

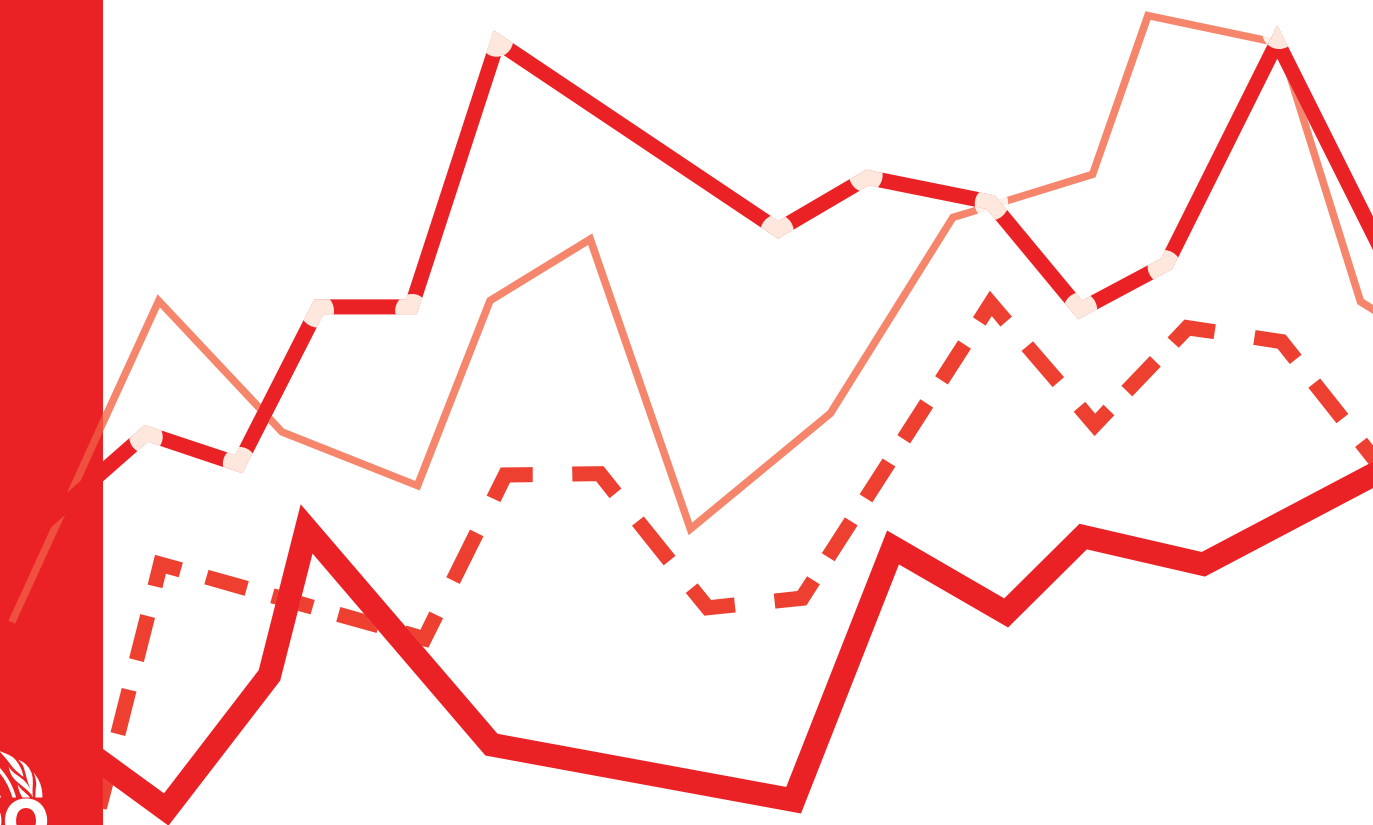


Ministry of Commerce and Industry
Sultanate of Oman

DEVELOPMENT OF MANUFACTURING INDUSTRIES IN OMAN

Preparing for the future

ANALYTICAL REPORT



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

**Development of the Manufacturing
Industries of Oman**
Preparing for the Future

Ministry of Commerce and Industry

Muscat, May 2015

Acknowledgements

The analysis of the performance of Oman's manufacturing sector presented in this Analytical Report is based on a comprehensive industrial survey, undertaken by the Ministry of Commerce and Industry, of the country's large and middle scale manufacturing establishments. The survey was a component of a technical cooperation project implemented jointly by UNIDO and Oman's Directorate General of Industry at the Ministry of Commerce and Industry. The statistics presented in the Report reflect the contribution of the manufacturing sector to the Omani economy.

The Report was prepared by Valentin Todorov from the Statistics Division of UNIDO and the UNIDO consultants Peter de Valk and Ascha Lychett Pedersen. The style and language editing was also performed by Ascha Lychett Pedersen. Data processing and analytical support was provided by the UNIDO consultants Dan Juleemun and Huzaiifa Zoomkawala. The graphical layout and cover design was done by Dina Dragoshinska with voluntary design contributions by Marta Todorova.

Many others supported the success of the survey and preparation of the Report, and we thank all who contributed in one way or another to its completion.

Preface

It is with great pride and pleasure that we present the first ever Analytic Report on the manufacturing sector in Oman.

It has been the great vision of His Majesty Sultan Qaboos Bin Said's that started Oman's economic diversification process, which in recent years has given a significant boost to the manufacturing industries in the Sultanate.

The Report traces the trends and development in the major industries of Oman's manufacturing sector and points the way forward for further economic growth and diversification.

Any analysis is only as good as the data on which it is based and we would like to acknowledge the great help provided by the many manufacturers, organizations and companies who contributed with data and statistics needed to put together different scenarios for the manufacturing sector. Without their sincere cooperation and input, this Report would not have been possible.

We hope the Report will serve as a useful resource and source of relevant information and facts for all who are concerned with the growth and development of Oman's manufacturing sector.

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Introduction

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Oman's economy, like those of its neighbors in the Gulf region, is strongly dependent on hydrocarbon revenues and foreign labor. The manufacturing sector of Oman has a crucial role to play in the structural transformation of the oil-dependent economy towards a sustainable economy that is competitive in productive activities. Forward-looking government policy envisages that the non-oil industrial sector will be one of the main pillars for continued prosperity.

Significance of oil in the Omani economy

In 2012, petroleum accounted for 58.8 percent of total export earnings, 74.1 percent of government revenues and 48.5 percent of (nominal) GDP (Central Bank of Oman 2013, 2015). These numbers underline the sector's importance for the Omani economy, but also its fragility in context of recent years plunging petroleum prices to record-low levels and the great uncertainties for future prices.

Oil production has substantial consequences on a country's macro-economy. Resource-rich countries in general and oil-rich countries in particular reap substantial economic rents that are often much larger than the production costs. In Oman, income generated from oil and gas resources vastly exceeds the total costs of extraction and production (this surplus, accounting for all costs and returns, is called economic rent). Figure 1-1 shows the economic rent from natural resources as a percentage of GDP for selected MENA countries. Comparatively speaking, Oman has a very high dependence even if the rent declined from 53 percent of GDP in 2006 to 36.7 percent in 2012. In the same period, the share of petroleum activities in GDP increased from 47.1 percent to 49.9 percent, indicating that cost of production have risen considerably. This may indicate that Oman's oil resources are near depletion over the medium term, which poses a challenge to the sustainability of the country's current economic structure.

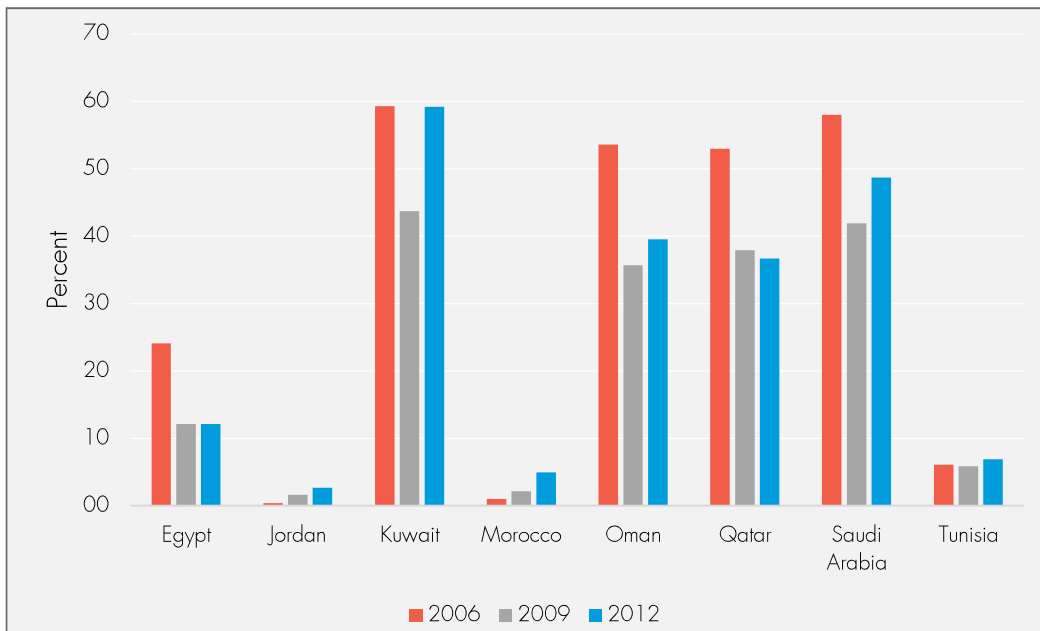


Figure 1-1: Economic rent as a percentage of GDP, selected MENA countries, 2006, 2009, and 2012

Note: See data for the period 2005-2013 in Appendix Table C-25.
Source: World Development Indicators (World Bank 2016b).

On the one hand, economic rent has positive effects on the economy in terms of higher per capita income and an improved government budget. Negative effects are seen on the growth potential in other sectors producing tradable commodities. This leads to high levels of private and public income, which translates into high levels of imports and an expanded public sector. In terms of economic development it leads to a boom of the non-traded services sector and a bias against other productive sectors that face international competition. Because of this, the manufacturing sector is at a disadvantage and needs extra support if it is to grow under these conditions.

Evidence suggests that economies with high economic rent tend to have problems with industrialization. A way to neutralize the negative effects is to invest in international assets, which are likely to ensure a future sustainable flow of income. Other options are to invest in domestic productive assets or to import capital goods. Oman's policy strategy of developing its industrial infrastructure can be understood in this perspective.

Fostering industrial-driven structural change

In 1995, Oman became the first Gulf Cooperation Council country to develop a long-term development strategy, the 'Vision 2020'. Its overarching objective was to overhaul the structural dependencies of the economy in parallel with a fundamental demographic shift. Crucial to this was to reposition the private sector as the engine of economic growth and generating employment opportunities for nationals.

To achieve these objectives, Oman has invested heavily in physical industrial infrastructure and in education and health. In addition, the country's geographical location and various incentive schemes have made it attractive for foreign investment. As a result the manufacturing industry has shown high rates of growth based on foreign investment and technology. However, it also became dependent on these direct and indirect subsidies and incentives and on the employment of large numbers of cheap expatriate labor from low wage countries, while Omani employees found their jobs in the public sector.

Broadly speaking, public sector employment will have to be transformed into private sector industrial employment at competitive wages. The policy problem is thus to ensure that in the future the non-oil productive sectors can provide employment to the Omani nationals at acceptable wage levels and sufficient financial resources to the Government in order to continue its supporting role in physical and human development.

In order to ensure the continuity in levels of individual welfare expectations, the nature of industrial development will have to rely on high labor productivity activities, implying capital intensive and high technology production. Human skill development (in technical, managerial, entrepreneurial, and general labor skills) will have to accompany the nature of industrialization.

The opportunities are partly based on the natural and man-made resource endowments and partly on the manner in which established industries are integrated in the domestic economic and physical structure. Figure 1-2 summarizes the sustainable drivers that lead to structural industrial change.

Natural resource endowments for Oman are its geographical location, the various natural ports, and its climate and natural beauty. Man-made resources include labor skill, entrepreneurial skills, technological sophistication and capability, efficiency of production, business environment, and Oman's culture and general hospitality. Integration can be gauged in the organization of value chains and the domestic supply of intermediate manufactured inputs, the industrial organization, and the development of a competent service industry for manufacturing.

