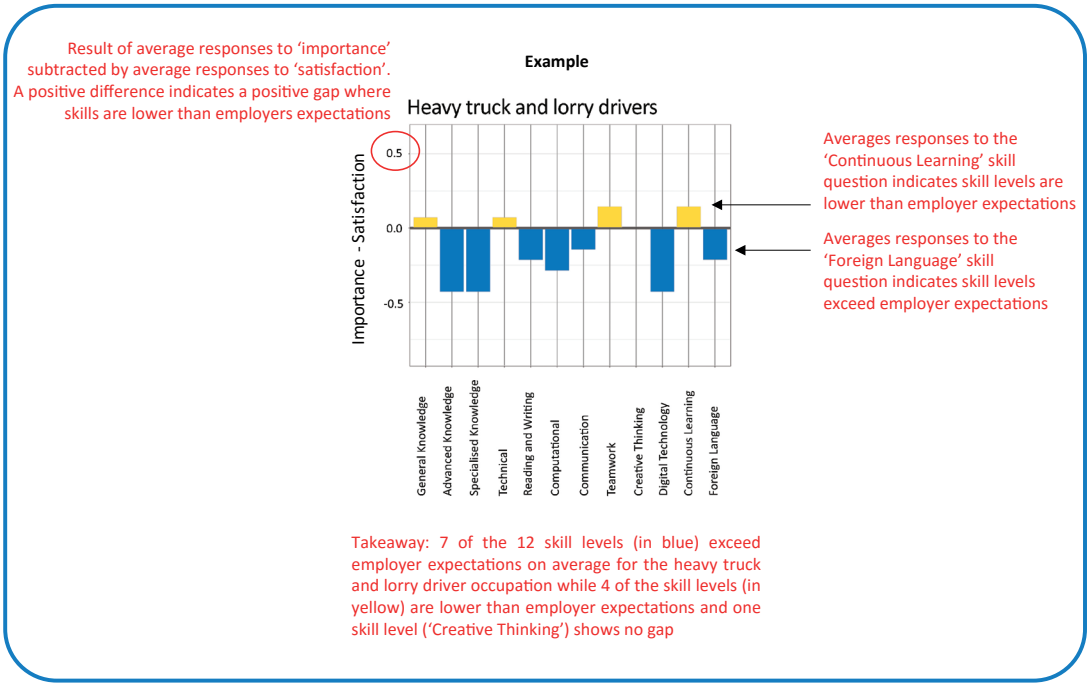
A score of zero (no bar) shows no gap between importance and satisfaction. The bar shows the size of the gap between importance and satisfaction for each skill. A positive bar (above the horizontal axis) means there is a gap, and the height of the bar shows how big the gap is. A negative bar (below the horizontal axis) means that the skill level exceeds employers' expectations (i.e. the workers have skills beyond what is thought to be important for the occupation).

In Iraq skills are slightly below expectation for managers and accountants (where expectations are higher) but skills generally exceed expectations for jobs which require lower levels of knowledge and

skill (like security guard or freight handler). Across all occupations general knowledge and teamwork skills are slightly below employers' expectations. Employers in Iraq seem to have lower expectations than KR-I employers for foreign languages, continuous learning skills, digital technology and creative thinking, as few gaps are identified in these skill areas.

KR-I employers are generally less satisfied with the specialist knowledge and technical skills of workers in the top jobs than their Iraqi counterparts. KR-I employers were much more likely to perceive skills deficit in foreign languages, continuous learning skills, digital technology and creative thinking, which are areas of higher importance for them in the top ten occupations.

Figure 40: Gap between average importance and satisfaction of 12 key skills for the top ten most frequent manufacturing-related occupations in Iraq



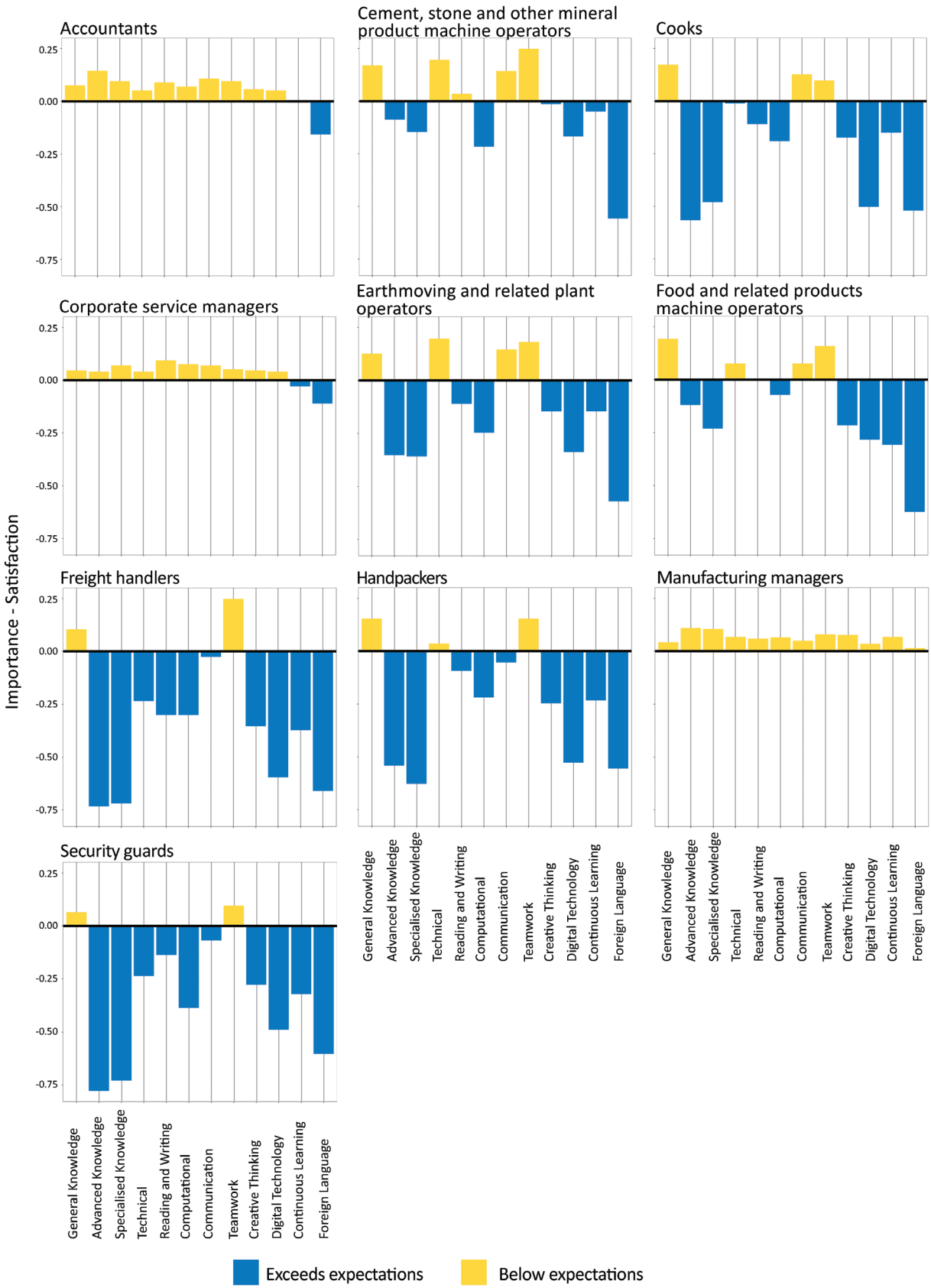
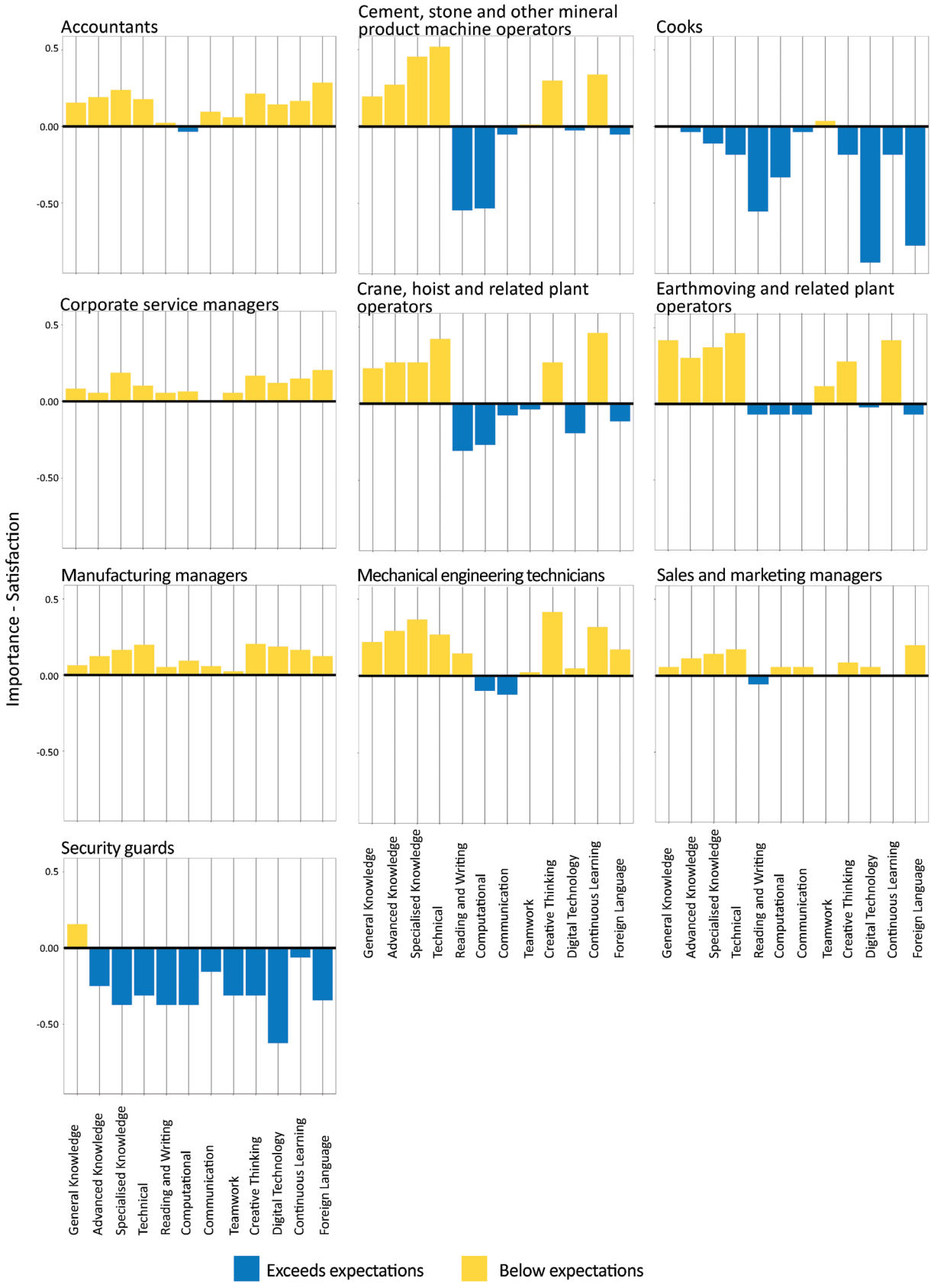

Accountants
Cement, stone and other mineral product machine operators
Cooks
Corporate service managers
Earthmoving and related plant operators
Food and related products machine operators
Freight handlers
Handpackers
Manufacturing managers
Security guards
Importance - Satisfaction
0.25
0.00
-0.25
-0.50
-0.75
General Knowledge
Advanced Knowledge
Specialised Knowledge
Technical
Reading and Writing
Computational
Communication
Teamwork
Creative Thinking
Digital Technology
Continuous Learning
Foreign Language
Exceeds expectations
Below expectations

Figure 41: Gap between average importance and satisfaction of 12 key skills for the top ten most frequent manufacturing-related occupations in KR-I



5.2.4 Analysis of training, recruitment and future growth of the manufacturing sector

Across all the surveyed firms in the sector, only 31.2% have organised training courses for their employees over the past 5 years (Table 28). However in the governorates of Najaf (54.3%), Basrah (45.6%) and Erbil (44.9%) around half have organised training. In Baghdad training was organised for only 26.3% of the firms sampled. The subsector of 'manufacture of other non-metallic mineral products' in Baghdad had 116 firms sampled with only 3 having organised training though 75% of the firms plan to hire in the next 5 years (Table 32). In contrast, the same subsector in Najaf had 46 firms sampled with 22 having organised training.

Perhaps the low overall percentage of 31.2% may be partially due to the lack of relationships with training institutions where only 5.9% of the total 876 firms sampled have a relationship with a training institution (Table 29). Low percentages are on average consistent across all the governorates and subsectors. Furthermore, employers did not express any difficulty finding relevant training or instructors (Table 30). The pilot Manufacturing Sector Council also described low confidence of employers in the teachers and the programmes of the training institutions. According to the pilot Sector Council members, teaching staff do not have links with the industry, or experience of the standards or methods of delivery in other countries, for comparison or benchmarking.

In the light of this feedback, evidence of no linkages in the survey is not unexpected. However, lack of relationships between industry and training providers is a significant disadvantage for learners, who should be offered meaningful work-based learning experience.