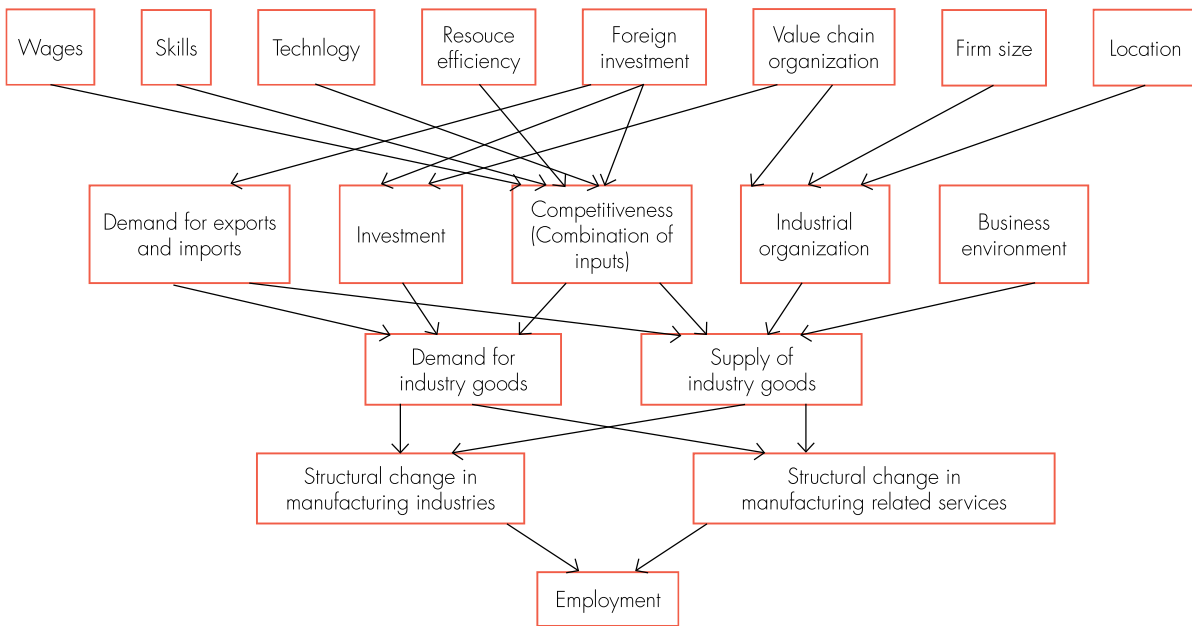


Figure 1-2: Drivers of industrial structural change

Source: UNIDO (2013).

Threats to Oman's structural transition include the possibility of trained human capital migrating to higher wage countries; a too-slow pace of skill acquisition and technological progress; continuous weak domestic entrepreneurship; shallow integration of the industrial structure; and political demands for further expansion of public sector employment potentially leading to a fiscal crisis. In other words, the declining economic rents in Oman may cause an industrial structure to be inherited from the oil-rich days; one that cannot easily cope with the new economic realities. Industries would then no longer be able to rely on high incentive policy regimes, the Omani labor force would not be sufficiently skilled, and domestic entrepreneurship would not be strong enough to keep the Omani economy on course.

A benchmark study to measure manufacturing development

The goals of the Vision 2020 remain far from realization. Despite of determined five-year development programs, while the manufacturing sector has grown, it is still at an early stage. High levels of unemployment, especially among young Omanis, and a persistently high demand for non-national labor remain among the major concerns in the economy. Most Omanis are employed in the public sector, while those in private employment are concentrated in specific manufacturing industries and occupations.

Aside from a few highly capitalized, low-labor intensity industries in which Omanis dominate, the economy is heavily factor-driven with a greater appetite for low-skilled foreign labor. At the same time, the single occupational category where affirmative action for Omanis succeeded – lower-skilled middle-class clerical jobs – is also most at risk of technological obsolescence.

To better understand what Oman has achieved in terms of structural change, this report will provide a descriptive and analytical account of the developments of the manufacturing sector in the period 2005-2012, thus offering a benchmark study upon which future developments can be traced. Where possible, these findings are viewed in a longer historical context and

compared with data for a selected group of countries in the Middle East and North Africa (MENA) region.

This report is the result of a project between the Sultanate of Oman and the United Nations Industrial Development Organization (UNIDO) aimed at improving Oman's capability to produce manufacturing sector statistics on level with best international practices. One objective of the project has been to improve Oman's key statistical survey of the sector, the Annual Industrial Survey, a comprehensive business survey, which has been in place since 1993 and has allowed the country to track the sectors performance in broad terms (see Appendix A). These surveys cover all establishments licensed by the Ministry of Commerce and Industry and engaging 10 or more people. In the improved 2012 edition of the Survey, data collection focused on a number of new parameters including gender, ownership structure and location of operation. The survey forms the backbone for the analysis in the report.

Although the global economic and financial crisis without doubt has influenced the Omani economy, the report will not dwell into the potential impacts on the manufacturing sector. While the crisis put a dampener on the pace of development and investment projects in 2009, Oman's successful increase in oil production gave the country more time to diversify its economic output (GulfBase 2016). The report will also not discuss the development of crude oil prices and the implications hereof. It does, however, pay attention to differences in the development of a macroeconomic variable in terms of constant and current prices, which can provide some insights on the impact of fluctuating oil prices on Oman's economy.

The report is divided into five sections. In Section 2, the overall visions and objectives of Oman's long-term economic development strategy and policy programs are laid out for the period 1976-2012. Sections 3 and 4 provide a statistical account and analysis of, respectively, the performance and impact of the manufacturing sector in Oman. Whereas Section 3 looks in-depth at the growing sector's structural implications on the economy, Section 4 focuses on its social and environmental impact. A comprehensive appendix supports the statistical data presented in each of these sections. Section 5 summarizes the key observations in the report and concludes.



Policies for industrialization: objectives and performance of Oman's economic reform program

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Since the mid-1970s, industrial policy in Oman has focused on diversifying and privatising the economy with the manufacturing sector as the primary foundation. The government has implemented five-year plans to steer the country's economic development, starting in 1976 with import substitution as the main policy tool. A key objective for these plans was to develop the non-hydrocarbon sectors through private sector investments, and to this end the government invested heavily in the country's infrastructure (i.e. transportation, electricity, communication, etc.). In 1983, the first industrial estate was in place, marking the beginning of the build-up of a modern industrial infrastructure conducive to efficient production of goods and services. Another important national objective was the Omanization of both private and public sectors. To secure employment and welfare of Oman's population, industrial policies prioritise education and training to increase their competitiveness with foreign labor by enhancing their skills and competences. (Deloitte 2012)

The Vision 2020 set to change the economy's structural dependencies simultaneously to a fundamental demographic shift in the country.

In the 1970s, manufacturing production in Oman was encouraged through import substitution.

As the first country in the GCC region, in 1995 Oman developed a long-term economic development strategy known as 'Vision 2020', which tied clear economic and social goals to the ambitions of development plans. With Omanization and the private industrial sector as the foundation, the strategy set to change the economy's structural dependencies simultaneously to a fundamental demographic shift in the country (Ennis and Al-Jamali 2014).

This section provides an overview of Oman's Vision 2020 as well as its reform programs from the first Five-Year Plan in 1976 to the eight and last one in force throughout the period of 2005-2012 considered in this report. Given the reform programs' key focus on building facilitating infrastructures for sustainable industrial and entrepreneurial development, the section also takes a snapshot of the current shape of Oman's industrial estates as well as of the business environment for SME's and entrepreneurs.

Development planning and industrial development policy

Economic development policy in Oman has since 1976 been operated under five-year development plans, which are formulated by the Government. Since then, eight successive Plans have been implemented.

Oman was the first Gulf country to undertake formal development planning.

In 1975, the Development Council was formed under the chairmanship of His Majesty Sultan Qaboos bin Said to prepare the First Five-Year Development Plan (1976-1980).¹ Created during the oil boom years, the Plan concentrated on the establishment of infrastructures such as Government buildings, power stations, and communication centers. Its vision encompassed a competitive, private sector led economy and an expansion of the economy's capacity. At this point and onwards, an important objective has been to reduce the country's expatriate population as to lessen the burden of remittances on GDP. In the period 1975 to 1980, the Government wished to bring down the number of expatriates with 5,000 a year (Ennis and al-Jamali 2014). Instead, however, private remittances tripled in the period, and by 2011 Oman was the third largest remittance-paying country in the world (Sultanate of Oman Development Council 1981; Ennis and al-Jamali 2014)

An important objective has been to reduce Oman's expatriate population as to lessen the burden of remittances on GDP.

¹ In 1996, the Development Council was replaced with the Council of Ministers (Royal Decree 6/96).

The three subsequent five-year plans continued the advancement of infrastructure developments in the country but paid more and more attention to human development (Ennis and al-Jamali 2014). Carried forward by high oil prices, the Second Five-Year Plan (1981-1985) successfully worked towards the completion of infrastructures for modern industrial development and initiated new water resource projects. It also implemented measures that raised living standards and stimulated regional development.

While sharing the same objectives as the preceding plan, steeply declining oil prices in the mid-1980s made the Government define less ambitious targets for the Third Five-Year Plan (1986-1990). The oil price situation steered the Government's focus towards addressing the concerns related to fiscal sustainability. This happened even though the Third Plan emphasized the urgency of economic diversification and the development of the private sector. (Ennis and al-Jamali 2014)

The five-year plans continued the advancement of infrastructure developments but paid more and more attention to human development.

The Fourth Five-Year Plan (1991–95) concentrated primarily on broadening and diversifying the production base of the economy, coupled with private sector development. Regional development was further emphasized with 60 percent (compared to 34 percent in the previous plan) of total project funds allocated to regions other than the capital. It also identified the need for improved human resource development and increased national participation in the labor force ('Omanization'). This was to be achieved through quota systems and more education and training opportunities. By the end of 1995, Omanis represented 36 percent of the total labor force and it was expected to rise to 42 percent by the end of 2000. (IBP 2013)

In 1991 the Export Guarantee and Finance Unit was established. It was later (1999) renamed as Export Credit Guarantee Agency.

In 1995, a major shift in development planning occurred when short- and medium-term planning was to be placed in the context of a long-term 25-years vision. The 'Vision for Oman's Economy 2020' or simply "Vision 2020" was released alongside the Fifth Five-Year Plan. The main goal was to transform the economy into one that would no longer be oil-reliant by 2020. Subsequent five-year plans were to be designed to achieve these broader goals by stages (Ennis and al-Jamali 2014).

In 1995, the 'Vision for Oman's Economy 2020' was released with the main goal to eliminate oil-reliance by 2020.

The "Vision 2020" identified seven dimensions for policy development:

1. Providing for a stable macroeconomic environment by a balanced state budget, low inflationary pressures, stable nominal exchange rate while maintaining its convertibility;
2. Upgrading the Government's role in basic fields (such as education, defense, and health) and reducing its role in production and services;
3. Developing human resources through the upgrading of competences and skills of Omanis;
4. Promoting economic diversification by fully utilizing all available natural resources and other natural advantages (such as Oman's favorable geographic position);
5. Inducing private sector development for the sustainable production of goods and services; promoting consultative mechanisms between the private sector and Government;
6. Raising Omanis living standards and working towards a more equitable distribution of income in terms of regions and income categories;
7. Facilitating the intensification of the economy's integration into the global economy through free trade and appropriate economic relations with other countries.

For the manufacturing sector, the following elements in the fourth dimension were of particular importance:

The Vision 2020 had clear objectives for the manufacturing sector.

- Managing the effects ('Dutch Disease') of a strong currency caused by oil and gas exports;
- Encouraging local and foreign investments in the exploitation of natural gas and its downstream industries;
- Facilitating the concentration of export industries and services;
- Promoting linkages between productive sectors to maximize domestic value added;
- Adopting a high value added strategy by concentrating on capital intensive techniques and advanced technologies;
- Promoting the development of SMEs through financial instruments such as tax, incentives, and credit facilitation;
- Completing infrastructures, particularly those for information and communications technology (ICT).

To realize the fifth dimension, the following changes were to be carried through:

- Selling assets owned by the Government (shares of companies and assets of establishments);
- Privatizing public services, specifically electricity, water, telecommunication and highways;
- Creating a conducive legal and organizational framework, particularly for investment and commercial licensing;
- Reducing Government incentives (subsidies) to the private sector;
- Developing the banking sector and other financial services; developing the Muscat Securities Market;
- Upgrading infrastructure to solve constraints in the fields of electricity, water and ports;
- Encouraging foreign investment, particularly in new activities and those involving technology transfer;
- Developing administrative and technical skills of Omanis enabling them to take leading roles in the private sector.