Table 28: Number of firms who have organised employee training courses in the last five years

Subsector	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Manufacture of food products	32/81 (39.5%)	15/25 (60%)	2/27 (7.4%)	13/23 (56.5%)	0/11 (0%)	23/57 (40.4%)	3/20 (15%)	2/8 (25%)	90/252 (35.7%)
Manufacture of beverages	8/12 (66.7%)	1/5 (20%)	1/5 (20%)	3/4 (75%)	2/11 (18.2%)	5/6 (83.3%)	4/7 (57.1%)	0/1 (0%)	10/30 (33.3%)
Manufacture of coke and refined petroleum products	0	5/9 (55.6%)	2/3 (66.7%)	1/6 (16.7%)	0/2 (0%)	0	2/10 (20%)	0	10/30 (33.3%)
Manufacture of chemicals and chemical products	5/10 (50%)	0/1 (0%)	0	1/1 (100%)	0/1 (0%)	5/5 (100%)	2/4 (50%)	2/4 (50%)	15/26 (57.7%)
Manufacture of basic pharmeceutical products and preparations	4/4 (100%)	0	0	1/1 (100%)	0	0	0	0	5/5 (100%)
Manufacture of rubber and plastics products	7/10 (70%)	2/3 (66.7%)	0	2/5 (40%)	0/4 (0%)	7/7 (100%)	5/9 (55.6%)	0	23/38 (60.5%)
Manufacture of other non-metallic mineral products	3/116 (2.6%)	8/25 (32%)	16/74 (21.6%)	4/16 (25%)	0/19 (0%)	22/46 (47.8%)	15/70 (21.4%)	0/31 (0%)	68/397 (17.1%)
Manufacture of basic metals	1/1 (100%)	1/1 (100%)	0	0	0/1 (0%)	2/2 (100%)	0/1 (0%)	0	4/6 (66.7%)
Manufacture of fabricated metal products	1/5 (20%)	4/8 (50%)	0	5/12 (41.7%)	0/5 (0%)	5/5 (100%)	11/20 (55%)	0/1 (0%)	26/56 (46.4%)
Manufacture of computer, electronic and optical products	0	0	0	0	0	1/1 (100%)	0	0	1/1 (100%)
Manufacture of electrical equipment	3/4 (75%)	0/2 (0%)	0	0	0	0	1/1 (100%)	0	4/7 (57.1%)
Manufacture of machinery and equipment	0	0	0/1 (0%)	1/1 (100%)	0/1 (0%)	0	2/3 (66.7%)	0/1 (0%)	3/7 (42.9%)
Total	64/243 (26.3%)	36/79 (45.6%)	21/110 (19.1%)	31/69 (44.9%)	2/55 (3.6%)	70/129 (54.3%)	45/145 (31%)	4/46 (8.7%)	273/876 (31.2%)

Table 29: Number of firms who have a relationship with a training institution

Subsector	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Manufacture of food products	5/81 (6.2%)	1/25 (4%)	0/27 (0%)	2/23 (8.7%)	0/11 (0%)	9/57 (15.8%)	1/20 (5%)	0/8 (0%)	18/252 (7.1%)
Manufacture of beverages	4/12 (33.3%)	0/5 (0%)	0/5 (0%)	0/4 (0%)	1/11 (9.1%)	1/6 (16.7%)	0/7 (0%)	0/1 (0%)	6/51 (11.8%)
Manufacture of coke and refined petroleum products	0	0/9 (0%)	1/3 (33.3%)	0/6 (0%)	0/2 (0%)	0	1/10 (10%)	0	2/30 (6.7%)
Manufacture of chemicals and chemical products	3/10 (30%)	0/1 (0%)	0	0/1 (0%)	0/1 (0%)	0/5 (0%)	0/4 (0%)	0/4 (0%)	3/26 (11.5%)
Manufacture of basic pharmeceutical products and preparations	3/4 (75%)	0	0	0/1 (0%)	0	0	0	0	3/5 (60%)
Manufacture of rubber and plastics products	1/10 (10%)	1/3 (33.3%)	0	0/5 (0%)	0/4 (0%)	3/7 (42.9%)	1/9 (11.1%)	0	6/38 (15.8%)
Manufacture of other non-metallic mineral products	0/116 (0%)	2/25 (8%)	0/74 (0%)	0/16 (0%)	0/19 (0%)	3/46 (6.5%)	2/70 (2.9%)	0/31 (0%)	7/397 (1.8%)
Manufacture of basic metals	0/1 (0%)	0/1 (0%)	0	0	0/1 (0%)	0/2 (0%)	0/1 (0%)	0	0/6 (0%)
Manufacture of fabricated metal products	0/5 (0%)	1/8 (12.5%)	0	2/12 (16.7%)	0/5 (0%)	1/5 (20%)	1/20 (5%)	0/1 (0%)	5/56 (8.9%)
Manufacture of computer, electronic and optical products	0	0	0	0	0	1/1 (100%)	0	0	1/1 (100%)
Manufacture of electrical equipment	1/4 (25%)	0/2 (0%)	0	0	0	0	0/1 (0%)	0	1/7 (14.3%)
Manufacture of machinery and equipment	0	0	0/1 (0%)	0/1 (0%)	0/1 (0%)	0	0/3 (0%)	0/1 (0%)	0/7 (0%)
Total	17/243 (7%)	5/79 (6.3%)	1/110 (0.9%)	4/69 (5.8%)	1/55 (1.8%)	18/129 (14.0%)	6/145 (4.1%)	0/46 (0%)	52/876 (5.9%)

Table 30 shows that employers have no difficulty in finding trainers for in-house training. Since relationships with training providers are almost non-existent (Table 29) this may suggest that any training is offered by personnel within the sector, or foreign trainers. The subject matter of in-house training is likely to indicate the gaps in formal education and training for the sector.

Table 30: Number of firms who have difficulty finding relevant training and trainers

	Difficulty finding relevant training courses	Difficulty finding competent trainers
Baghdad	15/243 (6.2%)	10/243 (4.1%)
Basrah	4/79 (5.1%)	4/79 (5.1%)
Diyala	3/110 (2.7%)	5/110 (4.6%)
Erbil	2/69 (2.9%)	1/69 (1.5%)
Kirkuk	2/55 (3.6%)	2/55 (3.6%)
Najaf	5/129 (3.9%)	6/129 (4.7%)
Sulaymaniyah	12/145 (8.3%)	15/145 (10.3%)
Wasit	1/46 (2.2%)	1/46 (2.2%)

When hiring new employees, the firms from different governorates tend to have similar priorities. Table 31 indicates a weighted average of the top 5 most important factors when firms are hiring

new employees. Specifically, each firm was asked from a list of 11 factors to rank the top 5 most important when hiring a new employee. To determine the aggregated rankings by governorate, a simple scoring system was used. Whenever a factor was listed as the most important by the employer it is given a score of 5. The second most important factor is given a score of 4 and so forth until the 5th most important is given a score of 1. These scores are tallied for each of the 11 factors and the top 5 based on score (for each governorate) are listed in the table.

Across all governorates, age is considered to be of high priority (no lower than 2nd most important). In 7 out of 8 governorates age of the applicant is considered the number one factor when hiring, perhaps due to a preference for experience in older employees, or lower cost of younger ones. Gender and interview behaviour are also high priorities for hiring.

Qualifications for the job is only ranked in the top five in KR-I, showing that in other governorates, either (i) employers in this sector generally do not value formal qualifications above demographic, social and behavioural factors, or practical experience, or (ii) there is a surplus of unemployed graduates, so the decision making is really between applicants who are all qualified.

Table 31: Rank of hiring factors

Rank	1st	2nd	3rd	4th	5th
Baghdad	Age	Gender	Interview behaviour	Practical experience	Social relations
Basrah	Age	Interview behaviour	Practical experience	Gender	Organisation trained at
Diyala	Age	Gender	Internal advancement	Interview behaviour	Practical experience
Erbil	Age	Interview behaviour	Gender	Qualifications	Practical experience
Kirkuk	Age	Interview behviour	Nationality	Gender	Practical experience
Najaf	Age	Gender	Practical experience	Interview behaviour	References
Sulaymaniyah	Age	Interview behaviour	Gender	Qualifications	Practical experience
Wasit	Gender	Age	Interview behaviour	Social relations	References

Table 32 indicates the proportion of firms across governorates who plan to hire new employees in the next five years. Overall, only 28% of firms plan to hire in the next five years. This overall low value is partly explained by the low intention to hire in the majority of the governorates sampled (Basrah, Diyala, Kirkuk, Najaf, Sulaymaniyah and Wasit) and nearly all of the subsectors sampled. However, in Erbil 62% of the firms plan to hire and in Baghdad 48% where in Baghdad's 'manufacture of other non-metallic mineral products' subsector 75% of the 116 firms sampled plan to hire in the next five years. The biggest employing sector (minerals, fabricated metal, food & beverage and oil) are all planning to hire in moderation.

Table 32: Number of firms planning to hire in the next five years by subsector and governorate

Subsector	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Manufacture of food products	15/81 (18.5%)	4/25 (16%)	1/27 (3.7%)	13/23 (56.5%)	3/11 (27.3%)	9/57 (15.8%)	5/20 (25%)	0/8 (0%)	50/252 (19.8%)
Manufacture of beverages	5/12 (41.7%)	1/5 (20%)	0/5 (0%)	3/4 (75%)	5/11 (45.5%)	3/6 (50%)	2/7 (28.6%)	0/1 (0%)	19/51 (37.3%)
Manufacture of coke and refined petroleum products	0	2/9 (22.2%)	0/3 (0%)	4/6 (66.7%)	0/2 (0%)	0	4/10 (40%)	0	10/30 (33.3%)
Manufacture of chemicals and chemical products	4/10 (40%)	0/1 (0%)	0	0/1 (0%)	0/1 (0%)	4/5 (80%)	2/4 (50%)	1/4 (25%)	11/26 (42.3%)
Manufacture of basic pharmeceutical products and preparations	0/4 (0%)	0	0	1/1 (100%)	0	0	0	0	1/5 (20%)
Manufacture of rubber and plastics products	3/10 (30%)	1/3 (33.3%)	0	3/5 (60%)	0/4 (0%)	3/7 (42.9%)	0/9 (0%)	0	10/38 (26.3%)
Manufacture of other non-metallic mineral products	87/116 (75%)	7/25 (28%)	2/74 (2.7%)	11/16 (68.8%)	0/19 (0%)	5/46 (10.9%)	9/70 (12.9%)	0/31 (0%)	121/397 (30.5%)
Manufacture of basic metals	1/1 (100%)	1/1 (100%)	0	0	0/1 (0%)	1/2 (50%)	0/1 (0%)	0	3/6 (50%)
Manufacture of fabricated metal products	1/5 (20%)	0/8 (0%)	0	8/12 (66.7%)	1/5 (20%)	3/5 (60%)	5/20 (25%)	0/1 (0%)	18/56 (32.1%)
Manufacture of computer, electronic and optical products	0	0	0	0	0	0/1 (0%)	0	0	0/1 (0%)
Manufacture of electrical equipment	1/4 (25%)	1/2 (50%)	0	0	0	0	1/1 (100%)	0	3/7 (42.9%)
Manufacture of machinery and equipment	0	0	0/1 (0%)	0/1 (0%)	1/1 (100%)	0	1/3 (33.3%)	0/1 (0%)	2/7 (28.6%)
Total	117/243 (48.1%)	17/79 (21.5%)	3/110 (2.7%)	43/69 (62.3%)	10/55 (18.2%)	28/129 (21.7%)	29/145 (20%)	1/46 (2.2%)	248/876 (28.3%)

The lack of strong hiring plans is not surprising given the overall economic outlooks (Table 33). The majority of firms in most of the governorates (except in Basrah and Erbil) have negative or unsure economic outlooks over the next five years.

Table 33: Five-year outlook by governorate

Outlook	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Negative	62/243 (25.5%)	13/79 (16.5%)	39/110 (35.5%)	14/69 (20.3%)	3/55 (5.5%)	15/129 (11.6%)	22/145 (15.2%)	19/46 (41.3%)	187/876 (21%)
Positive	51/243 (21%)	42/79 (53.2%)	38/110 (34.5%)	44/69 (63.8%)	26/55 (47.3%)	35/129 (27.1%)	46/145 (31.7%)	4/46 (8.7%)	286/876 (33%)
Unsure	130/243 (53.5%)	24/79 (30.4%)	33/110 (30%)	11/69 (15.9%)	26/55 (47.3%)	79/129 (61.2%)	77/145 (53.1%)	23/46 (50%)	403/876 (46%)

In an attempt to further understand this lack of hiring plan in the next five years, Tables 34 and 35 outline the satisfaction of the firms with applicants' basic and operational skills, and technical skills over the last five years. Many of the firms are either completely satisfied or somewhat satisfied, meaning that the quality of applicant is considered high in this sector. This is surprising given the feedback from the pilot Manufacturing Sector Council, who complained about the poor quality of local graduates. Satisfaction is highest in Erbil followed by Basrah. Large numbers of respondents for

Baghdad, Diyala, Najaf and Wasit were 'unsure' about the skills of past applicants, perhaps because the skills of the applicant is not a very important factor in recruitment decision making.

Table 34: Level of satisfaction with basic and operational skills of applicants over the past five years

Satisfaction	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Completely statsfied	93/243 (38.3%)	56/79 (70.9%)	23/110 (20.9%)	56/69 (81.2%)	18/55 (32.7%)	28/129 (21.7%)	79/145 (54.5%)	11/46 (23.9%)	364/876 (42%)
Somewhat satisfied	84/243 (34.6%)	18/79 (22.8%)	17/110 (15.5%)	9/69 (13.0%)	31/55 (56.4%)	69/129 (53.5%)	41/145 (28.3%)	16/46 (34.8%)	285/876 (33%)
Not satisfied	4/243 (1.7%)	1/79 (1.3%)	0/110 (0%)	0/69 (0%)	0/55 (0%)	2/129 (1.6%)	6/145 (4.1%)	0/46 (0%)	13/876 (1%)
Unsure	62/243 (25.5%)	4/79 (5.1%)	70/110 (63.7%)	4/69 (5.8%)	6/55 (10.9%)	30/129 (23.3%)	19/145 (13.1%)	19/46 (41.3%)	214/876 (24%)

Table 35: Level of satisfaction with technical skills of applicants over the past five years

Satisfaction	Baghdad	Basrah	Diyala	Erbil	Kirkuk	Najaf	Sulaymaniyah	Wasit	Total
Completely statsfied	100/243 (41.2%)	54/79 (68.4%)	21/110 (19.1%)	40/69 (58%)	20/55 (36.4%)	46/129 (35.7%)	73/145 (50.3%)	6/46 (13%)	360/876 (41%)
Somewhat satisfied	74/243 (30.5%)	19/79 (24.1%)	19/110 (17.3%)	23/69 (33.3%)	29/55 (52.7%)	49/129 (38%)	47/145 (32.4%)	21/46 (45.7%)	281/876 (32%)
Not satisfied	3/243 (1.2%)	1/79 (1.3%)	0/110 (0%)	2/69 (2.9%)	0/55 (0%)	3/129 (2.3%)	4/145 (2.8%)	0/46 (0%)	13/876 (1%)
Unsure	66/243 (27.2%)	5/79 (6.3%)	70/110 (63.6%)	4/69 (5.8%)	6/55 (10.9%)	31/129 (24%)	21/145 (14.5%)	19/46 (41.3%)	222/876 (25%)

To further investigate the outlook of employers it is important to understand what areas the firms consider to be important for the future growth of their businesses. Figure 42 indicates a variety of factors that the firms indicated as not, somewhat, or very important for business success. Across all governorates, all areas are considered important by most of the participants. This is not unexpected given that these questions ask about core business principles.

Firms in Erbil, Sulaymaniyah, Basrah and Kirkuk are almost unanimous about the importance of highly skilled staff. Firms in other governorates are less consistently convinced that their business success relies on this factor. Not all governorates are convinced about the value of 'more effective use of technology'. Both qualitative and quantitative data collected for this report suggest that manufacturing in Iraq is too costly, and local production cannot compete with the advanced technologies used by foreign producers. This perspective is confirmed by the Iraqi Federation of Industries, who rank lack of advanced technologies in Iraq as one of the main reasons for the competitive edge of foreign companies. According to the desk review in Chapter 3 only 3% of small companies and 19% of larger ones used computerised systems in 2009.

Nearly all survey participants agree that factors such as quality of products and services, reputation, fuel and energy and meeting customer needs are very important.

Figure 42: Factors impacting future business growth

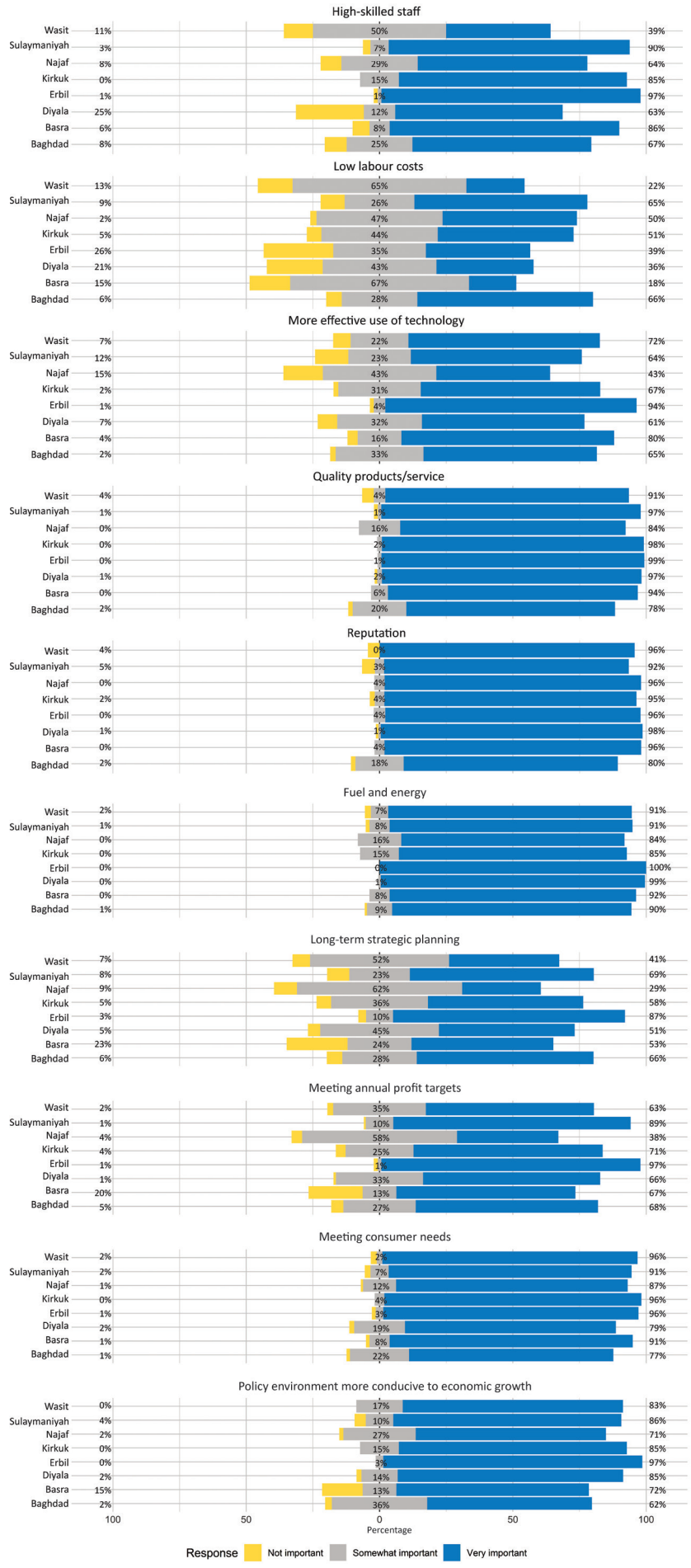
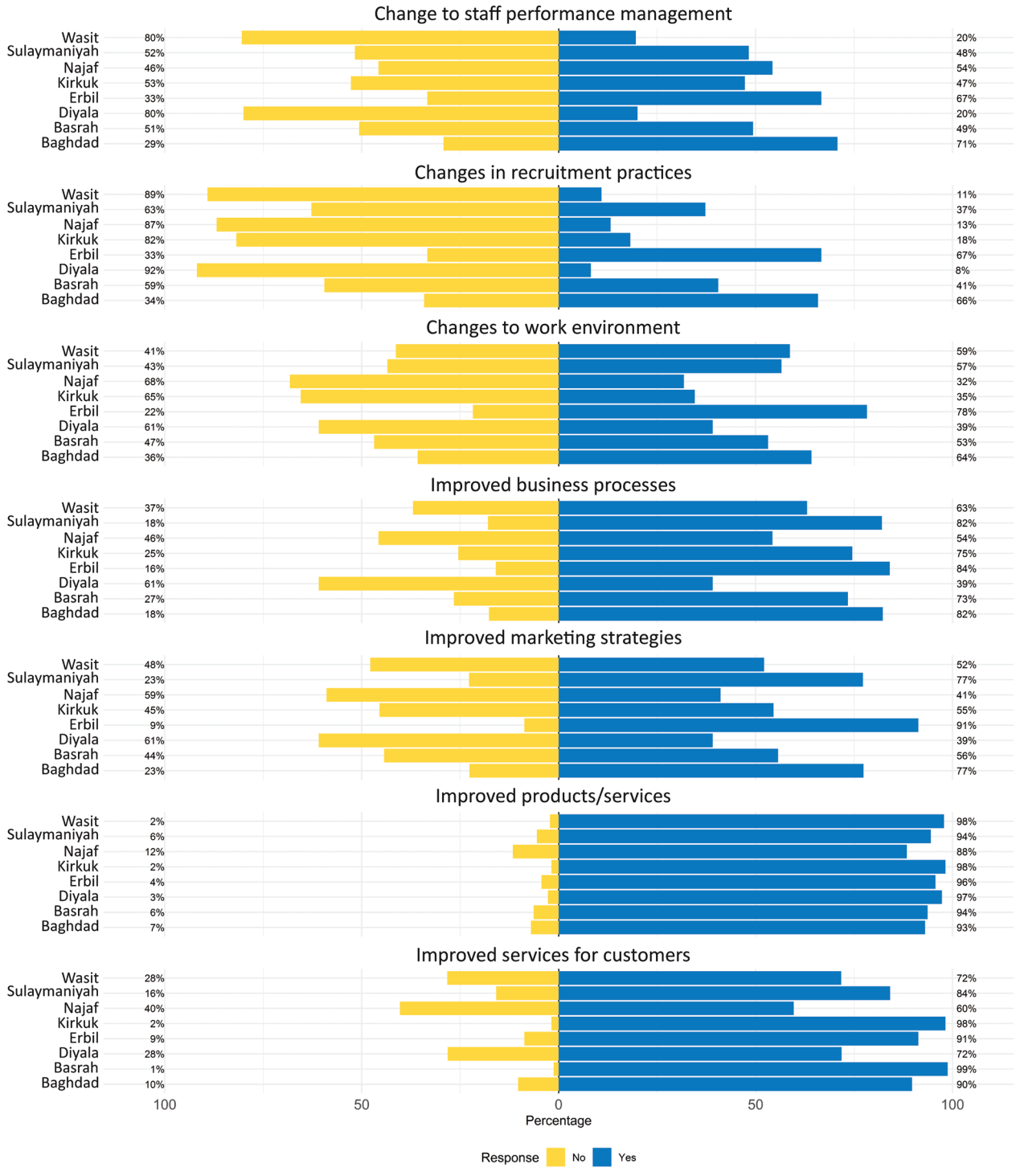


Figure 43 illustrates what firms have implemented in the past five years to improve their businesses. There is relatively even distribution of firms which have or not have implemented various changes to their business practices in the past few years and the variability between governorates is large with the exception of improved products/service and customer service. The improvement of products/service links with the success factors 'more effective use of technology' and 'quality products/service'. Overall, improvements are least likely to have been made in recruitment practices and performance management of staff.

Figure 43: Changes and innovations firms have implemented in the past few years, by governorate



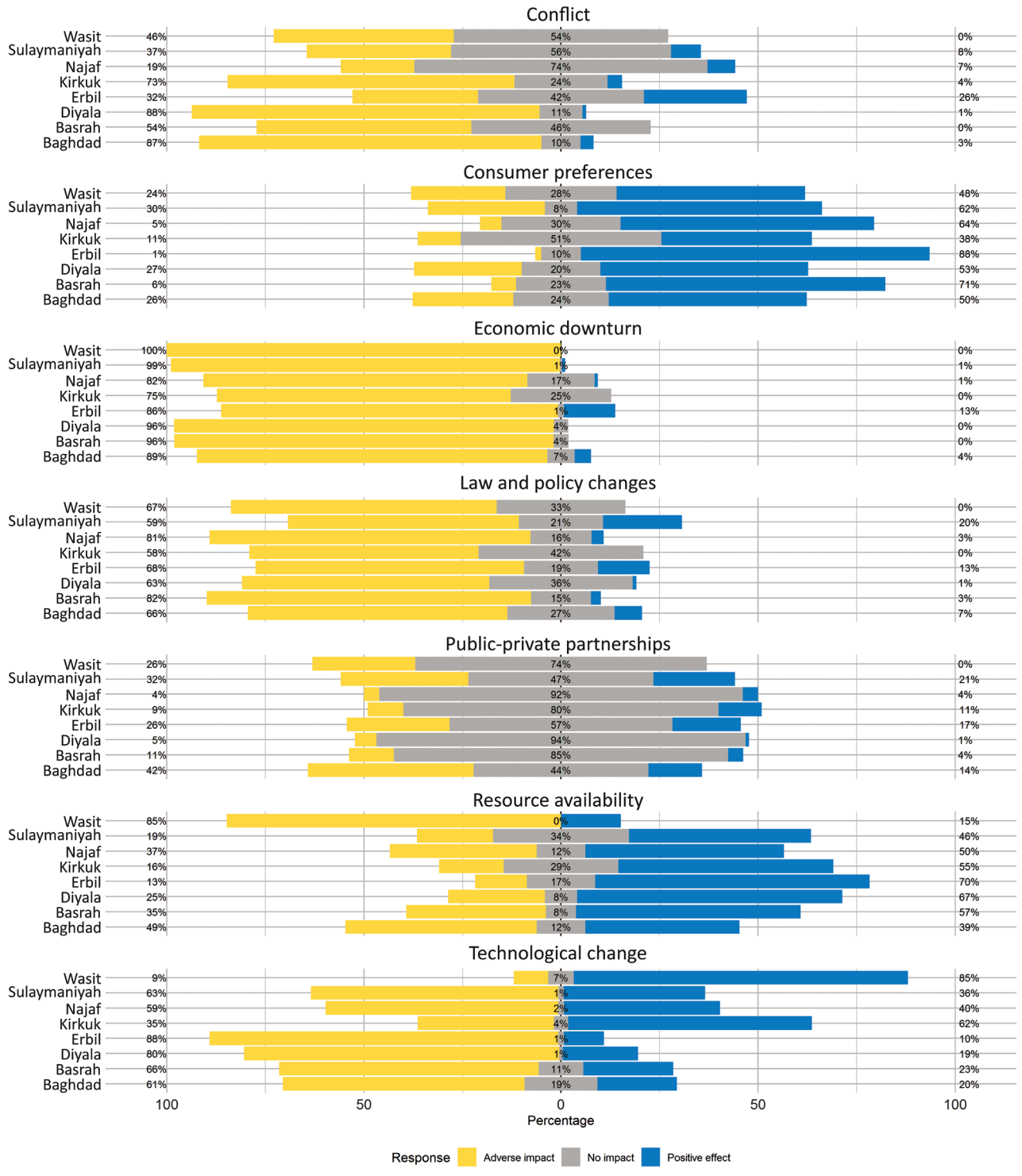
Finally, Figure 44 indicates the various factors that have had positive and negative influence on the firms over the last few years. Conflict, economic downturn, and law and policy changes stand out as major negative influences on business performance. The major positive for the firms in this sector are consumer preferences.

Law and policy are seen as a negative overall in this sector. This confirms the view of the pilot manufacturing Sector Council (section 5.1) that failure to update and implement laws and plans is an impediment to the development of the sector.

Public-private partnerships and technological change are seen as both positive and negative in this sector possibly due to the former being a fairly new concept and the latter due to the fast pace of change creating rising demand but also more competition.

Across all the economic sectors, the survey shows that conflict can have a positive effect on some businesses, especially in areas not so directly affected, where fewer players in the market, or reduced trade routes could provide some advantages.

Figure 44: External drivers impacting business performance during the past few years, by governorate



5.2.5 Analysis of small-sized firms in the manufacturing sector

The main analysis of the manufacturing sector focuses on firms of at least 10 employees. This is done in order to ensure that questions are related to overall occupations and not to specific employees. That being said, some data was collected on firms of less than 10 employees. In total, there was 261 firms sampled, 167 (64%) of which were from Baghdad.

Given that only there were responses for smaller firms from only seven of the eight governorates, comparisons at the governorate level (to the larger firms) is impossible. Furthermore, in Dialya, Najaf, Sulaymaniyah and Wasit, there are very few subsectors represented, and less than 12 firms in each governorate respectively. As 64% of the sample comes from Baghdad the results can be seen as mostly a reflection of the market there.

This makeup is likely part of the reason that there are significant differences in the top ten occupations in both Iraq and KR-I when compared to the larger firms. Occupations such as cleaners, cashiers, civil engineers, and supply distribution managers are present in the top ten in the small firms in Iraq and KR-I, but not in those larger. For unique occupations present in Iraq include heavy truck and lorry drivers and in KR-I mechanical engineers.

The smaller firms' answers to the importance and satisfaction of the 12 identified skills were similar to the larger firms, although with slightly more variability (likely due to the issue of answering questions relating to one employee, as mentioned above). In Iraq, gaps were identified in nearly all the top ten professions, especially security guards and cleaners. In KR-I, accountants, cooks and security guards also had skill gaps, which was somewhat different to the larger firms and may be due to the overrepresentation of Erbil or the different skill sets of these employees.

The responses relating to hiring practices, plans and recent firm improvements cannot be shown for all governorates as in the larger firms. In the governorates with data, the responses were similar to the larger firms. The same factors were considered positive/negatives to the firms over the past few years, and the hiring practices were similar. Again, demographics were most important when hiring, indicating more preference for male workers.

These comparisons indicate that where data is available, the smaller firms have similar preferences, needs and business practices as the larger firms, with some different potential skill gaps. Nonetheless, given the unbalanced and selectively taken sample, no strong inferences should be drawn from these firms.

5.2.6 Conclusion and limitations of the results from the Enterprise Survey

The firms sampled in the survey shows the manufacturing sector is dominated by males and medium-sized firms across all the strata, with mostly full-time workers. The sector has some of the largest and oldest businesses in Iraq and KR-I, as well as the most variety of subsectors. It is also by far the largest sector in the survey in terms of number of firms and employees.

On the whole, the sector is reasonably satisfied with current employees' skills sets, although satisfaction is generally below the perceived importance of each skill, especially in higher level occupations. These patterns are true both in the top ten professions in Iraq and KR-I as well as the overall sector.

Some of the subsectors have strong intentions to hire over the next five years, and positive outlooks. Despite this, the overall rate (31.2%) of training of employees is fairly low with only 5.9% of the

firms having relationships with training institutions. Having such relationships would likely more alignment and continuity between training and work.

Rates of satisfaction with new applicants were very high could indicate a strong labour force in terms of occupational, industry and general employability skills. Unfortunately, most hiring practices are still based predominately on gender and age (the two leading factors when hiring new employees), which indicates that many applicants are judged not on skills, but on demographics. Making changes to these policies may improve productivity and yield the best possible workforce. Education and training institutions should note that interview behaviour is the most important factor that can be influenced through training.

The only area that firms indicated as consistently (across governorates) positive for their businesses over the last few years was consumer preferences. All the remaining factors were either split (or neutral) across governorates or overwhelmingly negative (law and policy, economic downturn, conflict). The negative association with law and policy changes reflects possible tension between industry and government and further research should be done to determine the specifics of these fault lines.