With the Fifth five-year plan focus changed towards complying with the policy and mechanisms defined to achieve the broader goals of Vision 2020.

With the Fifth Five-Year Development Plan (1996-2000) the design of the Five-Year Plans changed towards complying with the policy and mechanisms defined to achieve the primary goals of the "Vision 2020". The primary objective of the Fifth Plan was to develop measures to maintain a prudent fiscal policy and to achieve a balanced State budget by 2000. While the latter objective was impeded by record low oil prices in 1998, a subsequent price hike in 2000 enabled the government to reduce the deficit to just 1.5 percent (IBP 2015)

develop measures to maintain a prudent fiscal policy and to achieve a balanced State budget by 2000. While the latter objective was impeded by record low oil prices in 1998, a subsequent price hike in 2000 enabled the government to reduce the deficit to just 1.5 percent (IBP 2015)

The Sixth Five-Year Plan focused on reducing the economy's dependence on Government spending, and enhancing the size and importance of the private sector.

A successful diversification project in the Plan period was the Salalah Container Port, which began operation in November 1998. By 2013, it was ranked 41st among the top 50 world container ports in the world with

a volume of 3.34 twenty-foot equivalency units, making it the fourth busiest port in the MENA region (World Shipping Council 2016).^{2,3} Another important achievement was the reformation of the Oman Development Bank, established in 1978, into a public joint stock

2 Equivalence units of production refer to the work-in-process inventory at the end of an accounting period

3 The top three ports in the MENA region were located in GCC countries: Jebel Ali (United Arab Emirates) with 13.64 TEU, Jeddah (Saudi Arabia) with 4.56 TEU and Sharjah (United Arab Emirates) with 4.12 TEU (World Shipping Council 2013).

company. The Bank now provided medium- and long-term loans to national companies, hereby facilitating the growth of the private sector through increased participation rates. (IBP 2009)

Continuing the previous economic strategies, the Sixth Five-Year Plan (2001-2005) focused on reducing the economy's dependence on Government spending, and enhancing the size and importance of the private sector. Key objectives included the maintenance of a prudent fiscal policy, provision of incentives for private sector development, encouragement of foreign investment, diversification, privatization, development of non-oil goods and services exports, and development of gas-based industries. (IBP 2015)

Foreign investment incentives under the plan include (IBP 2009):

- Eliminating personal income taxes and foreign exchange controls;
- Implementing tax and import duty exemptions;
- Introducing freedom to repatriate profit and capital;
- Providing interest free long-term loans to partly foreign owned industrial and tourism projects;
- Offering loans from Oman Development Bank at reduced rates;
- Giving products duty free access to markets of GCC (Gulf Cooperation Council) countries;
- Creating a one-stop shop to expedite investment proposals;
- Introducing export credit insurance;
- Making available long-term use of land at favorable rates.

Social dimensions were central in the Seventh Five-Year Plan (2006-2010). Its primary objectives related to the welfare of Omani citizens and sought to improve education, employment, and the distribution of wealth and services across classes and regions. Furthering economic diversification and encouraging domestic and foreign private investments remained important elements of the country's development plan (Oman Economic Review 2006):

Social dimensions were central in the Seventh Five-Year Plan.

- Improving the population's standard of living;
- Maintaining stability of prices;
- Upgrading education and expanding the enrollment opportunities for higher education;
- Providing employment opportunities for nationals;
- Increasing focus on issues of the population, social welfare and sustainable human development;
- Improving the infrastructure and regional development;
- Enhancing water resources and the provision of safe water;
- Preserving national heritage;
- Strengthening the capabilities of the judicial system and upgrading its performance level;
- Developing tourism, fishery and manufacturing industries, and encouraging exports as well as domestic and foreign private sector investments;
- Developing Oman's digital society and e-governance; including designing and managing a centralized e-government service portal; creating a unified government network to link all government institutions in Oman.

Despite an unfavorable external economic environment caused by the global financial crisis, Oman's economy continued to strengthen throughout the Seventh Plan period. Compared to previous Five-Year Plans, it was considered a success in terms of meeting its targets. Key explanatory factors were the higher than expected oil prices prevailing during the Plan period as well as the improvement of export competitiveness in and expansion of non-oil activities. Another contributing factor was the effectiveness of national policies. While expansionary fiscal policies stimulated domestic demand, prudent economic, and monetary policies encouraged domestic and foreign private investments. (IBP 2009)

A central focus of the Eight Five-Year Plan was therefore on creating employment opportunities for Omanis.

The Eight Five-Year Plan (2011-2015) continued to develop the themes of the "Vision 2020". Although it had made Omanization a key political priority and efforts to promote it had been intensified over the years, by 2005 little progress had been made. Between 1995 and 2020, Omanization were to have increased from 15 percent to 75 percent in the private sector and from 68 percent to 95 percent in the public sector (Ministry of Development 1995). However, labor market indicators suggest that the development was progressing far too slow. In 2005, the Omanization rate in the private sector was just 22.5 percent, while it had increased to 82.7 percent in the public sector (Ministry of National Economy 2006). In the subsequent five years, the rate in the private sector declined (Ennis and al-Jamali 2014).

A central focus of the Eight Five-Year Plan was therefore on creating employment opportunities for Omanis, through, among other things, the development of SMEs and on research and technology development. Both were new focus areas in the Government's development planning (Oxford Business Group 2012). The key objectives of the Eight Five-Year Plan were (GBCM Research 2011):

- Continuing the development of Oman's non-oil sector by sustaining the economic diversification process, focusing especially on the tourism, industry, agriculture and fishery sectors. Official estimates suggest that real GDP in the non-oil sector will have grown at an annual rate of 10 percent throughout the Plan period. These figures reflect the expectations of increasing contributions from the private sector.
- Promoting private sector participation, which the Government expects will play a key role in leveraging economic growth through the creation of domestic and foreign private investment prospects. This implies a larger private sector (a higher share in GDP) and more job opportunities for Omanis.
- Undertaking effective steps towards the development of SMEs, which the Government considers a key driver of economic growth. Developing and making available to smaller investors efficient financing plans for profitable ventures. In 2013, the Public Authority for Development of SMEs was established (Royal Decree 36/2013) to support the development of SMEs in Oman, particularly through the encouragement and, among other things, technical, financial and managerial support of young entrepreneurs (Deloitte 2012).
- Enhancing and developing national human resources by providing the population with quality education, better health care and new job opportunities.
- Introducing a new focus on research and technology development. Special emphasis is given to accelerating the implementation of the Oman Digital Society, i.e. the adoption and integration of information and communication technologies, and to encouraging scientific research. Also, creating a more efficient governmental administration and upgrading the statistical work are important elements of the Plan. These objectives, together with efforts to increase education and training of Omanis, are fundamental to the four pillars of the knowledge economy, which the Government seeks to further as to improve the productivity and competitiveness of the economy.

Building a facilitating industrial infrastructure: status of industrial estates

With the ambition to diversify the economy and attract domestic and foreign capital, the Government of Oman has since the early 1990s invested heavily in industrial infrastructure, particularly in the form of industrial estates, also known as industrial parks, and supporting transport links and energy access.

Industrial estates provide attractive industrial services, such as services for security, exports and imports and legal services for the administration of investments, as well as quality infrastructure and both tax- and non-tax incentives to the benefit of domestic and foreign investors.

Investment in seven industrial estates: Rusayl, Sohar, Raysut, Sur, Nizwa, Buraimi and Smail.

As of 2014, the Public Establishment for Industrial Estates (PEIE) managed seven industrial estates namely Rusayl, Sohar, Rasyut, Sur, Nizwa, Buraimi and Smail (see Appendices B-1 to B-7 for details on each estate). Together, these estates cover an area of more than 88 billion square meters and major expansion projects of several of the estates are either planned or in development. Approximately 1,240 businesses resides in the estates in which 60 percent of all developed land available is leased. This number excludes Sur that only has a lease

Table 2.1: Number of manufacturing establishments and employment, by location, 2012

	Location of operation		
	Within industrial estate	Outside industrial estate	Total
Number of establishments	261	440	701
Percent of total	37.2%	62.8%	
Employment	32,428	38,906	71,334
Percent of total	45.5%	54.5%	

Source: Ministry of Commerce and Industry (2014).

intensity of just 27 percent and brings the total intensity down to 48 percent.

The PEIE seeks to achieve a number of strategic goals, especially to achieve infrastructure-based economic growth, which would enable the development of the industrial base. This in turn would generate new employment, encourage exports and imports on the global markets, substitute imported products, and facilitate the establishment of export-based industries. (Ministry of Commerce and Industry 2014)

Through the industrial estates, PEIE provides packaged facilities and services including eco-friendly locations, strong transport connections to the rest of the world, land and buildings available for customized industrial development, excellent telecommunications, restaurants, lodging and banking facilities, convenience and retail stores, etc. (Ministry of Commerce and Industry 2014)

Table 2.1 provides an overview of the size of Oman's industrial estates as of 2014. 37.2

percent of all enterprises (establishments with 10 employees or more) were located within the estates, accounting for 45.5 percent of total manufacturing employment.

Top problems are 'high cost of production', 'unfair competition', and 'shortage of skilled operatives'.

Oman also has a number of free economic zones, most notably Duqm Special Economic Zone and Al Mazunah Free Zone, both of which have significant trade-strategic geographical locations (see Appendices B-8 and B-9 for details). While the former is one of the largest in the world, still undergoing rapid development, the latter is a unique point of trade for businesses wishing to Yemen-Oman trade.

Current business environment for entrepreneurs and SMEs

The manufacturing surveys also provide useful insights of the effectiveness of industrial policies. Table 2-2 presents a snapshot of the problems mainly encountered by entrepreneurs in the manufacturing sector, when asked about impediments to achieve a strong and competitive position in an international context. The three main challenges are 'high cost of

Table 2-2: Problems encountered by entrepreneurs, 2012

Problem	Percent of responses
High cost of production	20
Unfair competition	13
Shortage of skilled operatives	11
Transport problems	9
Shortage of raw materials	8
Insufficient Demand	7
Financial problems	6
Insufficient storage capacity	5
Insufficient production capacity	4
Telecommunication and IT	3
Inadequate supply of water	3
Lack of equipment	3
Shortage of management skills	2
Poor quality of raw materials	2
Illegal imports	2
Inadequate supply of electricity	1
Total	100

Source: Ministry of Commerce and Industry (2013).

production', 'unfair competition', and 'shortage of skilled operatives'. Although the survey does not indicate how serious these problems are to the businesses, it is a valuable to the optimization of existing policy measures and to the definition of new ones.

Though the data presented in Table 2-2 does not make it possible to distinguish between enterprises within or outside industrial estates, the survey suggests that only few experienced problems conducting business because of inadequate energy supply. This is a testimonial to the substantive efforts of the government to ensure countrywide

Challenges faced by SMEs are financial, institutional and infrastructural.

energy access to companies. Also the country's water infrastructure is working in favor of entrepreneurs. Only 3 percent of the companies surveyed encountered problems with water supply. On the other hand, 9 percent of respondents saw inefficient transportation infrastructures as a problem for their business.

Studies conducted between 2006 and 2010 on SMEs operating on either the demand or the supply side of the manufacturing sector in Oman⁴, showed that the main challenges faced by such enterprises also related to financing, institutions and infrastructure. The following focuses mainly on the obstacles of acquiring necessary financing. Institutional obstacles are reported to have included lack of incentives encouraging young nationals to find employment outside the public sector and in large private companies, restrictive labor regulations preventing companies in hiring expatriates, excessive bureaucracy making it difficult to obtain permits, and poor business skills and education among prospective entrepreneurs. (Al Barwani 2014)

A key financial challenge was the inability of the banking sector to increase its lending to SMEs. In December 2012, SMEs received just 2.8 percent of the total credit extended by the banks. This was partly due to the limited competition between banks as well as high margin requirements on consumer lending, giving banks little incentive to lend to SMEs, which in general are assessed as inherently high risk borrowers. Lack of transparency and management expertise in SMEs along with a poor financial infrastructure in Oman added to this risk profile. Consequently, banks in Oman have been unwilling to invest in the credit evaluation tools required to properly analyze SMEs credit risks. On the other hand, banks were only presented with a small pool of viable investment projects. (Al Barwani 2014)

Another notable problem for SMEs to obtain government loans was the requirement that beneficiaries must buy certain equipment and supplies from pre-determined vendors and suppliers. SMEs also faced high costs of conducting professional feasibility studies to assess a project's potential for success, and lack of collaterals either left SMEs with a high premium to pay or made them unable to even receive a credit. Some SMEs experienced problems in the management of their cash flows and were unable to meet scheduled payments on bank loans. This was in certain instances due to delayed payments when dealing with government agencies or large firms as clients through contractual agreements. (Al Barwani 2014)

In effect, Oman Development Bank was found to be the main lender to SMEs. The bank provides long term loans with low funding cost (government equity) together with large interest rate subsidies. These types of loans have an additional negative effect on commercial financing of SMEs as they crowd out long-term lending. (Al Barwani 2014)

Overall, the surveys and studies suggest that national companies are still in the process of strengthening their competitiveness and that there are improvements to be made to the country's enabling business environment.