Finally, there are a variety of limitations in the above data that are important to note when interpreting results. As identified in the opening paragraphs, the Register from which the data were drawn is from 2009. Given the changes in Iraq during that time, this sample frame is not considered reliable for the current labour market and therefore the data was not weighted as is typically done. Where possible, this has been mitigated by providing data at the governorate and subsector level. Furthermore, some governorates provided far less frames to the sample. This may be due to both underrepresentation and lack of economic activity in these governorates.

Chapter 6: Recommendations for skills development in the manufacturing sector

6.1 General observations

The manufacturing sector seems likely to resume its growth trajectory after the cessation of hostilities. Employment in the sector has been modest at 8-10 % of total employment. Coke/oil refining, food processing and mineral industries are the most productive subsectors in that order, followed by fabrication of metal products. These four are also the biggest employers, led by the mineral industry. Skills supply should be geared to these industries. There is huge potential in terms of unmet local demand, since Iraq imports nearly all the products which it also manufactures (except cement).

A major issue for the sector is that it is not able to compete with foreign manufactured products which are cheaper. According to the Iraqi Federation of Industries, many factors contribute to the high cost of local manufacturing. These include outdated methods and old technologies, lack of innovation, and lack of expertise. Iraq seems to be lagging behind in the computerisation of its processes, and application of modern methods. These modern technologies and methods should be the basis for newly developed programmes to meet the needs of the industry.

A RAND study, citing the KR-I Labour Force Survey, found that only 13% of occupations in the manufacturing sector required tertiary education, while 72% required secondary vocational education level and 15% of occupations did not require any sort of formal education.[87] Thus the expected profile of the sector is a small minority of tertiary qualifications and a vast majority of vocational qualifications. The top ten jobs in the Enterprise Survey, there was a surplus of management occupations, and 26% of the sample workforce had tertiary qualification. So, the sample of the current manufacturing workforce seemed to be top heavy in both number of management level jobs, and qualification of the workforce.

According to the skills supply data submitted by public institutions at all levels for this study twice as many diploma and degree graduates are entering the labour market with qualifications relevant for manufacturing, as non-tertiary graduates. This appears to be a significant mismatch in the level of the skills supply for this sector.

6.2 Skills supply in relation to demand

The skills gap seems to have three dimensions: level, specialisation and employability skills. As discussed above there seems to be an oversupply of tertiary graduates for an already top-heavy sector, and possible an oversupply of generalists, where industry specific training (with close relationships between training and work) may better meet the demand of the labour market.

The mineral industry is the biggest employer, followed by fabrication of metal products, and food processing, in that order. The oil industry is the most productive subsector by a wide margin, but only the fourth biggest employer.

According to the statistics for supply reported in Chapter 4, the vast majority of the supply of skills

[87] Constant et al. “Improving TVET in KR-I,” 2014

to the sector are graduates of generally relevant programmes in 'materials management' (more than 3,000 per annum none in KR-I; also relevant to the transport sector) 'mechanical techniques' (nearly 3,000 per annum all from KR-I), 'machinery and equipment' (about 1,000 all in KRI). Industry specific qualifications are offered in small numbers in KR-I for the oil, chemical and clothing industries (less than 1,000 all together).

In relation to the productive size of the subsectors, and their importance as employers, it appears that there are gaps in the skills supply to the mineral industry (top employer), fabrication of metal products (2nd) and food processing (3rd). Electrical equipment manufacture (Iraq) and furniture manufacture (Iraq and KR-I) are also significant employers for whom there is no public sector training available. Clothing manufacture (KR-I) is a good employer in KR-I. Generally, the textile industry employs more women than any other manufacturing subsector. Although, the oil refining industry is not a big employer relative to its productivity, the public sector skills supply to the oil industry seems insufficient.

The high cost of manufacturing in Iraq, which makes local companies unprofitable in competition with neighbouring countries, could be partly addressed through introduction of modern computerised technologies and a leaner, more skilled workforce: with modern employability skills such as creative thinking, digital skills, continuous learning skills and foreign languages. Education and training providers should ensure that their graduates have these skills.

Modernising the manufacturing industry would include changing recruitment practices, so that applicants are selected for their skills, rather than their age and gender, which is currently the case. In the meantime, training providers can ensure that graduates are prepared for other (less important to employers) factors that influence employers' recruitment decision making such as interview behaviour, practical experience and references. Work-based learning needs to be compulsory and meaningful, based on close relationships between training providers and employers.

Employers seem not to value formal qualifications, since these do not play a significant role in their recruitment decision making. There seems to be a strong need to review the manufacturing-related qualifications with the industry and form close relationships for the delivery of the qualifications and work-based learning experiences for learners.

Three of the top ten jobs in manufacturing are also in the top ten for other sectors, so these should be especially noted. Freight handlers are also found in the top ten in the transport sector; earthmoving; related plant operators are in the top ten for the construction sector; and cooks are in the top ten for hospitality.

Appendix

Appendix 1 Population frame

CSO Business Register ('Population Frame')

Type of Economic Activity		No. of Employees									
		4-1	9-5	49-10	99-50	499-100	999-500	1000 +	Not Stated	Total
Agriculture, Forestry and Fishing	01 - Crop and animal production, hunting and related service activities	187,854	4,625	772	48	25	0	0	1,238	194,562
	03 - Fishing and aquaculture	990	30	14	0	1	0	0	9	1,044
	Subtotal	188,844	4,655	786	48	26	0	0	1,247	195,606
Manufacturing	10 - Manufacture of food products	13,375	2,965	593	48	20	3	2	366	17,372
	11 - Manufacture of beverages	182	92	95	11	8	2	0	16	406
	19 - Manufacture of coke and refined petroleum products	135	113	175	14	12	1	0	27	477
	20 - Manufacture of chemicals and chemical products	476	135	102	3	7	0	3	56	782
	21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations	80	4	12	4	3	0	2	4	109
	22 - Manufacture of rubber and plastics products	1,011	185	71	2	2	3	2	37	1,313
	23 - Manufacture of other non-metallic mineral products	4,515	2,719	1,480	124	36	9	9	142	9,034
	24 - Manufacture of basic metals	1,144	111	23	4	1	0	2	37	1,322
	25 - Manufacture of fabricated metal products, except machinery and equipment	29,735	1,227	187	12	4	0	0	226	31,391
	26 - Manufacture of computer, electronic and optical products	346	15	8	2	1	0	0	7	379
	27 - Manufacture of electrical equipment	312	73	34	3	10	4	3	10	449
	28 - Manufacture of machinery and equipment	512	55	39	4	1	0	0	10	621
	32 - Other manufacturing	708	21	5	1	0	0	0	7	742
	Subtotal	52,531	7,715	2,824	232	105	22	23	945	64,397
Construction	41 - Construction of buildings	2,501	434	335	30	18	3	2	97	3,420
	42 - Civil engineering	360	86	155	27	19	5	4	21	677
	43 - Specialized construction activities	4,049	96	77	14	10	0	0	34	4,280
	Subtotal	6,910	616	567	71	47	8	6	152	8,377
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	45 - Wholesale and retail trade and repair of motor vehicles and motorcycles	102,817	2,588	411	24	10	0	5	612	106,467
	Subtotal	102,817	2,588	411	24	10	0	5	612	106,467
Transportation and Storage	49 - Land transport and transport via pipelines	952	168	143	20	16	2	1	60	1,362
	52 - Warehousing and support activities for transportation	59,153	1,414	812	104	68	5	10	6,518	68,084
	53 - Postal and courier activities	76	59	161	16	10	1	0	7	330
	Subtotal	60,181	1,641	1,116	140	94	8	11	6,585	69,776
Accommodation and Food Service Activities	55 - Accommodation	2,487	524	432	40	19	1	0	327	3,830
	56 - Food and beverage service activities	33,504	2,466	735	20	6	1	1	261	36,994
	Subtotal	35,991	2,990	1,167	60	25	2	1	588	40,824
Information and Communication	61 - Telecommunications	3,089	355	371	54	31	2	1	41	3,944
	62 - Computer programming, consultancy and related activities	255	10	4	0	0	0	0	1	270
	63 - Information service activities	268	68	58	7	3	1	0	14	419
	Subtotal	3,612	433	433	61	34	3	1	56	4,633
Total		450,886	20,638	7,304	636	341	43	47	10,185	490,080

Appendix 2 Sample frame

Sample frame: 8 governorates, 27 subsectors, 10+ employee-sized firms

Type of Economic Activity		Governorate								
		Sulaymaniyah	Kirkuk	Erbil	Diyala	Baghdad	Wasit	Najaf	Basrah	Total
Agriculture, Forestry and Fishing	01 - Crop and animal production, hunting and related service activities	132	25	69	32	116	46	32	41	493
	03 - Fishing and aquaculture	1	0	1	0	0	3	0	6	11
	Subtotal	133	25	70	32	116	49	32	47	504
Manufacturing	10 - Manufacture of food products	28	26	31	29	211	15	32	36	408
	11 - Manufacture of beverages	8	9	5	5	33	2	5	4	71
	19 - Manufacture of coke and refined petroleum products	21	12	14	13	16	10	4	18	108
	20 - Manufacture of chemicals and chemical products	3	5	4	0	53	5	4	7	81
	21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations	0	0	1	1	13	0	0	0	15
	22 - Manufacture of rubber and plastics products	9	6	14	0	18	0	3	5	55
	23 - Manufacture of other non-metallic mineral products	101	73	52	94	300	47	97	43	807
	24 - Manufacture of basic metals	1	2	0	0	13	0	1	4	21
	25 - Manufacture of fabricated metal products, except machinery and equipment	23	8	21	3	62	3	11	9	140
	26 - Manufacture of computer, electronic and optical products	0	1	1	0	2	1	1	0	6
	27 - Manufacture of electrical equipment	2	2	0	7	26	0	1	3	41
	28 - Manufacture of machinery and equipment	4	2	5	1	9	2	1	3	27
	32 - Other manufacturing	0	0	1	0	2	0	0	1	4
	Subtotal	200	146	149	153	758	85	160	133	1,784
Construction	41 - Construction of buildings	42	8	32	9	91	18	16	48	264
	42 - Civil engineering	26	12	18	6	28	7	6	18	121
	43 - Specialized construction activities	25	1	6	0	16	3	9	12	72
	Subtotal	93	21	56	15	135	28	31	78	457
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	45 - Wholesale and retail trade and repair of motor vehicles and motorcycles	39	13	50	9	140	11	17	29	308
	Subtotal	39	13	50	9	140	11	17	29	308
Transportation and Storage	49 - Land transport and transport via pipelines	10	13	11	3	50	3	6	22	118
	52 - Warehousing and support activities for transportation	94	29	53	29	290	28	28	88	639
	53 - Postal and courier activities	16	4	17	13	34	6	9	13	112
	Subtotal	120	46	81	45	374	37	43	123	869
Accommodation and Food Service Activities	55 - Accommodation	52	12	85	9	108	13	40	27	346
	56 - Food and beverage service activities	73	26	73	10	196	24	23	41	466
	Subtotal	125	38	158	19	304	37	63	68	812
Information and Communication	61 - Telecommunications	37	21	44	16	120	18	13	32	301
	62 - Computer programming, consultancy and related activities	0	0	0	0	1	0	0	2	3
	63 - Information service activities	12	2	12	6	13	0	2	6	53
	Subtotal	49	23	56	22	134	18	15	40	357
Total		759	312	620	295	1,961	265	361	518	5,091

Appendix 3 Target sample size

Target sample size: 8 governorates, 27 subsectors, 10+ employee-sized firms

Type of Economic Activity		Governorate								
		Sulaymaniyah	Kirkuk	Erbil	Diyala	Baghdad	Wasit	Najaf	Basrah	Total
Agriculture, Forestry and Fishing	01 - Crop and animal production, hunting and related service activities	104	25	62	32	94	44	32	39	432
	03 - Fishing and aquaculture	1	0	1	0	0	3	0	6	11
	Subtotal	105	25	63	32	94	47	32	45	443
Manufacturing	10 - Manufacture of food products	28	26	31	29	144	15	32	35	340
	11 - Manufacture of beverages	8	9	5	5	32	2	5	4	70
	19 - Manufacture of coke and refined petroleum products	21	12	14	13	16	10	4	18	108
	20 - Manufacture of chemicals and chemical products	3	5	4	0	50	5	4	7	78
	21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations	0	0	1	1	13	0	0	0	15
	22 - Manufacture of rubber and plastics products	9	6	14	0	18	0	3	5	55
	23 - Manufacture of other non-metallic mineral products	85	65	49	80	178	45	82	41	625
	24 - Manufacture of basic metals	1	2	0	0	13	0	1	4	21
	25 - Manufacture of fabricated metal products, except machinery and equipment	23	8	21	3	57	3	11	9	135
	26 - Manufacture of computer, electronic and optical products	0	1	1	0	2	1	1	0	6
	27 - Manufacture of electrical equipment	2	2	0	7	26	0	1	3	41
	28 - Manufacture of machinery and equipment	4	2	5	1	9	2	1	3	27
	32 - Other manufacturing	0	0	1	0	2	0	0	1	4
	Subtotal	184	138	146	139	560	83	145	130	1,525
Construction	41 - Construction of buildings	40	8	32	9	78	18	16	45	246
	42 - Civil engineering	26	12	18	6	28	7	6	18	121
	43 - Specialized construction activities	25	1	6	0	16	3	9	12	72
	Subtotal	91	21	56	15	122	28	31	75	439
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	45 - Wholesale and retail trade and repair of motor vehicles and motorcycles	38	13	47	9	109	11	17	29	273
	Subtotal	38	13	47	9	109	11	17	29	273
Transportation and Storage	49 - Land transport and transport via pipelines	10	13	11	3	47	3	6	22	115
	52 - Warehousing and support activities for transportation	80	29	50	29	174	28	28	76	494
	53 - Postal and courier activities	16	4	17	13	33	6	9	13	111
	Subtotal	106	46	78	45	254	37	43	111	720
Accommodation and Food Service Activities	55 - Accommodation	49	12	74	9	89	13	39	27	312
	56 - Food and beverage service activities	65	26	65	10	137	24	23	39	389
	Subtotal	114	38	139	19	226	37	62	66	701
Information and Communication	61 - Telecommunications	36	21	42	16	97	18	13	32	275
	62 - Computer programming, consultancy and related activities	0	0	0	0	1	0	0	2	3
	63 - Information service activities	12	2	12	6	13	0	2	6	53
	Subtotal	48	23	54	22	111	18	15	40	331
Total		686	304	583	281	1,476	261	345	496	4,432

Appendix 4 Actual sample size

Actual sample size: Actual sample size: 8 governorates, 25 subsectors, 10+ employee-sized firms

Type of Economic Activity		Governorate							
		Sulaymaniyah	Kirkuk	Erbil	Diyala	Baghdad	Wasit	Najaf	Basrah	Total
Agriculture, Forestry and Fishing	01 - Crop and animal production, hunting and related service activities	66	2	22	22	10	12	22	3	159
	03 - Fishing and aquaculture	0	0	0	0	0	1	0	0	1
	Subtotal	66	2	22	22	10	13	22	3	160
Manufacturing	10 - Manufacture of food products	20	11	23	27	81	8	57	25	252
	11 - Manufacture of beverages	7	11	4	5	12	1	6	5	51
	19 - Manufacture of coke and refined petroleum products	10	2	6	3	0	0	0	9	30
	20 - Manufacture of chemicals and chemical products	4	1	1	0	10	4	5	1	26
	21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations	0	0	1	0	4	0	0	0	5
	22 - Manufacture of rubber and plastics products	9	4	5	0	10	0	7	3	38
	23 - Manufacture of other non-metallic mineral products	70	19	16	74	116	31	46	25	397
	24 - Manufacture of basic metals	1	1	0	0	1	0	2	1	6
	25 - Manufacture of fabricated metal products, except machinery and equipment	20	5	12	0	5	1	5	8	56
	26 - Manufacture of computer, electronic and optical products	0	0	0	0	0	0	1	0	1
	27 - Manufacture of electrical equipment	1	0	0	0	4	0	0	2	7
	28 - Manufacture of machinery and equipment	3	1	1	1	0	1	0	0	7
	32 - Other manufacturing	0	0	0	0	0	0	0	0	0
	Subtotal	145	55	69	110	243	46	129	79	876
Construction	41 - Construction of buildings	30	0	16	2	18	6	8	32	112
	42 - Civil engineering	15	0	6	1	1	0	0	5	28
	43 - Specialized construction activities	11	0	0	0	1	1	0	3	16
	Subtotal	56	0	22	3	20	7	8	40	156
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	45 - Wholesale and retail trade and repair of motor vehicles and motorcycles	32	2	22	6	43	7	14	14	140
	Subtotal	32	2	22	6	43	7	14	14	140
Transportation and Storage	49 - Land transport and transport via pipelines	6	4	9	1	0	0	8	12	40
	52 - Warehousing and support activities for transportation	46	0	15	6	11	4	1	28	111
	53 - Postal and courier activities	0	0	1	0	1	0	0	0	2
	Subtotal	52	4	25	7	12	4	9	40	153
Accommodation and Food Service Activities	55 - Accommodation	26	4	36	0	24	2	42	7	141
	56 - Food and beverage service activities	58	18	51	10	71	17	13	32	270
	Subtotal	84	22	87	10	95	19	55	39	411
Information and Communication	61 - Telecommunications	21	11	26	4	23	1	6	7	99
	62 - Computer programming, consultancy and related activities	0	0	0	0	0	0	0	0	0
	63 - Information service activities	8	0	7	0	0	0	0	0	15
	Subtotal	29	11	33	4	23	1	6	7	114
Total		464	96	280	162	446	97	243	222	2,010

Appendix 5 List and description of the 12 key job skills in the Survey

Skill	Definition
General Knowledge	Basic in the field of work
Advanced Knowledge	Including the understanding of theories in the field of work
Specialised Knowledge	As a basis for research in the field of work
Technical	Technical and professional skills including “specific technical know-how to perform their functions”
Literacy (Readivng & Writing)	Reading refers to the skills necessary to understand and apply information in sentences and paragraphs
	Writing refers to the skills necessary to create handwritten or printed text to communicate information and ideas
Computational	Computational skills indicate the necessary skills to understand, understand and apply mathematical concepts and information
Communication	Oral communication skills indicate the necessary skills to share information and ideas with others by speaking, listening, and using nonverbal signals and hints, such as body language
	At work, people use oral communication skills to talk to customers, discuss products with processors, explain work procedures for assistant employees, participate in virtual sales meetings with customers, or other activities that involve verbal exchanges
Teamwork (working with others)	Working with others means the necessary skills to interact with others (one or more people)
	In the workplace, people work with others in binary, small or large groups to coordinate tasks, share resources, plan, make decisions, negotiate, resolve disputes, or complete other activities that involve group work
Creative Thinking	Creative thinking refers to the necessary skills needed to solve problems, make decisions, think critically, plan, remember details, and find information
	At work, people use thinking skills to accomplish tasks, such as solving electronic equipment problems, assessing workplace safety, identifying people to be employed, planning meetings, memorising and remembering passwords, and finding the information needed to assess project costs
Digital Technology	Digital technology refers to the necessary skills needed to understand and use digital systems, tools and digital applications, and digital information processing
	At work, people use the skills of digital technology to access, analyse, organise, find and communicate information and ideas using computers, software, electronic sales equipment (credit card devices), e-mail, podcasts, internet applications, smartphones, and other digital means
Continuous Learning	Continuous learning refers to the necessary skills necessary to continuously develop and improve a person's skills and knowledge for effective action and adaptation to changes
	In the workplace, people use continuous learning skills to identify and develop the knowledge and skills they need to do a good job, build a career, and adapt to changes in processes, technology, instructions, and employer requirements
Foreign Language	Foreign language skills indicate the ability to communicate (oral and written in English, Arabic, or any language other than the person’s native language)

Appendix 6 List of manufacturing-related occupations

Averages of importance and satisfaction across 12 key skills for manufacturing-related occupations found in all the sectors as part of the Enterprise Survey

(I=importance, S=satisfaction)

ISCO code	Profession	No. of employees	Iraqi	Foreign	Advanced Knowledge		Communication		Computational	
					I	S	I	S	I	S
2411	Accountants	329	317	12	2.88	2.72	2.84	2.74	2.93	2.89
2411	Accountants (from other sectors)	636	598	38	2.92	2.79	2.85	2.82	2.94	2.91
4311	Accounting and bookeeping clerks	91	90	1	2.83	2.73	2.84	2.81	2.93	2.85
4311	Accounting and bookeeping clerks (from other sectors)	99	99	0	2.86	2.64	2.72	2.7	2.95	2.8
3313	Accounting associate professionals	3	3	0	3	3	2.5	3	3	2.5
2431	Advertising and marketing professionals	1	1	0	3	3	3	3	3	3
2431	Advertising and marketing professionals (from other sectors)	33	32	1	2.85	2.69	3	2.92	2.77	2.85
1222	Advertising and public relations managers	2	2	0	3	3	3	3	2.5	3
1222	Advertising and public relations managers (from other sectors)	113	101	12	3	2.89	3	3	2.72	2.89
1311	Agricultural and forestry production managers	4	4	0	2.75	3	2.75	3	2.75	3
1311	Agricultural and forestry production managers (from other sectors)	85	85	0	2.82	2.75	2.95	2.87	2.95	2.84
7233	Agricultural and industrial machineray mechanics and repairers	149	144	5	2.65	2.62	2.5	2.58	2.23	2.48
7233	Agricultural and industrial machineray mechanics and repairers (from other sectors)	43	37	6	2.81	2.88	2.44	2.75	2.19	2.62
7127	Air-conditioning and refrigeration mechanics	5	5	0	3	3	3	3	3	3
7127	Air-conditioning and refrigeration mechanics (from other sectors)	9	5	4	3	3	3	3	2.6	2.4
8219	Assemblers not elsewhere classified	6	6	0	3	3	3	3	2.67	3
8219	Assemblers not elsewhere classified (from other sectors)	24	24	0	2	2.5	3	2.5	2.5	2
7512	Bakers, pastry cooks and confectionary makers	554	505	49	2.58	2.47	2.82	2.73	2.08	2.29
7512	Bakers, pastry cooks and confectionary makers (from other sectors)	79	71	8	2.33	2.73	2.63	2.69	2.08	2.53
2131	Biologists, botanists, zoologists and related professionals	7	7	0	2.5	2.5	2.5	2.5	3	3
2131	Biologists, botanists, zoologists and related professionals (from other sectors)	3	3	0	3	3	3	3	3	3
7221	Blacksmiths, hammersmiths, and forging pressworkers	73	73	0	2.63	2.37	2.74	2.53	2.16	2.21
7411	Building and related electricians	8	8	0	3	2.83	2.67	2.83	2.33	2.33
7411	Building and related electricians (from other sectors)	41	34	7	2.67	2.63	2.26	2.7	1.85	2.33
9313	Building construction labourers	128	128	0	1.93	2.19	2.48	2.48	2	2.11
9313	Building construction labourers (from other sectors)	151	148	3	2	2.37	2.74	2.68	2.11	2.53
8331	Bus and tram drivers	8	8	0	2.5	2.5	2.5	2	2.5	2
8331	Bus and tram drivers (from other sectors)	152	152	0	2.47	2.65	2.47	2.71	2.18	2.53
1219	Business services and administration managers	24	20	4	2.91	2.91	2.86	2.91	2.86	2.86
1219	Business services and administration managers (from other sectors)	56	54	2	2.95	3	2.92	2.97	2.67	2.82
7522	Cabinet maker and related workers	13	7	6	3	3	2.8	2.8	1.8	2.2
7522	Cabinet maker and related workers (from other sectors)	7	7	0	3	2	3	2	1	2
8322	Car, taxi and van drivers	83	83	0	2.46	2.49	2.59	2.59	2.15	2.41
8322	Car, taxi and van drivers (from other sectors)	538	538	0	1.74	2.35	2.72	2.7	2.3	2.46
2165	Cartographers and surveyors	1	0	1	3	3	3	3	3	3
2165	Cartographers and surveyors (from other sectors)	19	19	0	3	2.79	2.93	2.86	3	2.93
5230	Cashiers	23	23	0	2.64	2.57	2.71	2.57	2.71	2.5
5230	Cashiers (from other sectors)	222	210	12	2.78	2.72	2.72	2.75	2.88	2.78

Continuous Learning		Creative Thinking		Digital Technology		Foreign Language		General Knowledge		Reading and Writing		Specialised Knowledge		Teamwork		Technical	
I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S
2.7	2.64	2.71	2.6	2.73	2.65	2.36	2.36	2.94	2.84	2.89	2.82	2.83	2.69	2.83	2.74	2.82	2.72
2.8	2.76	2.7	2.66	2.79	2.75	2.57	2.52	2.95	2.85	2.86	2.83	2.82	2.71	2.85	2.8	2.81	2.76
2.62	2.56	2.6	2.57	2.51	2.48	1.88	2.17	2.93	2.81	2.88	2.83	2.74	2.63	2.84	2.85	2.85	2.72
2.58	2.55	2.53	2.39	2.5	2.42	2.25	2.22	2.95	2.77	2.83	2.77	2.78	2.59	2.8	2.7	2.66	2.5
3	2.5	3	2.5	3	2.5	2	2	3	3	3	2.5	3	3	3	2.5	3	3
3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3
2.62	2.62	2.69	2.46	2.62	2.38	2.54	2.46	2.92	2.85	2.69	2.85	2.69	2.69	2.85	2.77	2.69	2.54
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.78	2.83	2.72	2.78	2.67	2.83	2.67	2.67	3	2.94	3	3	2.89	2.83	2.89	2.94	2.94	2.83
3	3	3	3	3	3	3	3	2.75	3	2.75	3	2.75	3	3	3	2.75	3
2.69	2.69	2.65	2.69	2.53	2.58	2.45	2.47	2.98	2.91	2.82	2.8	2.8	2.73	2.95	2.87	2.89	2.78
2.41	2.45	2.47	2.5	2.14	2.35	1.83	2.29	2.94	2.77	2.45	2.53	2.48	2.59	2.73	2.59	2.83	2.64
2.62	2.88	2.56	2.81	2.5	2.69	2.25	2.69	3	3	2.25	2.81	2.81	2.88	2.88	2.88	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.8	2.8	2.8	2.8	2.6	2.8	2.4	2.4	3	3	2.8	2.8	2.8	2.8	3	3	2.8	2.8
3	2.67	3	3	2.33	2.67	2.33	2.67	2.67	3	3	3	2.67	3	3	3	2.67	3
2.5	2	2.5	2	2.5	2	2	2	2.5	2.5	3	2.5	2	2	2.5	2.5	2.5	2.5
1.93	2.3	1.91	2.34	1.71	2.16	1.42	2.06	2.84	2.54	1.97	2.32	2.42	2.39	2.89	2.78	2.3	2.43
2.06	2.49	2.02	2.49	1.61	2.35	1.49	2.22	2.86	2.76	2	2.45	2	2.61	2.78	2.76	2.57	2.55
3	3	3	3	3	3	2.5	2.5	3	3	3	3	3	2.5	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.26	2.42	2.47	2.26	1.95	2.05	1.47	1.95	3	2.68	2.32	2.37	2.63	2.37	2.84	2.74	2.74	2.42
2.5	2.5	2.83	2.83	2.17	2	1.33	1.83	3	3	2.5	2.67	2.17	2.5	2.83	3	2.83	2.83
2.41	2.52	2.26	2.44	2.3	2.44	1.93	2.37	2.67	2.63	1.93	2.41	2.52	2.56	2.3	2.74	2.3	2.33
1.93	2.22	1.78	2.22	1.44	2.04	1.3	2	2.78	2.63	2.04	2.15	1.52	2.11	2.74	2.52	2.04	2.37
2	2.16	1.68	2.16	1.63	2	1.53	2.26	2.89	2.74	2.37	2.37	2	2.37	2.95	2.68	2.16	2.42
1.5	1.75	1.5	1.75	2	1.75	1.5	1.75	3	2.5	2.75	2.5	1.75	2	2.5	1.75	2.5	2.25
2.41	2.53	2.29	2.59	2.06	2.29	2	2.41	2.88	2.76	2.06	2.53	2.47	2.59	2.47	2.59	2.59	2.71
2.91	2.95	2.91	2.86	2.86	2.91	2.77	2.64	2.91	2.95	2.82	2.73	2.86	2.86	2.82	2.82	2.86	2.86
2.87	3	2.77	2.87	2.69	2.87	2.67	2.69	2.97	3	2.79	2.85	2.87	2.9	2.9	3	2.87	2.97
2.8	2.6	3	2.6	1.6	2	1.2	1.8	3	3	2	2.4	2.2	2.6	3	3	3	3
3	2	3	2	1	2	3	1	3	2	3	2	2	2	3	2	3	2
2.15	2.38	2.05	2.38	1.69	2.21	1.56	2.15	2.85	2.51	2.21	2.38	2.31	2.44	2.69	2.59	2.41	2.33
1.98	2.25	1.81	2.28	1.65	2.19	1.79	2.14	2.63	2.67	2.46	2.37	1.7	2.26	2.81	2.74	2.18	2.4
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.93	2.86	2.93	2.71	2.93	2.86	2.79	2.86	3	2.86	2.5	2.93	2.93	2.79	2.93	2.86	3	2.86
2.29	2.36	2.29	2.43	2.5	2.36	2.07	2.43	2.71	2.5	2.86	2.5	2.5	2.43	2.71	2.57	2.64	2.5
2.56	2.68	2.43	2.58	2.5	2.58	2.47	2.43	2.94	2.78	2.82	2.71	2.59	2.62	2.83	2.78	2.76	2.68