Summary: Towards sustainable industrial development

The efforts and achievements of Oman's government in furthering non-oil industrial development in the country has been recognized at several occasions. In 2010, the United Nations Development Program highlighted Oman as the country in

⁴ The survey summary in Al Barwani et al. (2014) is based on various sources, including studies by IMF and World Bank, who define SMEs as enterprises with up to 99 employees. This is more or less comparable to the Annual Industrial Surveys of the manufacturing sector undertaken by the Ministry of Commerce and Industry, which cover all enterprises with 10 employees or more.

the world having experienced the biggest improvement in human development over the previous 40 years. A few years later, in 2013, Oman's progress was recognized at the United Nations Conference for Trade and Development held in Geneva. Here, PAIPED was rewarded a prize for "Excellence in Promoting Export-oriented Foreign Direct Investment" in acknowledgement of the agency's work in strengthening local businesses' international competitiveness achieved partly by attracting quality export-oriented FDI projects (Times of Oman 2013).

For Oman to continue the development towards a diversified non-oil economy that empowers the local population, and ultimately realizing its ambition of becoming a leader in the innovation economy, future development plans needs to include measures addressing the various challenges encountered by entrepreneurs and SMEs hereby improving the enabling business environment. Other key elements of success will include increasing private sector participation, facilitating investments in industrial infrastructure, furthering research and technology development, including ICT development, as well as human resource development by providing quality education and health, and improving the quality of statistical institutions and products.

3

Performance of the manufacturing sector

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With five years remaining of Vision 2020's planning horizon, a throughout assessment of the manufacturing sector's performance in relation to the Vision's objectives is essential. This section provides a statistical overview and evaluation of the performance of Oman's manufacturing sector in the period 2005 to 2012. It focuses on the sector's relative position within the larger economy, its structure, as well as the structural change that have occurred within the sector, its productivity and competitiveness.

The importance of manufacturing to the economy

Overall, Oman's manufacturing activities performed better than the rest of the economy; compared to other non-oil related activities as well as oil related activities.

Table 3 shows that the share of manufacturing in GDP increased from 8.6 percent in 2005 to 10.7 percent in 2012. The majority of manufacturing activities, 64 percent, centers on products derived from oil. In the same period, the share of oil-related activities increased from 48.9 percent to 49.9 percent (average growth of 1.1 percent), and non-oil related activities more or less maintained their share of 52-53 percent.

The share of manufacturing in GDP increased from 8.6 percent in 2005 to 10.7 percent in 2012.

Second to oil related activities are services, which made up 33.8 percent of GDP in 2012. Their share declined substantially from a level of 41.1 percent in 2009, primarily due to a drop in 'Public administration and defense' and 'Education' (see Appendix C-2).

Table 3-1: Composition of GDP, selected economic activities, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Petroleum activities	48.9	47.1	44.2	50.9	39.7	46.1	50.2	49.9
Crude petroleum	45.3	43.0	40.5	47.2	36.1	42.2	46.5	46.3
Natural gas	3.7	4.1	3.7	3.7	3.6	3.8	3.7	3.6
Non-petroleum activities	52.8	54.6	57.6	50.7	62.6	56.0	51.8	52.0
Agriculture and fishing	1.6	1.4	1.4	1.1	1.5	1.4	1.2	1.2
Industry	14.3	16.6	17.1	16.5	19.9	18.0	18.0	17.1
of which:								
- Mining and quarrying	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.3
- Manufacturing	8.6	11.3	10.8	10.5	11.6	10.6	11.3	10.7
- Manufacturing of refined petroleum	0.4	0.4	0.7	0.5	0.8	0.2	0.5	0.3
- Manufacturing of chemicals	5.0	7.8	6.5	6.8	5.8	5.7	6.8	6.5
- Other manufacturing	3.2	3.1	3.6	3.2	5.0	4.6	4.1	3.8
- Electricity and water supply	1.7	1.2	1.1	0.8	1.2	1.2	1.1	1.1
- Building and construction	3.8	4.0	4.9	4.8	6.7	5.8	5.2	4.9
Services	36.9	36.6	39.1	33.1	41.1	36.6	32.6	33.8
Financial intermediation services	-1.8	-1.7	-1.8	-1.5	-2.3	-2.1	-2.0	-1.9
GDP at basic prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Plus: Taxes less subsidies on products	-0.5	0.0	0.3	0.6	0.1	0.0	-3.4	-3.3
GDP at market prices	99.5	100.0	100.3	100.6	100.1	100.0	96.6	96.7

Note: See Appendix C-1 for values of all economic activities in constant 2010 prices and the composition of these activities in Table C-2.
Source: National Centre for Statistics and Information (2014).

With 8.3 percent the manufacturing sector grew substantially faster than GDP.

Figure 3-1 depicts the average growth rates in value added in the same industries and activities. The fastest growing sectors were 'Building and construction' (with 16.7 percent), followed by 'Mining and quarrying' (13.4 percent), 'Electricity and water supply' (12.5 percent), and 'Financial intermediation services' (11.5 percent). With 8.5 percent the manufacturing sector grew substantially faster than the economy overall (5.4 percent growth in GDP at basic prices). Within the manufacturing sector 'Manufacturing of refined petroleum' and 'Manufacturing of chemicals' grew at a slower pace, 3.6 percent and 6.6 percent respectively, compared to the rest of the sector (11.2 percent) - a development in alignment with the objectives of the industrial policy in place. Albeit promising, such growth rates will have to continue for a long time before these manufacturing activities become a serious alternative to the petroleum-driven industries.

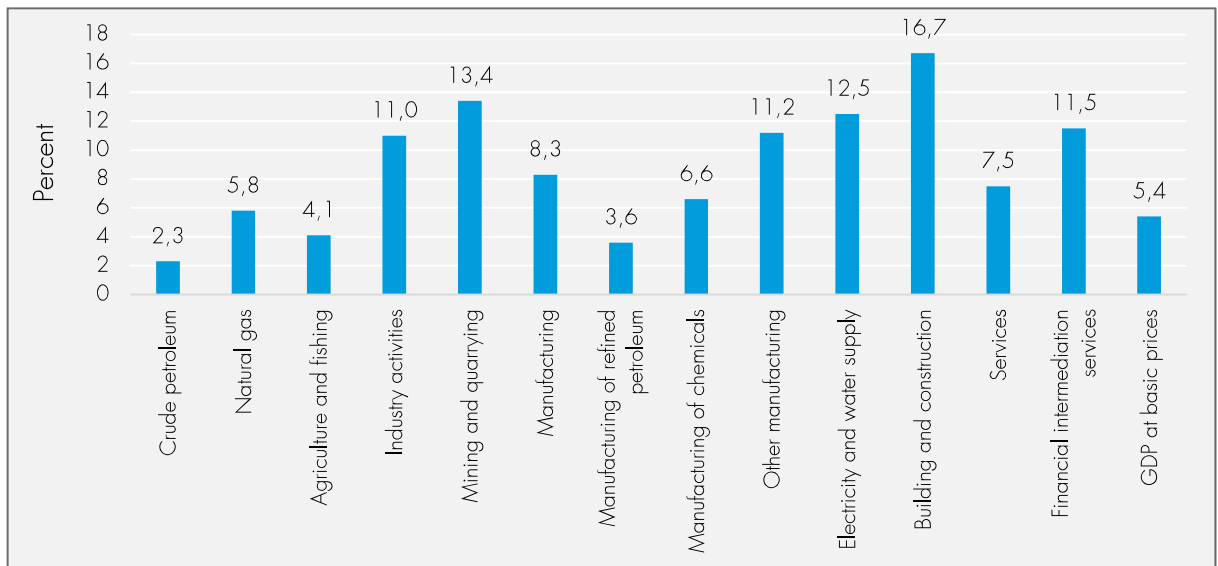


Figure 3-1: Average annual growth rate of value added, selected economic activities, 2005-2012

Note: Manufacturing value added in constant 2010 Omani Rial.
Source: National Centre for Statistics and Information (2013).

Table 3-2 elaborates on the per capita increase in manufacturing value added and GDP over the period. On average growth of the former was at a healthy 4.2 percent despite a large cumulative decline in 2011-2012. This reflects the relative strength of the manufacturing sector overall as the overall economy has experienced negative, if only little, growth since 2009.

The 4.2 percent per capita manufacturing growth rate at constant prices is by all means a healthy growth performance.

Table 3-2: Trends in manufacturing value added per capita and GDP per capita, 2005-2012

	Manufacturing value added per capita		GDP per capita	
	Value	Annual growth rate	Value	Annual growth rate
2005	995	5.6%	12,061	1.6%
2006	1,082	8.8%	12,254	4.1%
2007	1,214	12.2%	12,761	6.2%
2008	1,328	9.4%	13,549	11.8%
2009	1,455	9.5%	15,142	-1.5%
2010	1,523	4.7%	14,912	0.3%
2011	1,368	-10.2%	14,961	-3.2%
2012	1,323	-3.3%	14,486	-4.2%
Average 2005-2012	1,286	4.2%	13,766	1.8%

Note: The population figures used to calculate per capita values include both Omanis and expats. Value added in constant 2010 Omani Rial. Source: National Centre for Statistics and Information (2014).

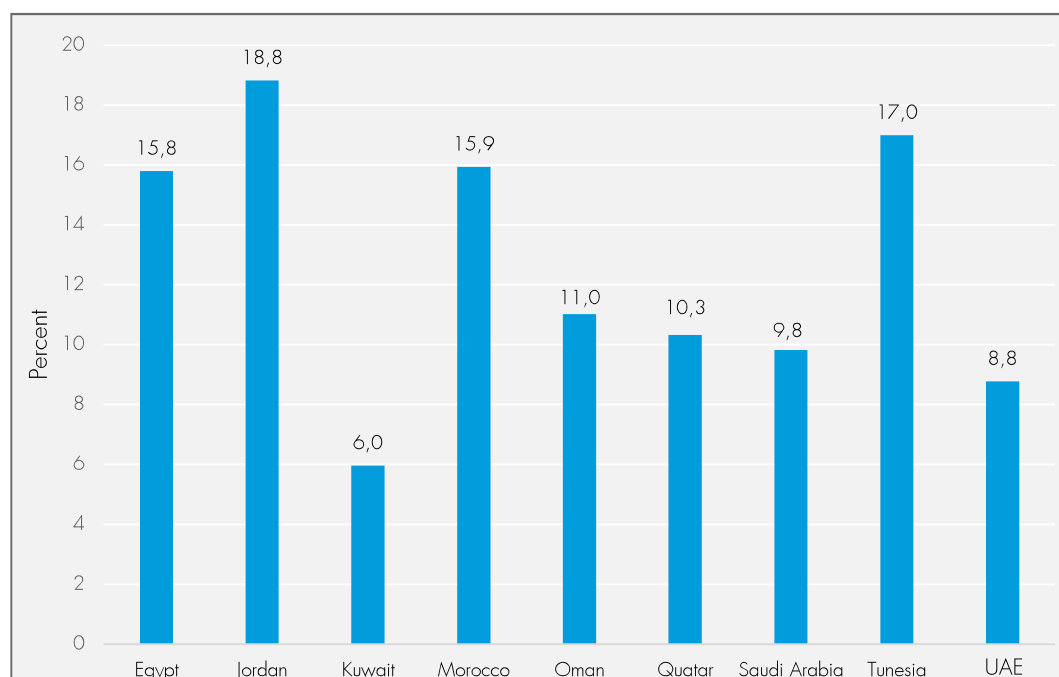


Figure 3-2: International comparison of manufacturing value added share in GDP, selected MENA countries, 2012

Source: World Development Indicators (World Bank 2016a).

In a comparison with other MENA countries (see Figure 3-2), Oman performs just below average with a manufacturing value added share of 11 percent, which is about 5 to 8 percentage point lower than the leading countries. However, Oman is at the top compared to other GCC countries – slightly better than Qatar (10.3 percent), Saudi Arabia (9.8 percent) and the United Arab Emirates (6 percent).

Oman's share of manufacturing value added in GDP is higher than that of the other GCC countries but lower than that of the other NEMA countries.

Countries that did not depend on the export of natural resources, in particular oil, experienced higher shares of manufacturing value added in GDP in 2012. A comparison of Figure 3-2 and Figure 3-3 shows that in the highest performing countries in terms of manufacturing value added constituted less than, or close, 10 percent of GDP.

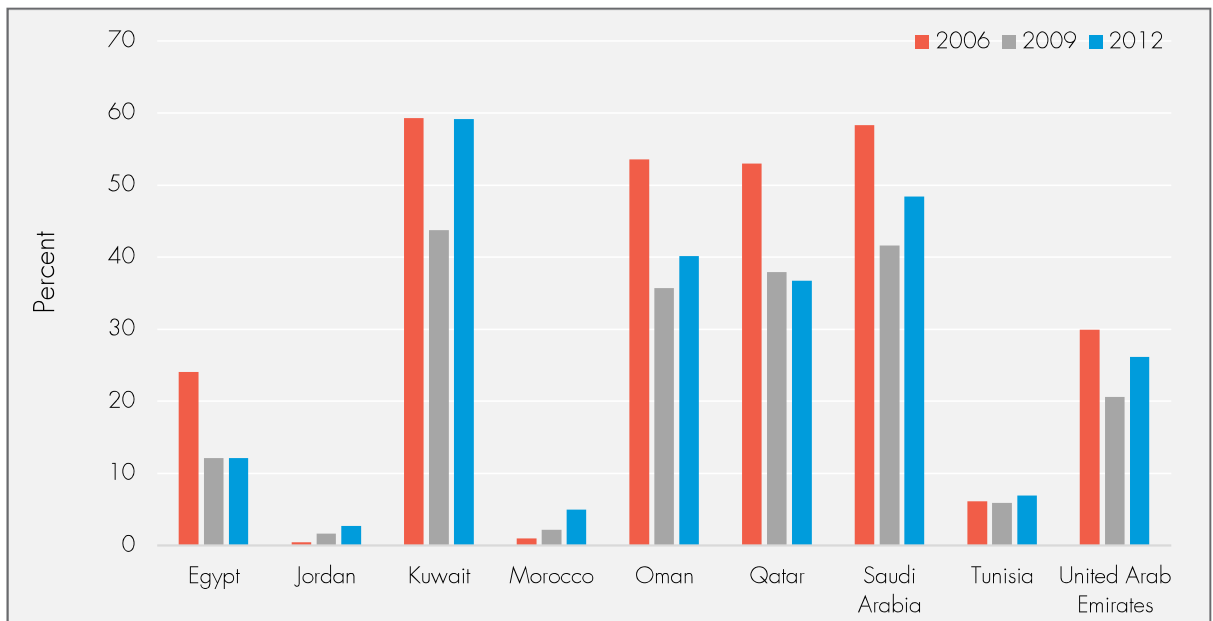


Figure 3-3: Natural resource as percentage of GDP, selected MENA countries, 2006, 2009, and 2012

Note: See data for the period 2005-2013 in Appendix Table C-25.
Source: World Development Indicators (World Bank 2016b).

Structures and structural changes in the manufacturing sector

Structural change indicates the shifts in shares of manufacturing industries over a certain period of time. It is at the core of industrial policy seeking to transition an economy from lower to higher level productivity. This section provides an overview of the current and changing structures of the manufacturing sector. First, it considers the sector's composition in terms of the relative contribution of industries manufacturing value added. Then, it gives a snapshot of (and if data allows, changes to) the profile of establishments including their ownership structure, size (in terms of employees and value added) and FDI intake. To assess the overall performance of the sector, performance indicators are presented. Special attention is paid to labor productivity and wages and salaries. Ultimately, statistical summary measures are used to describe and analyze any structural changes within Oman's manufacturing sector in the period 2005-2012. Finally, these changes are evaluated against the relative competitiveness of the sector compared to other MENA countries and globally, and the challenges for doing business in the country.

Composition of the manufacturing sector

Carried forward by three industries, major changes have occurred in Oman's manufacturing sector. Table 3-3 shows the composition of the sector in terms of manufacturing value added, including only industries with a share larger than 1 percent (see Figure 3-4 and Appendix C-5 for all industries). In 2012, the largest industries, in which also the biggest changes have occurred since 2005, were 'Chemicals and chemical products' at 39.5 percent, 'Coke and refined petroleum products' at 18.7 percent and 'Basic metals' with 10.8 percent. The fourth largest sector was 'Other non-metallic mineral products' with 9.4 percent.

While the two former are industries with production directly based on oil, it was the booming building and construction sector in Oman and neighboring countries that fueled the production of the two latter industries (iron and steel, and cement exports in 2012 mounted to approximately, respectively, 283 million Omani Rial and 22 million Omani Rial). The significant drop in the share of 'Coke and refined petroleum products' from comprising more than 50 percent of manufacturing value added to less than 20 percent is consistent with the low growth rate in the industry's value added.

Dominant sub-sectors are 'Chemicals and chemical products', 'Coke and refined petroleum products', 'Basic metals', and 'Other non-metallic mineral products' together 78.4 percent.

Table 3-3 Share in total manufacturing value added, selected industries, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Food products	5.9	5.2	6.1	5.4	7.5	5.2	5.5	4.5
Beverages	1.4	1.3	1.8	1.1	1.2	1.1	1.6	1.2
Printing and reproduction of recorded media	0.9	0.7	1.0	0.9	0.7	0.5	1.2	1.1
Coke and refined petroleum products	55.3	56.9	47.5	55.6	32.4	38.4	20.7	18.7
Chemicals and chemical products	12.7	10.2	10.9	9.8	23.6	15.7	33.3	39.5
Rubber and plastics products	1.4	1.4	2.1	1.8	2.1	2.1	1.3	1.2
Other non-metallic mineral products	12.0	12.9	13.3	12.0	13.3	11.3	10.2	9.4
Basic metals	2.0	2.7	4.2	3.3	10.4	11.9	11.4	10.8
Fabricated metal products, except machinery and equipment	1.6	2.4	3.6	2.7	3.7	6.9	2.6	3.0
Electrical equipment	1.6	1.3	3.4	2.4	1.7	2.3	6.0	4.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: : Manufacturing value added in current Omani Rial. See Appendix C-5 for data on all industries.
Source: Ministry of Commerce and Industry (2005-2012)

The accumulative share of the two largest industries 'Chemicals and chemical products' and 'Coke and refined petroleum products' dropped from 68 percent in 2005 to 58.2 percent in 2012. A dramatic shift in their relative position from 2011 onwards is also observed. The share of 'Basic metals' showed continuous increase until 2011 after which the industry declined slightly.

Together, the remaining industries made up 22.4 percent of total manufacturing value added. Figure 3-5 gives a graphical depiction of the industrial composition but excluding the four major industries. The largest industries are now 'Food products', 'Electrical equipment' and 'Fabricated metal products, except machinery and equipment'. 'Electrical equipment' and 'Repair and installation of machinery and equipment' – with shares of 4.9 percent and 2.2 percent respectively - are emerging industries, having increased their shares throughout their period.

Relative newcomers are 'Electrical equipment' and 'Repair and installation of machinery and equipment'.

The growth impact of an industry on total manufacturing growth is a combination of its size and its growth rate. Although a small fast growing industry may be interesting in its own right, it will, however, have little impact on the growth of the manufacturing sector as a whole.

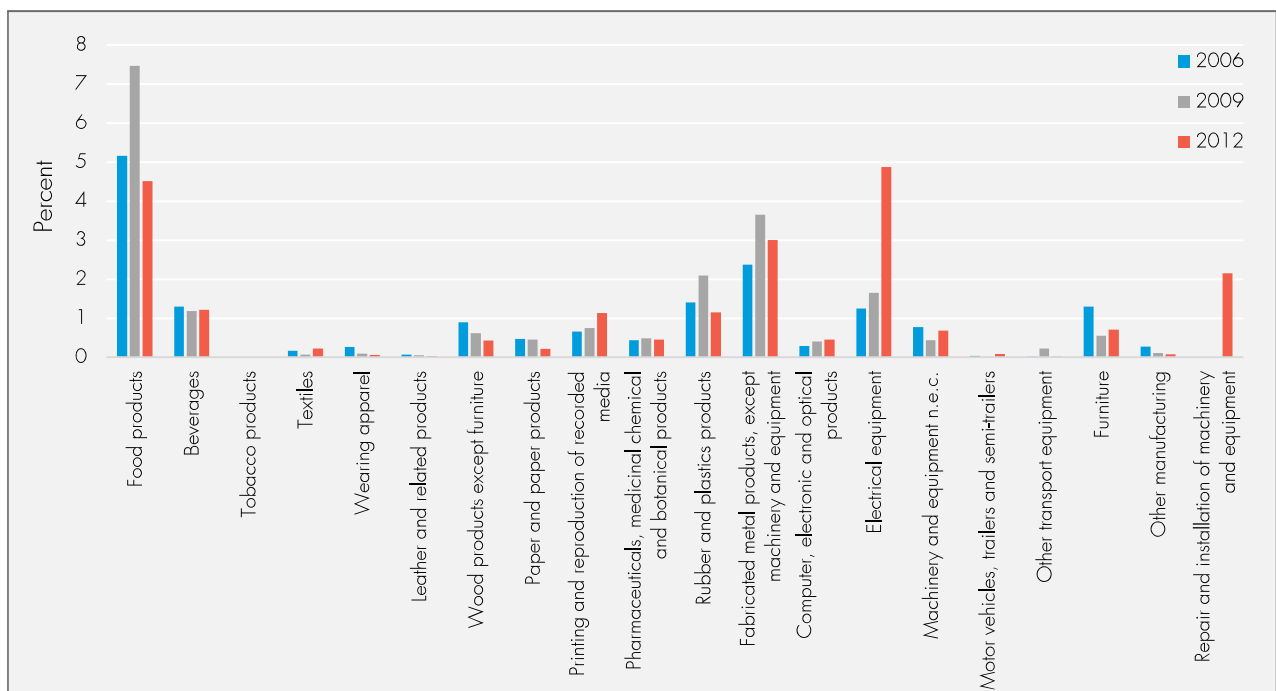


Figure 3-4: Share in total manufacturing value added, excluding the four largest industries, 2006, 2009, and 2012

Note: The industries with the largest shares in total manufacturing value added in 2012, namely chemicals and chemical products, coke and refined petroleum products, basic metals, and other non-metallic mineral products, are not included in the graphical depiction. See Appendix C-5 for all industries. Source: Ministry of Commerce and Industry (2005-2012).

Between 2007 and 2012, the manufacturing sector saw an average annual value added growth rate of 12.1 percent. Table 3-4 lists the six industries with the largest share in 2012. Together, they accounted for 87.7 percent of the manufacturing sector's total value added. 'Chemicals and chemical products' contributed the most to the sector's growth with an average annual rate of 47.2 percent over the period.

'Chemical and chemical products' dominates the average yearly growth rate of the whole manufacturing sector. Also other large sectors are directly or indirectly based on oil production.

While most manufacturing sector industries exhibited a high volatility in their rate of growth between 2007 and 2012 (see Appendix C-8), often alternating between large negative values and large positive values, the highest volatility was found among the dominating industries (Table 3-4). Variations in the oil price and ensuing domestic demand may be responsible for these fluctuations.

More detailed information on production in manufacturing sector by industry, at 4-digit level of ISIC Revision 4 (UN 2008a), is available from Ministry of Commerce and Industry (2005-2012) and UNIDO (2015e).