ISCO code	Profession	No. of employees	Iraqi	Foreign	Advanced Knowledge		Communication		Computational	
					I	S	I	S	I	S
8114	Cement, stone and other mineral product machine operators	958	933	25	2.57	2.6	2.68	2.57	1.99	2.27
8114	Cement, stone and other mineral product machine operators (from other sectors)	10	10	0	2.5	2.5	2.83	2.67	2.17	2
3111	Chemical and physical science technicians	15	7	8	3	2.5	3	2.5	2.5	3
3116	Chemical engineering technicians	159	159	0	2.83	2.58	2.62	2.5	2.54	2.54
3116	Chemical engineering technicians (from other sectors)	5	5	0	3	2.5	3	2.5	3	2.5
2145	Chemical engineers	19	18	1	3	2.83	2.67	2.5	2.33	2.5
3133	Chemical photographic products plant machine operators	61	61	0	2.67	2.67	2.78	2.67	2.22	2.67
3133	Chemical photographic products plant machine operators (from other sectors)	6	6	0	2.5	3	2	2.5	2	2.5
8131	Chemical products plant machine operators	331	319	12	2.69	2.72	2.83	2.72	2.65	2.67
8131	Chemical products plant machine operators (from other sectors)	51	51	0	2.25	2.12	2.88	2.75	3	2.75
2113	Chemists	56	39	17	2.82	2.91	3	2.91	2.91	2.91
2113	Chemists (from other sectors)	2	2	0	3	2	3	2	3	2
3112	Civil engineering technicians	17	17	0	2.25	2.75	2.75	2.75	2	2
3112	Civil engineering technicians (from other sectors)	8	8	0	3	3	3	3	2.67	3
2142	Civil engineers	23	23	0	3	3	2.93	2.93	2.93	2.93
2142	Civil engineers (from other sectors)	342	330	12	2.98	2.88	2.89	2.86	2.89	2.84
9112	Cleaners (dishwashers/hotel)	139	133	6	1.83	2.35	2.38	2.31	1.67	2.23
9112	Cleaners (dishwashers/hotel) (from other sectors)	1071	698	373	1.91	2.42	2.36	2.45	1.88	2.29
3322	Commercial sales representatives	15	15	0	3	2.5	3	3	3	3
3322	Commercial sales representatives (from other sectors)	29	29	0	2.57	3	3	3	3	3
2523	Computer network professionals	22	22	0	3	3	3	3	3	3
2523	Computer network professionals (from other sectors)	55	55	0	3	2.62	2.75	2.88	2.62	2.88
7114	Concrete placers, concrete finishers and related workers	107	103	4	2.61	2.52	2.81	2.77	2.39	2.35
7114	Concrete placers, concrete finishers and related workers (from other sectors)	28	28	0	2.57	2.29	2.29	2	2.14	2.14
1323	Construction managers	25	24	1	3	2.67	3	2.67	3	3
1323	Construction managers (from other sectors)	51	48	3	3	2.95	2.97	2.92	2.97	2.95
3123	Construction supervisors	2	2	0	3	3	3	2.5	2	2
3123	Construction supervisors (from other sectors)	22	21	1	2.5	2.5	2.67	2.92	2.5	2.58
5120	Cooks	346	321	25	2.23	2.72	2.67	2.57	2.03	2.24
5120	Cooks (from other sectors)	1303	1082	221	2.49	2.68	2.6	2.68	2.22	2.52
1211	Corporate service managers	434	404	30	2.93	2.88	2.9	2.86	2.92	2.85
1211	Corporate service managers (from other sectors)	692	638	54	2.98	2.88	2.96	2.92	2.94	2.89
8343	Crane, hoist and related plant operators	301	299	2	2.14	2.46	2.73	2.63	2.01	2.3
8343	Crane, hoist and related plant operators (from other sectors)	92	91	1	2.08	2.56	2.6	2.64	2.12	2.28
9211	Crop farm labourers	25	25	0	3	2	3	2	3	1
9211	Crop farm labourers (from other sectors)	7	5	2	1	2	1	2	1	2
3359	Customs, tax and related associate professionals not elsewhere classified	10	10	0	3	2.8	2.8	2.8	2.8	2.8
3359	Customs, tax and related associate professionals not elsewhere classified (from other sectors)	30	30	0	2.86	2.57	2.5	2.36	2.93	2.93
7513	Diary product makers	18	12	6	2.33	3	3	2.67	3	2.67
7513	Diary product makers (from other sectors)	7	7	0	2.5	2.25	2	2.25	1	2
5243	Door-to-door salepersons	21	16	5	2	2	2.5	2.5	1.5	1.5
5243	Door-to-door salepersons (from other sectors)	24	24	0	1.33	2.33	2.33	2.33	1.67	2.33

Continuous Learning		Creative Thinking		Digital Technology		Foreign Language		General Knowledge		Reading and Writing		Specialised Knowledge		Teamwork		Technical	
I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S
2.18	2.16	2.25	2.2	1.91	2.06	1.27	1.73	2.95	2.78	2.2	2.27	2.45	2.48	2.88	2.67	2.87	2.61
2	2.17	2.17	2.17	1.83	2.5	1.67	2.33	3	2.5	2.33	2.17	2.5	2.5	2.83	2.67	2.67	2.5
3	3	3	2.5	2	2.5	2.5	2.5	2.5	2.5	2	2	3	3	3	2.5	3	3
2.62	2.54	2.71	2.54	2.67	2.62	2.25	2.29	2.83	2.67	2.54	2.58	2.75	2.58	2.79	2.62	2.83	2.71
3	2.5	3	2.5	3	2.5	3	2.5	2.5	2.5	3	2.5	3	2.5	3	2.5	3	2.5
3	2.83	2.67	2.5	2.5	2.5	2.5	2.67	2.83	3	2.67	2.83	2.83	2.67	2.83	2.83	2.67	2.67
2.89	2.89	2.78	2.78	2.22	2.33	1.89	2.22	2.89	2.78	2.22	2.44	2.67	2.56	2.44	2.67	3	2.78
2	2.5	2.5	2.5	2	2.5	2	2	2.5	3	3	3	2.5	3	3	3	2.5	3
2.17	2.39	2.22	2.41	1.98	2.2	1.83	2.17	2.96	2.89	2.63	2.72	2.33	2.54	2.89	2.78	2.76	2.72
2.88	2.12	2	1.88	2.88	2.12	2.38	1.38	3	2.75	3	2.75	1.5	1.62	3	2.88	3	2.62
3	2.91	2.91	2.91	2.91	2.91	3	2.91	3	2.82	2.91	2.82	3	2.91	3	2.91	3	2.91
3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2	3	2
2.5	2.5	2.5	2.5	1.75	2	2	2.25	3	3	2.5	2.75	2.5	2.5	3	3	3	2.75
3	3	3	3	3	3	2.67	3	3	3	2.67	3	3	3	3	3	3	3
2.87	2.73	2.93	2.67	3	2.93	2.53	2.47	3	3	3	3	3	3	2.93	2.93	2.93	2.93
2.85	2.84	2.86	2.8	2.72	2.75	2.77	2.73	2.98	2.91	2.77	2.86	2.9	2.82	2.93	2.9	2.88	2.83
2	2.25	2.29	2.23	1.58	2.08	1.23	2.02	2.65	2.48	1.98	2.17	1.83	2.31	2.46	2.31	2.29	2.31
1.98	2.33	1.76	2.19	1.66	2.18	1.92	2.25	2.49	2.58	2.09	2.37	1.79	2.33	2.51	2.55	2.09	2.36
3	3	3	2.5	3	3	3	3	3	2.5	2.5	2.5	3	2.5	3	3	3	2
2.29	2.71	2.86	2.57	2.86	2.86	2.29	2.43	3	3	3	3	2.57	2.71	2.71	2.71	2.86	2.71
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.62	2.88	2.75	2.88	2.62	2.75	2.75	2.75	3	3	3	3	3	2.5	2.88	2.88	3	2.88
2.06	2.06	2	2.16	1.74	2.1	1.39	1.94	2.94	2.68	2.39	2.29	2.23	2.32	2.84	2.84	2.81	2.52
2.57	2.14	2.14	2	1.86	1.86	1.86	1.86	2.71	2.29	2.43	2.14	2.57	2.29	2.57	2.29	2.71	2.29
3	3	3	2.67	2.67	2.67	2.67	2.67	3	3	2	2	3	2.67	3	2.67	3	3
2.97	2.87	3	2.87	2.95	2.9	2.92	2.85	3	2.95	2.92	2.9	2.97	2.9	2.95	2.87	2.97	2.87
3	2.5	3	2.5	1.5	1.5	1.5	1.5	3	3	2	2	1	1.5	2.5	2.5	2.5	2.5
2.42	2.33	1.83	2.33	1.75	2.08	2	1.92	2.92	2.67	2.58	2.92	2.17	2.33	2.92	2.83	2.5	2.42
2.14	2.29	2.23	2.41	1.67	2.23	1.23	1.78	2.94	2.79	2.29	2.46	2.22	2.65	2.68	2.6	2.58	2.62
2.44	2.6	2.45	2.55	1.73	2.3	1.76	2.19	2.9	2.82	2.24	2.5	2.34	2.56	2.76	2.74	2.7	2.65
2.83	2.79	2.84	2.74	2.76	2.68	2.52	2.51	2.97	2.91	2.91	2.83	2.91	2.79	2.89	2.83	2.94	2.87
2.93	2.86	2.89	2.81	2.83	2.78	2.73	2.65	2.98	2.93	2.9	2.89	2.93	2.82	2.96	2.93	2.92	2.88
1.87	2.11	1.95	2.13	1.69	2.06	1.25	1.96	2.93	2.71	2.19	2.34	1.93	2.33	2.84	2.71	2.71	2.48
2.12	2.32	1.92	2.2	1.84	2.4	1.68	2.24	2.92	2.92	2.08	2.28	2.04	2.6	3	2.68	2.8	2.8
1	2	1	2	1	2	1	1	3	1	3	1	3	1	3	3	3	1
1	2	1	2	1	2	2	2	3	3	1	2	1	2	3	3	3	3
2.8	2.8	2.6	2.2	2.6	2.4	2.8	1.8	3	2.8	3	2.8	2.8	2.2	3	3	2.8	2.8
2.86	2.5	2.79	2.64	2.71	2.29	2.57	2	2.86	2.57	2.93	2.86	2.79	2.21	2.57	2.57	2.93	2.21
2.67	2.67	3	2.67	2.67	2.33	2	2.33	3	3	2.33	2.67	2.33	3	3	2.67	3	3
1	2	1	2	1	2	1	2	3	3	1.5	2	2.5	2.25	2	2.5	3	3
1.5	2	2.5	2	2	2	1	1.5	2.5	2.5	2	2.5	2	2	3	3	2	2
1	2.33	1.67	2.33	1.33	2.33	1	2.33	3	2.33	1.67	2.33	1.67	2.33	3	2.67	2.67	2.33

ISCO code	Profession	No. of employees	Iraqi	Foreign	Advanced Knowledge		Communication		Computational	
					I	S	I	S	I	S
8342	Earthmoving and related plant operators	540	531	9	2.33	2.57	2.59	2.49	2	2.22
8342	Earthmoving and related plant operators (from other sectors)	38	38	0	2.06	2.53	2.76	2.59	2.29	2.35
8212	Electrical and electronic equipment assemblers	5	5	0	3	3	3	3	3	3
8212	Electrical and electronic equipment assemblers (from other sectors)	18	3	15	3	3	2	2	2	2
3113	Electrical engineering technicians	213	201	12	2.72	2.72	2.57	2.43	2.43	2.51
3113	Electrical engineering technicians (from other sectors)	338	336	2	2.84	2.68	2.57	2.59	2.59	2.59
2151	Electrical engineers	277	273	4	2.91	2.87	2.87	2.87	2.61	2.78
2151	Electrical engineers (from other sectors)	112	96	16	3	2.8	2.9	2.9	2.88	2.8
7413	Electrical line installers and repairers	24	19	5	3	2.38	2.54	2.54	2.31	2.31
7413	Electrical line installers and repairers (from other sectors)	3	3	0	2.5	2.5	2.5	2.5	2.5	2.5
7412	Electrical mechanics and fitters	82	56	26	2.82	2.86	2.68	2.61	2.61	2.57
7412	Electrical mechanics and fitters (from other sectors)	89	89	0	2.71	2.43	3	2.71	2.71	2.43
3114	Electronics engineering technicians	7	4	3	3	2.83	2.5	2.5	2.67	2.67
3114	Electronics engineering technicians (from other sectors)	252	252	0	2.9	2.76	2.61	2.76	2.71	2.78
2152	Electronics engineers	29	28	1	3	3	3	3	3	3
2152	Electronics engineers (from other sectors)	47	47	0	3	2.81	3	2.75	3	2.81
2143	Environmental engineers	30	28	2	3	3	3	3	3	2.33
2143	Environmental engineers (from other sectors)	4	4	0	3	3	3	3	3	3
2263	Environmental occupational health and hygiene professionals	1	1	0	3	3	3	3	2.5	3
2132	Farming, forestry and fisheries advisors	1	1	0	3	2.5	3	3	3	3
2132	Farming, forestry and fisheries advisors (from other sectors)	7	3	4	3	3	2.33	2.83	2.5	2.83
1212	Finance managers	248	241	7	2.92	2.92	2.77	2.77	2.85	2.77
1212	Finance managers (from other sectors)	146	140	6	2.95	2.9	2.98	2.93	2.95	2.93
5411	Firefighters	13	13	0	3	3	2	2	2	2
7515	Food and beverage tasters and graders	5	5	0	3	3	3	3	3	3
7515	Food and beverage tasters and graders (from other sectors)	5	5	0	2.5	2.5	3	3	2.5	2.5
8160	Food and related products machine operators	901	898	3	2.53	2.64	2.62	2.57	2.33	2.41
8160	Food and related products machine operators (from other sectors)	75	75	0	1.62	2.25	1.69	2.19	1.94	2.12
9333	Freight handlers	1314	1270	44	1.6	2.26	2.28	2.32	1.88	2.17
9333	Freight handlers (from other sectors)	495	490	5	1.57	2.27	2.62	2.67	2.06	2.33
7514	Fruit, vegetable and related preservers	18	18	0	2.25	2.25	2.5	2.5	2	2.25
4110	General office clerks	32	32	0	2.83	2.67	3	3	3	3
4110	General office clerks (from other sectors)	47	47	0	2.88	3	2.88	2.88	2.75	2.81
8181	Glass and ceramics plant operators	87	54	33	2.67	2.8	2.73	2.87	2.4	2.73
7125	Glazers	2	2	0	3	2	3	3	2	2
9331	Hand and peddle vehicle drivers	67	67	0	2.42	2.25	2.5	2.58	2.67	2.42
9331	Hand and peddle vehicle drivers (from other sectors)	5	5	0	2	2	2	2	2	2
9321	Handpackers	3429	3366	63	1.99	2.5	2.46	2.53	2.05	2.26
9321	Handpackers (from other sectors)	269	113	156	1.81	2.25	2.31	2.5	1.62	2.25
8332	Heavy truck and lorry drivers	223	214	9	1.94	2.65	2.86	2.8	2.35	2.55
8332	Heavy truck and lorry drivers (from other sectors)	261	259	2	1.57	2.56	2.75	2.77	2.13	2.55
1213	Human resource managers	3	3	0	3	3	3	3	3	3
1213	Human resource managers (from other sectors)	5	5	0	3	3	3	3	2.5	3