Table 3-4: Trends in value added of the six largest manufacturing industries, 2007-2012 (Percent)

	Share in total manufacturing value added, 2012	Value added annual growth rate					Average annual growth rate 2007-2012
		2008	2009	2010	2011	2012	
Food products	4.5	9.3	58.2	-19.3	7	4.8	3.9
Coke and refined petroleum products	18.7	36.8	-15.7	14.6	-51.5	10.6	-11.3
Chemicals and chemical products	39.5	12.9	178.5	-19.6	126.5	55.6	47.2
Other non-metallic mineral products	9.4	21.7	9.6	0.6	1.2	21.7	5.1
Basic metals	10.8	-10.3	410.3	12.3	-9.4	31.2	36.5
Electrical equipment	4.9	-3.5	-0.1	35.3	148.8	12.4	23.1

Note: Manufacturing value added shares at current Omani Rial and growth rates at constant Omani Rial. Detailed data for all industries in the period 2005-2012 available in Appendices C-5 and C-8, respectively.
Source: Ministry of Commerce and Industry (2005-2012).

Material intensity

Material intensity as measured by intermediate inputs over gross output gives an indication of changes in the shallowness or depth of the manufacturing process. The shallower the process, the lower is the intensity. For instance, light assembly and packaging will have a very high material intensity. As evident in Table 3-5, the overall intensity of Oman's

Table 3-5 Gross output and value added in manufacturing, 2005-2012

	Gross output	Value of inputs	Value added	Value of inputs as percent of gross output	Value added as percent of gross output
2005	2,519	1,454	1,065	58%	42%
2006	2,986	1,797	1,188	60%	40%
2007	3,968	2,621	1,347	66%	34%
2008	6,621	4,601	2,020	69%	31%
2009	5,359	3,259	2,100	61%	39%
2010	6,271	3,821	2,450	61%	39%
2011	6,621	3,929	2,692	59%	41%
2012	8,251	4,762	3,489	58%	42%

Notes: Value added is calculated in million Omani Rial (current prices). Data on industry level available in Appendix C-6. Source: Ministry of Commerce and Industry (2005-2012).

Table 3-6: Value added to output ratio, 2005-2012 (Percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Food products	28.6	26.1	26.5	22.3	37.2	28.9	30.9	30.9
Coke and refined petroleum products	41.6	39.5	28.8	27.1	25.8	28.7	29.4	29.4
Chemicals and chemical products	72.3	67.2	59.3	52.4	73.0	65.6	58.8	58.8
Other non-metallic mineral products	63.5	64.5	64.1	61.1	65.2	67.5	45.7	45.7
Basic metals	15.7	20.4	27.0	21.1	45.9	46.5	35.0	35.0
Electrical equipment	19.3	10.3	16.9	12.6	16.7	20.1	36.1	36.1
Total	42.3	39.8	33.9	30.5	39.2	39.1	40.7	42.3

Notes: Value added is calculated in million Omani Rial (current prices). Data on industry level available in Appendix C-6. Source: Ministry of Commerce and Industry (2005-2012).

manufacturing sector did not change very much: from 58 percent in 2005, with fluctuations in the following years, back to 58 percent in 2012. The annual trend was increasing until 2008 and declined up to 2012.

Table 3-6 considers changes in the value added as percentage of gross output in the major manufacturing industries over the same period. A substantial decrease occurred in 'Coke and refined petroleum products' and 'Chemicals and chemical products'. These industries have therefore also seen an increase in their material intensity. Reversely, 'Basic metals' and 'Electrical equipment' saw an increase in value added as percentage of gross output and thus a decrease in their material intensity (Table 3-6).

In a comparison with other MENA countries in 2012 (Table 3-7), Oman's manufacturing sector performed second to that of Qatar, who had a material intensity of 44 percent. This is indicative of a high level of manufacturing value added and advanced technological processes.

With the United Arab Emirates as the exception, Kuwait and the other non-oil countries show the highest material intensity in the years available in Table 3-7. The same is the case in terms of the manufacturing value added and input intensity (see Figure 3-5). More elaborate data would be needed to relate these observations to differences in the structure of each country's manufacturing sector.

Compared to the other countries, Oman's material intensity is the lowest after Qatar. This indicates more complex industrial processes.

Table 3-7: Material intensity of the manufacturing sector, selected MENA countries, 2005-2012 (Percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Egypt	73	71	69	68	67	66	66	62
Jordan	69	70	70	69	69	66	70	70
Kuwait	81	83	85	86	86	86	87	85
Morocco	68	71	72	75	71	71	75	75
Oman	58	61	66	70	61	61	59	58
Qatar	37	41	43	51	48	51	48	44
Tunisia	73	73	74	46	47	50	50	50
United Arab Emirates	44	43	43	70	67	67		

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

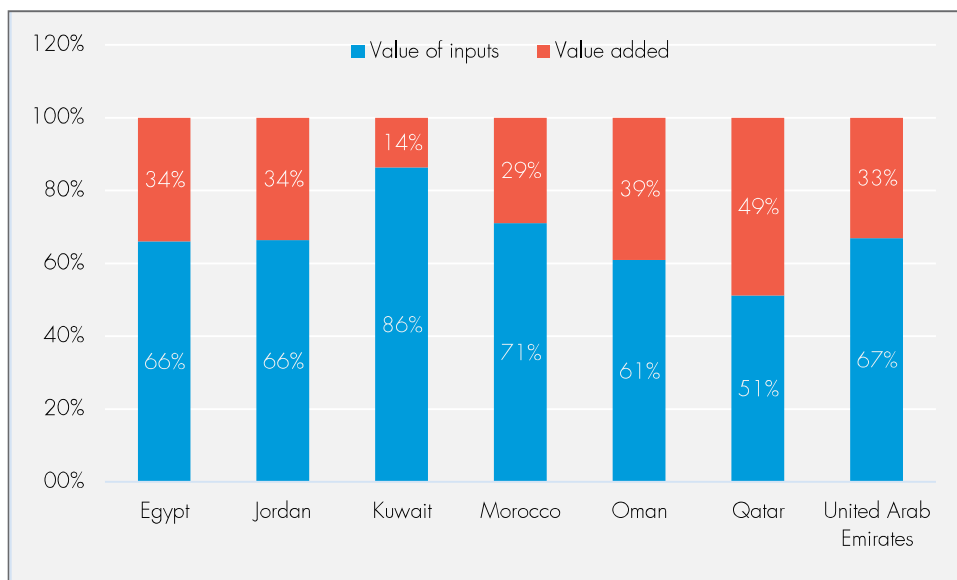


Figure 3-5: Share of value of inputs and value added in total manufacturing output, selected MENA countries, 2010

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

Ownership of establishments

According to the annual survey of the manufacturing sector conducted by the Ministry of Commerce and Industry, most establishments in Oman are owned by nationals (77.6 percent of a total of 701 surveyed establishments in 2012). 20.3 percent is under mixed ownership and a mere 2.1 percent is under full foreign ownership. The latter is only possible with permission by the Ministry and is limited to economic development projects. Hence, a company must be partially owned by an Omani national. The outcomes of the survey are found in Table 3-8, which also includes employment numbers. Of approximately 71,300 employees in the surveyed 701 establishments, a third are employed at mixed establishments.

Most establishments are Omani-owned. Only 20.3 percent and 2.1 percent, respectively, have mixed or full foreign ownership.

Table 3-8: Manufacturing establishments and employment, by location of operation and origin of ownership, 2012

	Location of operation			Origin of ownership			
	Within industrial estate	Outside industrial estate	Total	Omani	Foreign	Mixed	Total
Establishments	261	440	701	544	15	142	701
Percent of total	37.2%	62.8%		77.6%	2.1%	20.3%	
Employment	32,428	38,906	71,334	46,831	1,917	22,586	71,334
Percent of total	45.5%	54.5%		65.7%	2.7%	31.7%	

Note: See Appendix C-15 for industry level data.
Source: Ministry of Commerce and Industry (2013).

In addition to the origin of ownership, survey variables are also categorized according to the location of operation. 62.8 percent of all surveyed establishments are localized outside an industrial estate, as are 54.5 percent of the establishments surveyed.

Table 3-9 presents the ownership structure on the industry level. The highest number of establishments with foreign presence (foreign plus mixed) is in 'Other non-metallic mineral products' (39), followed by 'Fabricated metal products, except machinery and equipment' (22), and 'Food products' (15). Industries not presented in Table 3-9 below have little foreign presence.

Table 3-9: Origin of ownership, selected manufacturing industries, 2012

	Origin of ownership			
	Omani	Foreign	Mixed	Total
Food products	75	0	15	90
Coke and refined petroleum products	4	0	5	9
Chemicals and chemical products	42	2	6	50
Rubber and plastics products	43	2	13	58
Other non-metallic mineral products	165	5	34	204
Basic metals	21	4	9	34
Fabricated metal products, except machinery and equipm.	56	1	21	78
Electrical equipment	16	1	8	25
Furniture	9	0	8	17
Repair and installation of machinery and equipment	3	0	2	5

Note: See Appendix C-15 for data on all industries.
Source: Ministry of Commerce and Industry (2013).

A direct consequence of a mixed or foreign ownership form is the influx of foreign direct investments.

Table 3-10 shows that the manufacturing sector between 2009 and 2012 was the largest receiver of foreign direct investments in Oman's economy with shares between 27.3 percent and 30.6 percent of all investments made. Closely following were 'Oil and gas exploration' (between 25.9 percent and 29.5 percent) and

The manufacturing sector was the largest receiver of foreign direct investments.

Table 3-10: Foreign direct investments, selected sectors and manufacturing industries, 2009-2012 (Percent)

	Share of total			
	2009	2010	2011	2012
Manufacturing	30.4	30.2	30.6	27.3
Financial intermediation	27.2	23.2	24.4	27.3
Oil and gas exploration	25.9	28.7	28.2	29.5
Transport, storage and Communication	4.1	5.1	4.6	4.4
Electricity and water	3.8	3.8	2.8	2.3
Real estate, renting and business activities	3.2	3.2	3.6	3.4
Trade	2.2	2.5	2.4	2.5
Construction	2.0	2.4	2.2	2.1
Hotels and restaurants	0.8	0.9	0.9	0.8
Other	0.4	0.2	0.3	0.4
Total	100.0	100.0	100.0	100.0

Source: Ministry of Commerce and Industry (2014).

Table 3-11: Foreign direct investments as percentage of GDP, selected MENA countries, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012	Regional ranking	
									2005	2012
Egypt	6.0%	9.3%	8.9%	5.8%	3.6%	2.9%	-0.2%	1.1%	2	8
Jordan	15.8%	23.5%	15.3%	12.9%	10.1%	6.2%	5.1%	4.8%	1	1
Kuwait	0.3%	0.1%	0.1%	0.0%	1.1%	1.1%	2.1%	1.7%	9	5
Morocco	2.8%	3.7%	3.8%	2.8%	2.2%	1.4%	2.5%	3.0%	7	3
Oman	4.9%	4.3%	7.9%	4.8%	3.1%	2.1%	1.3%	1.2%	5	7
Qatar	5.6%	5.7%	5.9%	3.3%	8.3%	3.7%	-0.1%	0.2%	4	9
Saudi Arabia	3.7%	4.9%	5.9%	7.6%	8.5%	5.5%	2.4%	1.7%	6	6
Tunisia	2.2%	9.4%	3.9%	5.8%	3.5%	3.0%	0.9%	3.4%	8	2
United Arab Emirates	6.0%	5.8%	5.5%	4.4%	1.6%	1.9%	2.2%	2.6%	3	4

Source: World Development Indicators (World Bank 2014).

'Financial intermediation' (between 23.2 percent and 27.3 percent). This development reflects the successful privatization efforts of the government's Vision 2020 strategy, which set to attract foreign direct investments as a mean to develop manufacturing as an oil independent growth pillar.

Compared to other MENA countries, Oman received relatively little foreign direct investments (as percentage of GDP).

Compared to other countries in the MENA region, foreign direct investments in Oman as percentage of GDP was on the low side with a rank of 5 and 7 (out of 9) in 2005 and 2012 respectively (Table 3-11). In this period, investments dropped from 4.9 percent to 1.2 percent of GDP. Jordan, Tunisia and Morocco ranked the highest in 2012. For the

region overall, foreign direct investments declined, but some countries increased their relative position, particularly Kuwait (ranking changes from 9 to 5) and Tunisia (ranking changes from 8 to 2).

Establishment size

Average size of the surveyed establishments for the manufacturing sector is measured by the total employment divided by the number of establishments. Between 2005 and 2012, the average size increased from a 74 to 100 (see Table 3-11). In 2012, industries with the largest establishments were 'Basic metals' (241), 'Pharmaceuticals, medicinal chemical

Average establishment size for the manufacturing sector increased from 74 employees in 2005 to 100 in 2012.

Table 3-12: Average manufacturing employment and value added per establishment, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Average establishment size	74	82	96	96	100	103	95	100
Average value added per establishment	-	-	2,800	3,104	3,703	3,855	3,527	4,381

Note: Manufacturing value added at constant 2007 Omani Rial. Average establishment size is calculated from Appendices C-15 and C-20. Industry-level data on value added per establishment in Appendix C-11. Source: Ministry of Commerce and Industry (2005-2012).

Table 3-13: Number of manufacturing establishments and share in sector total, by industry, 2006, 2009, and 2012

	2006		2009		2012	
Food products	83	17.5%	87	15.2%	90	12.8%
Beverages	14	3.0%	23	4.0%	28	4.0%
Tobacco products	-	-	-	-	-	-
Textiles	4	0.8%	3	0.5%	10	1.4%
Wearing apparel	5	1.1%	4	0.7%	4	0.6%
Leather and related products	2	0.4%	3	0.5%	2	0.3%
Wood products except furniture	14	3.0%	12	2.1%	17	2.4%
Paper and paper products	11	2.3%	14	2.4%	9	1.3%
Printing and reproduction of recorded media	28	5.9%	32	5.6%	37	5.3%
Coke and refined petroleum products	11	2.3%	16	2.8%	9	1.3%
Chemicals and chemical products	36	7.6%	42	7.3%	50	7.1%
Pharmaceuticals, medicinal chemical and botanical products	4	0.8%	4	0.7%	3	0.4%
Rubber and plastics products	43	9.1%	48	8.4%	58	8.3%
Other non-metallic mineral products	115	24.3%	154	26.9%	204	29.1%
Basic metals	10	2.1%	15	2.6%	34	4.9%
Fabricated metal products, except machinery and equipment	48	10.1%	53	9.2%	78	11.1%
Computer, electronic and optical products	4	0.8%	4	0.7%	4	0.6%
Electrical equipment	12	2.5%	18	3.1%	25	3.6%
Machinery and equipment n.e.c.	7	1.5%	10	1.7%	10	1.4%
Motor vehicles, trailers and semi-trailers	3	0.6%	4	0.7%	3	0.4%
Other transport equipment	1	0.2%	2	0.3%	2	0.3%
Furniture	13	2.7%	19	3.3%	17	2.4%
Other manufacturing	6	1.3%	6	1.0%	2	0.3%
Total	474	100.0%	573	100.0%	701	100.0%

Note: See Appendix C-15 for more detailed industry-level data in 2012.
Source: Ministry of Commerce and Industry (2005-2012).

and botanical products' (223), 'Coke and refined petroleum products' (212) and 'Other transport equipment' (203). In most industries the average size increased or remained roughly the same with the exception of 'Wearing apparel', which saw a rapid decline in the period from 258 in 2005 to 174 in 2012. The industry lost 3 out of 7 establishments and employment went down from 1,809 to just 701.

Measuring average establishment size in terms of manufacturing value added per establishment tells a similar story of an overall increase between 2006 and 2012 (Table 3-12). The average value added growth rate per establishment for the manufacturing sector was 9.4 percent. Industry level growth rates varied widely; as low as -4.3 percent for 'Furniture' and as high as 44.2 percent for 'Chemicals and chemical products' (see Table C-11). Without the growth contribution from the latter sector (9.4 percent), the overall increase in the period would have been merely 0.1 percent.

Thus, as a whole, establishments became larger in terms of employment and, to some extent, in terms of value added. Leaving out the industry 'Chemicals and chemical products', the increase in value added per establishment was smaller than that of employment per establishment (0.7 percent over the same period). This means that the accumulative change in value added per worker for all other manufacturing industries declined - i.e. a hollowing of labor productivity - which indicates a decrease in the intensity of capital or of other factors.

Input-output ratio, labor productivity, manufacturing value added-output ratio, wages and salaries

Table 3-14 and Figure 3-6 compile the principal indicators for the manufacturing sector as a whole in the period 2005-2012. Besides summarizing the structural indicators covered in the section this far, it also shows that in 2012 both the input-output ratio and manufacturing value added-output ratio were at their 2005-levels. Labor productivity (measured as

Table 3-14: Principal indicators for the manufacturing sector, 2005-2012 (Index)

	2005	2006	2007	2008	2009	2010	2011	2012
Establishments	100	96.0	97.4	107.5	116.0	120.2	134.2	141.9
Employees	100	105.4	126.1	139.6	156.8	167.0	171.3	190.6
Wages/salaries	100	91.5	120.1	107.9	164.0	169.0	225.6	271.3
Gross fixed capital formation	100	144.3	58.5	105.9	79.7	24.1	37.6	46.1
Input	100	109.5	149.8	214.6	188.3	204.2	195.0	239.6
Gross output	100	105.0	130.9	178.3	178.7	193.4	189.7	239.6
Manufacturing value added	100	98.8	105.1	128.6	165.6	178.7	182.5	239.7
Average number of employees per establishment	100	109.8	129.5	129.8	135.2	138.9	127.7	134.3
Input-output ratio	100	104.3	114.4	120.4	105.4	105.6	102.8	100.0
Average wage/salary rate	100	86.8	95.3	77.3	104.6	101.2	131.7	142.4
Labour productivity	100	93.8	83.4	92.2	105.6	107.0	106.5	125.8
Manufacturing value added-output ratio	100	94.1	80.3	72.2	92.7	92.4	96.2	100.0
Capital productivity	100	81.9	85.0	135.4	83.8	89.2	110.2	150.1

Note: Based on Appendix C tables.
Source: Ministry of Commerce and Industry (2005-2012).

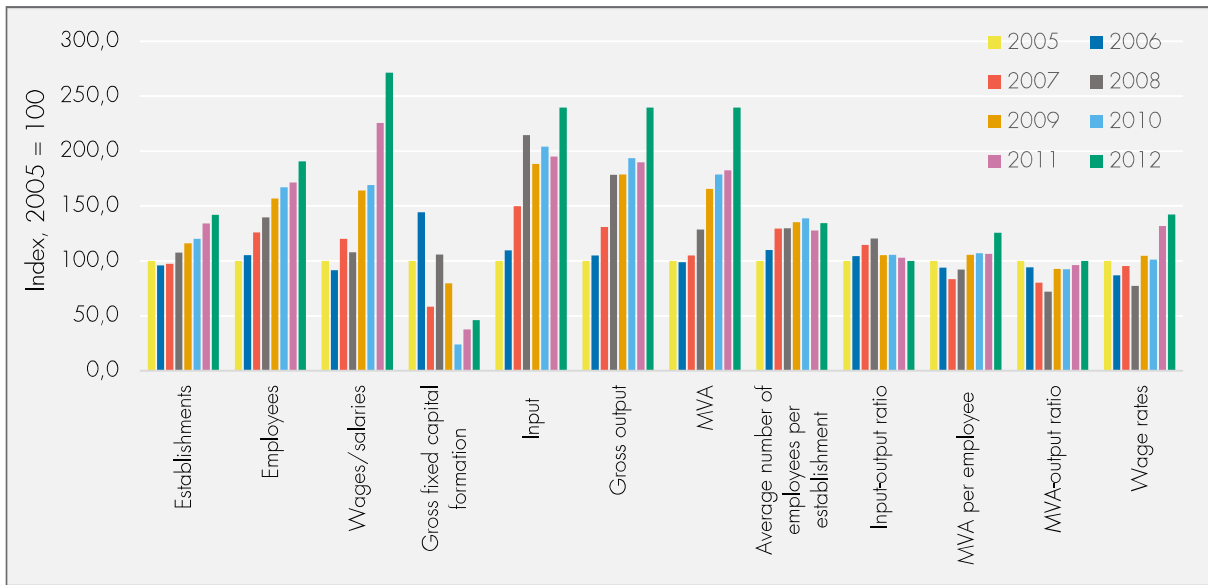


Figure 3-6: Principal indicators for the manufacturing sector, 2005-2012

Note: MVA is manufacturing value added. All monetary values are in current Omani Rial. Based on Appendix C tables. Source: Ministry of Commerce and Industry (2005-2012).

manufacturing value added per employee) increased by 25.8 percent. This means that the sector's overall level of technology remained more or less constant.

Gross output and value added more than doubled in the period, reflecting the overall growth of the manufacturing sector (increase of 139 percent). The number of establishments increased by 41.9 percent. Taken together, this implies that the scale of production became higher. In line with this, the total number of employees increased by 90.6 percent.

Gross output and value added more than doubled.

Labor productivity increased by 25.8 percent, while wage and salary rates grew a little faster than productivity..

A simultaneous increase in the wages and salaries by 171.3 percent and in the number of employees by 90.6 percent, resulted in higher real wages. While labor productivity went up by 25.8 percent, wage rates and salary rates increased slightly faster (see also Figure 3-7)

Parallel to this, capital productivity went up by 50.1 percent (see Figure 3-8). This may suggest 'better' capital in terms of higher technology for the same price, or just cheaper capital, or better use of capital by management and labor. However, one must keep in mind that data on capital assets are notoriously unreliable.⁵ For instance, the high value for capital productivity in 2008, followed by the low value in 2009, seems a bit suspect. Yet, there appears to be a trend for rising labor productivity as well as capital productivity.

⁵ This is a general issue, which can occur differently across countries. The reasons are conceptual (companies does not invest or renew machines and buildings on a regular basis every year) and methodological: for example, there could be errors in terms of specification of investments or understanding or misunderstanding of the specifications, which then translates into errors in the data collection and processing.

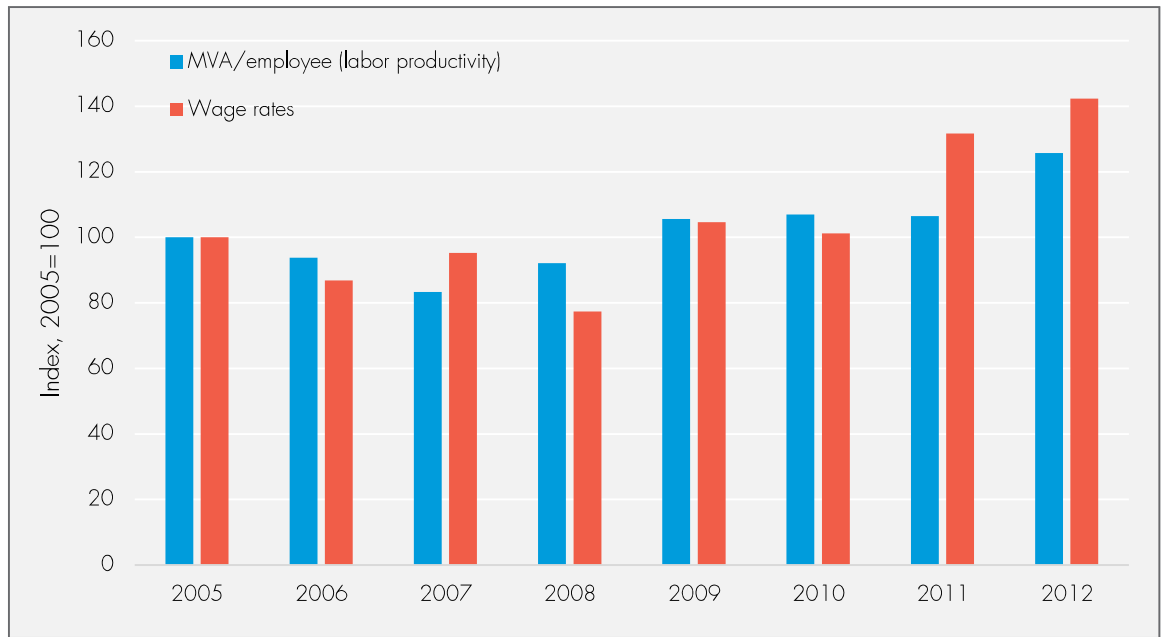


Figure 3-7: Indicators of labor productivity and wage rates, manufacturing sector, 2005-2012

Note: MVA is manufacturing value added and is at current Omani Rial. Based on Appendices C-4, C-17 and C-22.
Source: Ministry of Commerce and Industry (2005-2012).