Continuous Learning		Creative Thinking		Digital Technology		Foreign Language		General Knowledge		Reading and Writing		Specialised Knowledge		Teamwork		Technical	
I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S
2.21	2.26	2.13	2.2	1.73	2.01	1.27	1.75	2.93	2.75	2.24	2.34	2.23	2.46	2.75	2.58	2.77	2.52
2.18	2.29	2.12	2.35	1.76	2.35	1.53	2.06	2.71	2.82	2.24	2.47	2.12	2.47	2.76	2.65	2.29	2.47
2	3	2.5	3	2.5	3	2.5	3	3	3	3	3	3	3	3	3	3	3
3	3	3	3	2	2	2	2	3	3	2	2	3	3	3	3	2	2
2.77	2.57	2.66	2.55	2.43	2.45	2.26	2.19	2.94	2.81	2.81	2.66	2.77	2.6	2.77	2.6	2.85	2.7
2.77	2.55	2.8	2.5	2.55	2.45	2.18	2.27	2.91	2.7	2.7	2.64	2.84	2.7	2.7	2.61	2.82	2.52
3	2.91	3	2.83	2.83	2.83	2.35	2.7	3	2.96	2.91	2.74	2.91	2.83	2.83	2.83	3	2.91
2.93	2.8	2.88	2.78	2.73	2.76	2.88	2.8	3	2.85	2.56	2.85	2.85	2.73	2.93	2.9	2.88	2.76
2.85	2.69	2.62	2.38	2.23	2.08	2.23	2	2.92	2.46	2.77	2.23	3	2.15	2.77	2.54	3	2.54
3	2.5	2.5	2.5	2	2	2.5	2	2.5	2.5	2	2.5	2.5	2.5	2.5	2.5	3	2.5
2.82	2.64	2.86	2.57	2.32	2.5	2.21	2.36	2.96	2.86	2.57	2.61	2.68	2.57	2.86	2.64	2.93	2.68
2.29	2.57	2.71	2.57	2.29	2.43	2.29	2.43	3	3	2.86	2.57	2.71	2.57	3	2.86	2.86	2.86
3	2.83	3	2.83	2.83	2.83	3	2.5	3	3	2.5	2.33	3	2.83	2.83	2.67	3	2.83
2.71	2.76	2.68	2.63	2.93	2.71	2.61	2.49	2.98	2.8	2.78	2.83	2.9	2.71	2.83	2.76	2.88	2.63
3	3	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3
3	2.69	2.88	2.62	3	2.75	2.5	2.38	3	2.81	3	2.81	3	2.81	2.81	2.62	3	2.81
3	3	3	2.67	2.67	2.33	2.33	2.33	3	3	2.33	3	3	2.33	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	2.5	3	3	3	3	2.5	2.5	3	3	2.5	3	3	3	3	3	3	3
3	3	3	2.5	3	3	3	2.5	3	3	3	3	3	2.5	3	3	3	2.5
3	3	3	2.83	2.17	2.67	2.17	2.5	3	3	2.67	2.67	3	2.83	2.83	2.83	3	3
2.92	2.85	2.92	2.85	2.92	2.85	2.54	2.69	3	2.92	2.62	2.77	2.92	2.77	2.92	2.92	2.92	2.85
2.95	2.86	2.88	2.81	2.86	2.88	2.86	2.78	2.98	2.91	2.86	2.86	2.97	2.9	2.93	2.93	2.93	2.9
2	2	2	2	2	2	2	1	3	3	3	3	3	3	2	2	3	3
3	3	3	3	3	3	3	3	3	3	2.33	2.67	3	3	3	3	3	3
3	2.5	2.5	2.5	3	2.5	1.5	2	3	3	2.5	2.5	2.5	2.5	3	3	3	2.5
1.96	2.24	2.1	2.29	1.95	2.22	1.45	2.07	2.92	2.74	2.43	2.46	2.35	2.55	2.8	2.65	2.7	2.63
1.75	2.19	1.62	2.19	1.56	2.19	1.44	2.12	2.94	2.81	1.62	2.12	1.88	2.19	2.62	2.38	2.88	2.56
1.73	2.07	1.74	2.08	1.47	2.03	1.28	1.9	2.54	2.43	1.84	2.15	1.55	2.21	2.65	2.43	2.01	2.22
2.05	2.29	1.89	2.22	1.73	2.11	1.67	2.05	2.6	2.51	2.14	2.32	1.48	2.21	2.81	2.75	2.25	2.4
1.75	2	1.75	2	1.25	2	1	1.75	3	3	2.25	2.5	1.75	2.25	2.75	2.5	2.75	2.75
3	3	3	3	2.83	2.83	2.5	2.5	2.83	2.83	3	2.83	2.67	2.83	2.83	2.83	2.67	2.67
2.81	2.75	2.88	2.88	2.88	2.81	2.62	2.75	3	3	2.94	3	2.94	3	2.88	2.88	2.94	2.94
2.73	2.67	2.53	2.6	2.27	2.53	1.87	2.33	2.93	2.87	2.4	2.73	2.4	2.67	2.8	2.87	2.8	2.73
3	2	3	3	3	3	3	2	3	3	3	3	3	3	3	2	3	2
2.08	2.42	2	2.08	2.08	2	1.33	1.33	2.75	2.5	2.25	2.17	2.5	2.42	2.67	2.5	1.92	2.58
2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2
1.84	2.06	1.84	2.09	1.47	2	1.17	1.73	2.82	2.67	2.13	2.25	1.81	2.42	2.71	2.57	2.46	2.43
1.62	2.25	1.44	2.12	1.38	2	1.44	1.94	2.75	2.56	1.94	2.25	1.81	2.19	2.5	2.69	2.56	2.44
1.99	2.42	1.97	2.39	1.69	2.32	1.68	2.3	2.87	2.86	2.35	2.59	1.76	2.59	2.83	2.79	2.58	2.68
1.92	2.4	1.85	2.37	1.75	2.32	1.71	2.31	2.92	2.83	2.15	2.49	1.59	2.48	2.89	2.84	2.47	2.6
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

ISCO code	Profession	No. of employees	Iraqi	Foreign	Advanced Knowledge		Communication		Computational	
					I	S	I	S	I	S
3132	Incinerator and water treatment plant operators	49	46	3	2.4	2.8	2.7	2.8	2.5	2.5
2141	Industrial and production engineers	44	41	3	2.91	2.77	2.82	2.77	2.77	2.82
2141	Industrial and production engineers (from other sectors)	1	1	0	3	3	3	3	3	2
2611	Lawyers	5	5	0	3	2.6	3	3	2.8	2.6
2611	Lawyers (from other sectors)	73	73	0	2.86	2.79	2.89	2.86	2.66	2.75
3141	Life science technicians (excluding medical)	15	10	5	3	2.67	2.5	2.83	2.67	2.33
9329	Manufacturing labourers not elsewhere classified	24	24	0	2	2.6	2.6	2.5	1.6	2.2
1321	Manufacturing managers	1482	1356	126	2.97	2.86	2.95	2.89	2.92	2.85
1321	Manufacturing managers (from other sectors)	22	22	0	3	2.88	3	2.82	2.82	2.65
3122	Manufacturing supervisors	242	240	2	2.89	2.67	2.66	2.51	2.47	2.43
3122	Manufacturing supervisors (from other sectors)	3	3	0	3	3	2.67	3	2.67	2.67
3115	Mechanical engineering technicians	273	242	31	2.88	2.66	2.45	2.55	2.27	2.39
3115	Mechanical engineering technicians (from other sectors)	409	394	15	2.89	2.61	2.8	2.68	2.62	2.61
2144	Mechanical engineers	118	109	9	2.91	2.86	2.74	2.66	2.8	2.71
2144	Mechanical engineers (from other sectors)	160	144	16	3	2.86	2.84	2.86	2.82	2.8
8211	Mechanical machinery assemblers	65	65	0	2.5	2.5	2	2	3	2
9621	Messengers, package deliverers and luggage porters	258	257	1	1.58	2.56	2.39	2.5	2.17	2.44
9621	Messengers, package deliverers and luggage porters (from other sectors)	114	110	4	1.57	2.17	2.27	2.43	1.8	2.17
7211	Metal molders and coremakers	5	5	0	2	3	3	3	3	3
8121	Metal processing plant operators	50	42	8	2.67	2.67	2.67	2.67	2.67	3
3135	Metal production process controllers	2	1	1	3	3	3	3	3	2
3135	Metal production process controllers (from other sectors)	30	30	0	3	3	3	3	3	3
8112	Mineral and stone processing plant operators	208	208	0	2.17	2.46	2.57	2.51	1.73	2.19
8111	Miners and quarriers	21	21	0	2.88	2.24	3	3	2.76	1.94
9311	Mining and quarry labourers	17	17	0	2.25	2.5	2	2	1.75	2
1322	Mining managers	3	3	0	3	2.67	3	2.67	3	2.67
3121	Mining supervisors	1	1	0	3	2	3	3	3	3
1349	Other professional services managers not elsewhere classified	5	5	0	2.8	2.6	2.6	2.6	2.8	2.8
1349	Other professional services managers not elsewhere classified (from other sectors)	24	22	2	2.95	2.86	2.95	3	2.81	2.95
8183	Packing, bottling and labeling machine operators	35	35	0	3	3	2.33	2.67	3	2.67
8143	Paper products machine operators	10	10	0	2.4	2.6	3	2.8	3	2.8
4313	Payroll clerks	14	14	0	2.57	2.57	2.86	2.57	2.71	2.57
4313	Payroll clerks (from other sectors)	2	2	0	3	2.5	3	3	3	2.5
2423	Personnel and career professionals	2	2	0	3	3	3	3	2.5	3
2423	Personnel and career professionals (from other sectors)	6	5	1	2	3	3	2.5	2.5	2.5
4416	Personnel clerks	8	8	0	2	2	3	2	3	2
4416	Personnel clerks (from other sectors)	13	13	0	2.67	2.67	3	3	3	3
3134	Petroleum and natural gas refining plant operators	12	12	0	3	3	2	3	2	3
2111	Physicists and astronomers	24	24	0	3	3	3	3	3	3
7123	Plasterers	76	76	0	1.97	2.39	2.21	2.21	1.39	2.11
7123	Plasterers (from other sectors)	9	9	0	2.75	2.25	2.75	2	2.5	2.25
8142	Plastic products machine operators	241	201	40	2.47	2.58	2.81	2.83	2.44	2.56
2422	Policy administration professionals	74	67	7	2.89	2.79	2.89	2.74	2.68	2.74

Continuous Learning		Creative Thinking		Digital Technology		Foreign Language		General Knowledge		Reading and Writing		Specialised Knowledge		Teamwork		Technical	
I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S
2.6	2.4	2.7	2.6	2.5	2.7	2.1	2.3	2.9	2.8	2.6	2.6	2.4	2.7	2.9	2.8	2.8	2.7
2.86	2.82	2.91	2.77	2.82	2.64	2.59	2.41	2.91	2.91	2.86	2.77	2.91	2.59	2.77	2.82	2.86	2.77
3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3
2.8	2.6	2.6	2.4	2.6	2.4	2.8	2.6	3	2.8	3	3	3	2.6	2.8	2.8	3	2.6
2.75	2.61	2.7	2.57	2.48	2.5	2.62	2.48	2.91	2.84	2.89	2.89	2.84	2.73	2.73	2.71	2.7	2.7
3	2.83	2.83	2.83	2.83	3	2.67	2.5	3	2.83	2.5	2.17	3	2.67	2.83	2.83	2.83	2.67
2	2.3	2	2.3	1	2	1.1	1.9	2.5	2.8	1.8	2	1.8	2.5	2.8	2.6	2.2	2.7
2.87	2.77	2.91	2.8	2.71	2.63	2.45	2.4	2.97	2.92	2.88	2.82	2.93	2.81	2.95	2.89	2.95	2.84
2.94	2.71	2.94	2.82	2.71	2.47	2.76	2.59	3	2.88	2.88	2.76	3	2.88	3	2.88	3	2.88
2.57	2.31	2.64	2.37	2.16	2.11	1.76	1.69	2.94	2.73	2.61	2.51	2.8	2.59	2.74	2.56	2.81	2.59
3	3	3	2.67	2.33	2.67	2.33	2.33	3	3	2.67	2.67	3	2.67	3	3	3	3
2.83	2.62	2.77	2.53	2.29	2.29	2.12	2.1	2.9	2.79	2.51	2.43	2.88	2.62	2.75	2.73	2.86	2.66
2.88	2.59	2.82	2.58	2.59	2.48	2.48	2.33	2.94	2.74	2.73	2.77	2.88	2.58	2.88	2.74	2.94	2.73
2.86	2.71	2.86	2.63	2.69	2.69	2.37	2.4	3	2.91	2.74	2.71	2.89	2.77	2.74	2.66	2.97	2.83
2.95	2.89	2.91	2.84	2.82	2.77	2.75	2.73	3	2.91	2.43	2.73	2.95	2.82	2.91	2.91	3	2.86
3	3	3	3	2.5	2.5	1.5	1.5	3	3	2.5	2	2.5	2	3	3	3	3
2.17	2.39	2.25	2.42	1.89	2.36	1.94	2.31	2.69	2.69	2.19	2.44	1.61	2.47	2.86	2.64	2.22	2.56
1.87	2.17	1.6	2.07	1.47	2.03	1.47	1.93	2.27	2.5	2	2.27	1.43	2.1	2.3	2.4	1.8	2.3
1	2	1	2	2	2	1	2	3	3	3	3	2	3	3	3	3	3
2.67	2.67	2.67	2.67	2.67	3	2.33	2.33	2.67	3	2.33	2.67	3	2.67	3	2.67	2.67	2.67
3	3	3	3	2	2	2	3	3	3	2	2	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1.73	2.36	1.9	2.35	1.55	2.27	1.14	2.1	2.99	2.72	2.05	2.33	2.07	2.41	2.9	2.64	2.82	2.61
2.82	2.41	1.88	1.53	1.65	1.53	2.12	1.94	3	2.47	2.76	2.71	2.47	2.06	3	3	2.18	2
2.5	2.25	2.5	2.25	1.75	1.75	1.75	2	3	2.25	1.5	1.75	2.25	2.25	3	2.5	2.5	2.25
3	2.67	3	2.67	2.67	2.67	3	2.33	3	2.67	3	3	3	2.67	3	2.67	3	2.67
3	3	3	3	3	3	3	2	3	3	3	3	3	2	3	3	3	2
2.6	2.6	2.4	2.8	2.6	2.6	2.4	2.2	3	2.8	3	2.8	2.6	2.6	2.8	2.6	2.8	2.6
2.86	2.86	2.76	2.76	2.52	2.71	2.48	2.57	2.9	2.81	2.76	2.9	2.81	2.86	2.86	2.95	2.81	2.86
3	3	3	2	1.67	1.33	1	1.33	3	3	1.33	1.67	3	2.33	3	2.67	3	2.33
1.4	2.2	1.4	2.2	1.8	2.4	1.8	2.2	3	2.6	3	2.8	2.2	2.6	2.8	2.8	2.8	2.8
2.71	2.57	2.71	2.71	2.43	2.43	2.43	2.29	2.86	2.57	2.71	2.57	2.86	2.71	2.71	2.57	2.86	2.43
2	2	2.5	2.5	2	2.5	1.5	1.5	3	2.5	3	3	2.5	2.5	2.5	2.5	2.5	2.5
3	2.5	3	3	3	3	2.5	2.5	3	3	3	3	3	3	3	3	3	3
2.5	2.5	3	2.5	2.5	2.5	2.5	2.5	3	2.5	3	3	2.5	2.5	2.5	3	3	1.5
2	3	3	3	3	3	3	3	2	2	2	2	2	2	3	2	2	2
3	3	3	3	3	3	2.67	2.67	2.67	2.67	3	3	2.67	2.67	3	3	3	2.67
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1.95	2.03	1.89	2.05	1.32	1.97	1.08	1.95	2.95	2.66	1.68	2.08	1.66	2.18	2.84	2.5	2.24	2.29
2.5	2.25	2	2	1.25	2	1	1.75	3	2.75	2.5	2.5	2.75	2	2.5	2	2.5	2
2.17	2.39	2.33	2.39	2.31	2.31	1.56	2.17	2.92	2.83	2.39	2.44	2.39	2.47	2.92	2.89	2.81	2.83
2.63	2.58	2.68	2.47	2.58	2.53	2.21	2.32	3	2.84	2.74	2.58	2.79	2.63	2.84	2.79	2.68	2.53

ISCO code	Profession	No. of employees	Iraqi	Foreign	Advanced Knowledge		Communication		Computational	
					I	S	I	S	I	S
2422	Policy administration professionals (from other sectors)	310	303	7	2.97	2.94	2.97	2.97	2.97	2.94
3131	Power production plant operators	75	75	0	2.02	2.31	2.71	2.67	1.94	2.21
3131	Power production plant operators (from other sectors)	44	44	0	2.05	2.41	2.36	2.45	2	2.27
7323	Print finishing and binding workers	14	14	0	2.75	2.5	2.5	2.5	2.25	2.75
3139	Process control technicians not elsewhere classified	115	97	18	2.95	2.42	2.53	2.47	2.26	2.32
3139	Process control technicians not elsewhere classified (from other sectors)	52	52	0	3	3	3	3	2	2
2163	Product and garmet designers	1	1	0	3	3	3	3	3	3
2163	Product and garmet designers (from other sectors)	2	2	0	3	3	3	3	3	2
4322	Production clerks	23	23	0	3	2.33	2.33	1.5	2.67	2
4322	Production clerks (from other sectors)	2	2	0	3	2	3	2.5	3	2.5
4226	Receptionists	3	3	0	2.33	2.33	2.33	2.33	2	2.33
4226	Receptionists (from other sectors)	349	337	12	2.83	2.83	3	2.93	2.76	2.83
7215	Riggers and cable splicers	5	2	3	3	3	3	3	2	3
7121	Roofers	2	2	0	3	3	3	3	3	3
7121	Roofers (from other sectors)	12	12	0	3	2.5	3	2.5	3	2
8141	Rubber product machine operators	2	2	0	2	2	3	3	2	2
1221	Sales and marketing managers	227	214	13	2.95	2.84	3	2.89	2.92	2.87
1221	Sales and marketing managers (from other sectors)	235	217	18	2.93	2.81	2.95	2.91	2.93	2.82
5249	Salesworkers not elsewhere classified	67	59	8	2	2	3	3	2.75	2.5
5249	Salesworkers not elsewhere classified (from other sectors)	146	142	4	2.54	2.54	2.75	2.71	2.71	2.75
5414	Security guards	432	426	6	1.71	2.44	2.37	2.44	1.75	2.13
5414	Security guards (from other sectors)	943	928	15	1.87	2.4	2.36	2.46	1.81	2.26
7213	Sheet metal workers	57	57	0	2.36	2.64	2.86	2.86	2.27	2.5
7213	Sheet metal workers (from other sectors)	5	5	0	3	3	3	2	3	3
9334	Shelf fillers	109	109	0	2.05	2.5	2.59	2.55	2.32	2.5
9334	Shelf fillers (from other sectors)	256	213	43	2.04	2.38	2.82	2.64	2.71	2.56
1420	Shop managers	12	12	0	2.75	2.75	2.88	2.75	2.88	2.62
1420	Shop managers (from other sectors)	52	46	6	2.94	2.94	2.97	2.94	2.97	2.97
5223	Shop sales assistants	120	117	3	2.5	2.32	2.96	2.72	2.92	2.4
5223	Shop sales assistants (from other sectors)	203	199	4	2.53	2.67	2.82	2.77	2.62	2.7
5222	Shopsales assistants	33	31	2	2.58	2.63	2.95	2.79	2.95	2.63
5222	Shopsales assistants (from other sectors)	61	61	0	2.82	2.64	2.95	2.82	2.82	2.77
2212	Specialist medical practitioners	4	4	0	3	3	3	3	3	2
7132	Spray painters and varnishers	6	4	2	1.67	2.67	2.33	2.33	2	2.33
5211	Stall and market salespersons	10	10	0	3	3	3	3	1	2
5211	Stall and market salespersons (from other sectors)	1	1	0	3	3	3	3	2	2
3314	Statisticial, mathematical and related associate professionals	2	2	0	2	2	3	3	2	2
3314	Statisticial, mathematical and related associate professionals (from other sectors)	18	18	0	3	3	3	3	3	3
4321	Stockclerks	28	27	1	2.5	2.39	2.44	2.28	2.44	2.11
4321	Stockclerks (from other sectors)	63	61	2	2.37	2.46	2.66	2.54	2.74	2.66
7113	Stonemasons, stone cutters, splitters and carvers	115	115	0	2.99	2.97	2.99	2.98	2.99	2.97
7113	Stonemasons, stone cutters, splitters and carvers (from other sectors)	16	16	0	3	3	3	3	3	3
7214	Structural metal preparers and erectors	107	94	13	2.59	2.86	2.5	2.73	2.32	2.55

Continuous Learning		Creative Thinking		Digital Technology		Foreign Language		General Knowledge		Reading and Writing		Specialised Knowledge		Teamwork		Technical	
I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S
2.62	2.84	2.5	2.84	2.56	2.78	2.72	2.5	3	2.97	2.94	2.94	2.94	2.88	2.97	2.94	2.97	2.91
1.92	2.19	2	2.06	1.81	2.19	1.42	2	2.69	2.52	2.08	2.27	2.08	2.27	2.75	2.62	2.44	2.38
1.95	2.23	1.82	2.05	1.77	2.18	1.64	2.05	2.86	2.5	2.32	2.45	1.95	2.23	2.77	2.45	2.82	2.55
2	2.25	2.25	2.25	2	2.5	1.75	1.75	3	2.5	2.5	2.75	2.5	2.5	2.75	2.75	2.5	2.5
2.89	2.53	2.53	2.32	1.89	2.05	2.05	2	2.95	2.68	2.68	2.32	2.79	2.21	2.68	2.58	2.89	2.37
3	3	3	3	1	2	3	2	3	3	2	2	3	2	3	3	3	3
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2	2	3	3	3	2	2	2	3	3	3	2	3	3	3	3	3	2
2.33	1.17	2.33	1.17	2.67	1.17	2.17	1.17	3	2.33	2.67	2.17	2.67	2.17	2.67	1.33	2.67	2
3	2.5	3	2.5	3	2	3	2	3	2	3	2.5	3	2.5	3	2.5	3	2.5
2.67	2.33	2.67	2.33	1.67	2.33	2.33	2.33	2.67	2.67	2.33	2.33	2	2.33	2.67	2.33	2	2.33
2.79	2.83	2.62	2.72	2.72	2.76	2.76	2.76	3	2.97	2.86	2.66	2.76	2.79	2.93	2.86	2.72	2.76
3	3	2	3	3	2	1	3	3	3	3	2	3	3	3	3	3	3
2	3	2	3	2	3	1	3	3	3	3	3	2	3	3	3	3	3
1	2.5	2	3	1	3	1	2.5	3	2	2.5	2.5	3	3	3	2.5	3	2.5
3	3	2	2	2	2	2	2	3	3	2	2	2	2	3	3	3	3
2.89	2.92	2.9	2.85	2.85	2.81	2.77	2.68	2.98	2.94	2.82	2.85	2.9	2.77	2.92	2.85	2.94	2.79
2.88	2.79	2.87	2.76	2.7	2.65	2.77	2.67	2.99	2.86	2.83	2.86	2.94	2.79	2.92	2.89	2.9	2.79
2	1.75	1.25	1.5	1.5	1.75	1.5	1.5	2	2.25	2.75	2.25	2	2	3	3	2.25	2
2.67	2.54	1.96	2.17	2	2.17	2.21	2.04	2.96	2.83	2.62	2.67	2	2.38	2.92	2.75	2.71	2.79
1.78	2.08	1.86	2.14	1.56	2.07	1.22	1.79	2.7	2.63	2.04	2.2	1.7	2.39	2.53	2.48	2.14	2.38
1.87	2.24	1.73	2.19	1.58	2.13	1.59	2.08	2.61	2.63	2.08	2.31	1.81	2.32	2.58	2.55	2.2	2.38
1.91	2.36	2.14	2.41	1.86	2.36	1.36	2.27	2.91	2.95	2.18	2.5	2.09	2.45	2.82	2.86	2.55	2.5
3	3	3	2	3	3	2	2	3	3	3	2	3	3	3	3	3	3
2.09	2.36	2.09	2.41	1.77	2.27	1.5	2.18	2.91	2.77	2.36	2.55	2.05	2.5	2.82	2.73	2.23	2.55
2.15	2.31	2	2.29	1.89	2.31	1.87	2.18	2.84	2.65	2.65	2.53	1.95	2.36	2.87	2.67	2.44	2.38
2.75	2.5	2.88	2.5	2.75	2.62	2.88	2.5	2.75	2.75	2.88	2.75	2.88	2.62	2.88	2.75	2.62	2.5
2.81	2.9	2.9	2.9	2.9	2.9	2.77	2.9	2.97	2.94	2.87	3	2.94	2.9	3	2.94	2.94	2.9
1.58	2.14	1.5	2.12	1.88	2.14	1.42	2	2.92	2.42	2.68	2.34	2.36	2.3	2.98	2.76	2.12	2.18
2.38	2.53	2.27	2.45	2.15	2.47	2.02	2.23	2.94	2.67	2.61	2.61	2.32	2.5	2.86	2.79	2.52	2.5
2.42	2.42	2.53	2.42	2.42	2.32	2	2.16	2.95	2.63	3	2.74	2.68	2.53	2.74	2.74	2.79	2.58
2.77	2.64	2.59	2.55	2.55	2.59	2.5	2.36	2.95	2.77	2.86	2.68	2.82	2.68	2.91	2.68	2.77	2.64
2	3	3	3	3	2	3	3	3	3	2	2	2	2	2	3	3	3
2.67	2.33	2.67	2.67	2	2.33	2	2.33	3	3	2	2.33	1.67	2.33	2.33	2.33	3	3
1	2	3	2.5	1	2	1	2	3	3	1	2	3	3	3	3	3	3
3	3	3	3	2	2	1	1	3	3	2	2	2	2	3	3	1	1
3	3	3	3	2	2	1	2	3	3	2	2	2	2	2	3	3	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.06	2.06	2.11	2.06	1.94	1.89	1.78	2	2.78	2.67	2.5	2.39	2.22	2.39	2.11	2.22	2.22	2.28
2.29	2.26	2.17	2.17	2.2	2.2	1.74	2.06	2.74	2.57	2.66	2.54	2.29	2.29	2.74	2.54	2.37	2.4
2.95	2.95	2.97	2.97	2.91	2.92	2.68	2.78	2.99	2.97	2.99	2.94	2.97	2.97	2.99	2.96	2.99	2.98
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2.27	2.5	2.27	2.64	1.77	2.32	1.41	2.23	2.95	2.95	2.23	2.55	2.27	2.68	2.82	2.82	2.68	2.77

ISCO code	Profession	No. of employees	Iraqi	Foreign	Advanced Knowledge		Communication		Computational	
					I	S	I	S	I	S
7214	Structural metal preparers and erectors (from other sectors)	4	4	0	3	2.5	2.5	2.5	2.5	2
1324	Supply, distribution and related managers	51	44	7	2.85	2.85	2.81	2.81	2.85	2.85
1324	Supply, distribution and related managers (from other sectors)	209	196	13	2.95	2.82	2.94	2.9	2.93	2.87
9613	Sweepers and related labourers	36	35	1	1.6	2.3	2.5	2.45	1.7	2.15
9613	Sweepers and related labourers (from other sectors)	93	93	0	1.65	2.39	2.3	2.48	1.96	2.39
4323	Transport clerks	4	4	0	3	3	2	2	2	3
4323	Transport clerks (from other sectors)	101	100	1	2.67	2.79	2.96	2.88	2.83	2.83
2250	Veterinarians	4	4	0	3	3	2.5	3	3	3
2250	Veterinarians (from other sectors)	32	30	2	2.97	2.97	2.67	2.7	2.5	2.77
7212	Welders and flamecutters	108	82	26	2.52	2.57	2.74	2.78	2.26	2.39
7212	Welders and flamecutters (from other sectors)	16	16	0	2	3	3	3	3	3
7523	Woodworking machine toolsetters and operators	3	3	0	2.5	2.5	3	3	2.5	2.5

Continuous Learning		Creative Thinking		Digital Technology		Foreign Language		General Knowledge		Reading and Writing		Specialised Knowledge		Teamwork		Technical	
I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S
2	2	2.5	2.5	1.5	1.5	2.5	2.5	3	2.5	2.5	2	3	2.5	2.5	2.5	3	2.5
2.92	2.88	2.92	2.81	2.58	2.58	2.35	2.42	2.96	2.77	2.5	2.62	2.81	2.85	2.73	2.77	2.88	2.88
2.81	2.72	2.72	2.64	2.73	2.63	2.49	2.39	2.96	2.9	2.82	2.82	2.79	2.68	2.95	2.9	2.91	2.82
1.3	2	1.25	1.95	1.2	2.05	1.25	1.9	2.45	2.45	1.6	2.1	1.45	2.15	2.6	2.6	1.5	2.1
1.52	2.17	1.35	2.17	1.13	2.3	1.17	2	2.65	2.65	2.09	2.26	1.65	2.35	2.48	2.61	1.87	2.26
3	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3
2.79	2.67	2.54	2.62	2.58	2.75	2.5	2.62	2.96	2.88	2.88	2.79	2.58	2.71	2.96	2.88	2.88	2.75
3	3	3	2.5	3	3	3	3	3	3	2.5	3	3	3	2.5	3	3	3
2.97	2.9	2.9	2.9	2.37	2.67	2.73	2.73	3	2.97	2.73	2.9	2.97	2.93	2.73	2.73	2.97	2.93
2.09	2.39	2.13	2.39	1.87	2.22	1.43	1.91	3	2.91	2.39	2.39	2.3	2.52	2.83	2.74	2.74	2.65
1	3	3	3	2	3	1	3	3	3	3	3	2	3	3	3	3	3
1.5	2	1.5	2	2.5	2.5	1.5	2	3	3	2.5	2.5	1.5	2.5	3	3	2.5	2.5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