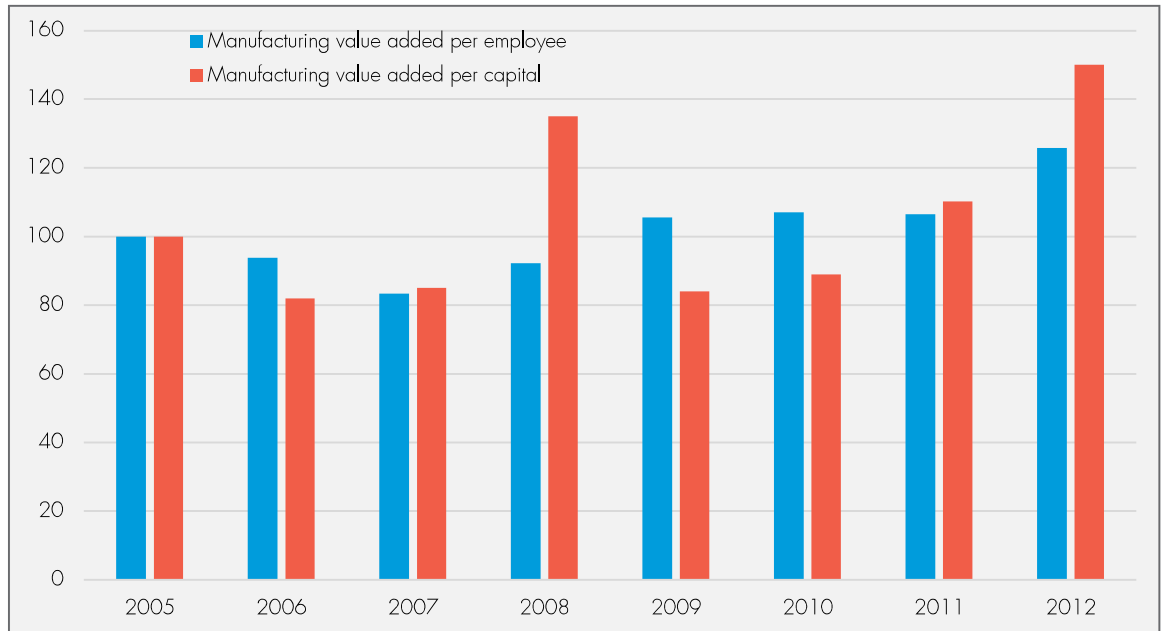


Figure 3-8: Manufacturing value added per employee and per capital, 2005-2012

Source: Ministry of Commerce and Industry (2005-2012).

Assessing structural change

A simplified way to track structural movements in the manufacturing sector is to observe changes in the division of labor across its industries. The percentage share of an industry in total manufacturing can be calculated as:

$$S_k = \frac{x_k}{\sum_{i=1}^n x_i} * 100$$

where:

S_k = share of the k^{th} industry (in any chosen ISIC classification) in total manufacturing

x_i = value of the variable being analyzed for the i^{th} ISIC branch

n = number of industries in the observation.

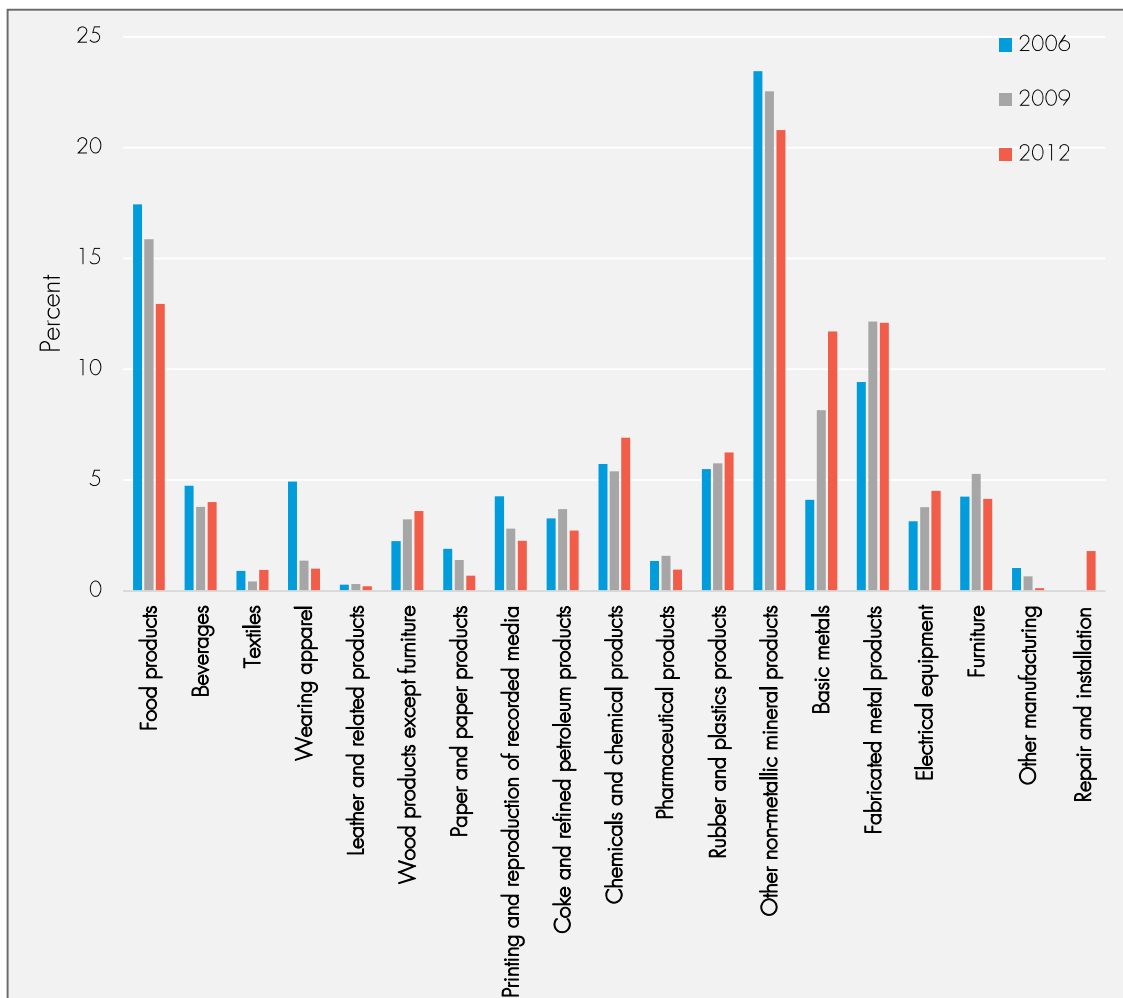


Figure 3-9: Industry shares in total manufacturing employment, 2006, 2009 and 2012

Source: Ministry of Commerce and Industry (2005-2012).

Figure 3-9 shows the shares of manufacturing employment by industry for the years 2006, 2009, and 2012. On appearance little change took place, except within the 'Food products', 'Basic metals', and 'Wearing apparel' industries. However, in order to account for any real changes, more detailed measures are needed.

Integral coefficient of structural change

A more detailed summary measure is the **integral coefficient of structural change**, which estimates the combined effect of the shifts in industries on the overall structural change experienced in the manufacturing sector. The formula for the computation of the coefficient of structural change, d_{int} , is given by:

$$d_{\text{int}} = \sqrt{\frac{1}{n} \sum \frac{(s_{i1} - s_{i0})^2}{(s_{i1} + s_{i0})^2}}$$

where,

S_{i1} and S_{i0} are the shares of i_1^{th} and i_0^{th} manufacturing industry in the total value of the variable being analyzed, for example employment or value added, for the periods 1 and 0.

The value of the coefficient ranges from 0 to 1, representing the scale of the structural change having taken place. A value of $d_{\text{int}} \leq 0.1$ suggests that the manufacturing sector's structure is identical in both time periods, and hence no structural change has taken place. On the other hand, if $d_{\text{int}} \geq 0.9$ a complete restructuring of the sector has occurred, meaning that the relative shares of the sector's industries have changed. However, changes at such a scale are mostly theoretical. When referring to "significant" within sector structural changes, it is more likely to happen at $d_{\text{int}} \leq 0.5$.

Significant structural changes occurred between 2006 and 2012 in terms of value added, but less in terms of employment and number of establishments. This indicates an increase in the number of capital intensive firms.

From Table 3-15 it is evident that significant structural changes - in terms of value added - have taken place between 2006 and 2012. The integral coefficient is 0.503, suggesting that the 2006 industry shares in total manufacturing were markedly different in 2012. If calculated using employment or establishment data, the changes are much less pronounced. This implies that the change in value added came from an increase in large capital intensive establishments.

Table 3-15: Integral coefficient of structural change, manufacturing sector, selected periods, 2006-2012

	Value added	Establishments	Employment
2006-2009	0.362	0.245	0.277
2009-2012	0.380	0.217	0.263
2006-2012	0.503	0.375	0.410

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

Rank correlation

To check on the reliability of the above coefficient of structural change, the Spearman's rank correlation ρ_s between industry shares is calculated. It shows the strength of the relation between industries in any two periods and is defined as follows:

$$\rho_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

where:

d = the difference of ranks of manufacturing industries (ISIC branches) in observed time periods by the chosen variable

n = number of industries in the observation.

The summation is over all manufacturing industries (ISIC branches).

When industry shares do not differ much between two periods, they have a high degree of correlation and ρ_s is close to 1. For less correlated data, ρ_s is close to zero, indicating that industries are more diverse and that significant structural change has occurred.

Table 3-16: Rank correlation coefficient, selected periods, 2006-2012

	Value added	Establishments	Employment
2006-2009	0.947	0.968	0.944
2009-2012	0.930	0.917	0.963
2006-2012	0.884	0.921	0.907

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

Once again, the period 2006-2012 demonstrated the highest incidence of structural change (lowest rank correlation). The pattern of change is roughly similar to the integral coefficient of structural change but the changes in the rank correlation are less pronounced (by only using the rank and not the actual shares a lot of information is thrown overboard).

Coefficient of diversification (or diversification index)

Structural change and the subsequent industrial growth has lead to the diversification of production across a wide range of manufacturing activities. The coefficient of diversification, C_d , shows the extent to which the production is spread across different manufacturing industries and is based on the share of these industries in total output. It is calculated as:

$$C_d = \frac{\sum s_i \ln s_i}{-\ln n}$$

C_d equals 0 when the value is concentrated in one industry, which would mean a complete lack of diversification. The coefficient of diversification equals 1 when all industries have an equal share, indicating perfect diversification.

Table 3-17: Coefficient of diversification, value added, establishments and employment, 2005-2012

	Value added	Establishments	Employment
2005	0.51	0.76	0.76
2006	0.50	0.75	0.75
2007	0.60	0.80	0.80
2008	0.54	0.79	0.78
2009	0.63	0.78	0.77
2010	0.63	0.78	0.75
2011	0.68	0.83	0.78
2012	0.64	0.82	0.78

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

The coefficient of diversification in value added is for all years lower than that for establishments and employment.

The coefficient of diversification in value added is for all years lower than that for establishments and employment, while the two latter are quite similar. As also previously concluded, this indicates that value added became more concentrated due to the growth of large, capital intensive firms in particular industries. This is especially the case for the 'Chemicals and chemical products' industry in which fast output growth and high value added per employee occurred at the same time.

Comparatively speaking, Oman and the other GCC countries, for which data are available, have substantially lower diversification coefficients than Egypt and Morocco (see Table 3-18). This indicates that countries who do not strongly rely on natural resource rents enjoy more balanced manufacturing growth.

Table 3-18: Coefficient of diversification, selected MENA countries, 2005-2012

	Oman	Kuwait	Qatar	Egypt	Morocco
2005	0.51	0.55	0.61	0.78	0.70
2006	0.50	0.61	0.58	0.73	0.71
2007	0.60	0.61	0.56		0.80
2008	0.54	0.60	0.58		0.79
2009	0.63	0.61	0.71		0.80
2010	0.63	0.58	0.59	0.75	0.72
2011	0.68	0.58			
2012	0.64	0.55			0.80

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

Figure 3-10 shows the coefficient of manufacturing diversification over a longer period of time (1990-2012). In the early years of the 1990s all countries were close together with a high diversification index. Kuwait dropped out in the course of the decade, to be joined by Oman and Qatar from around 2000 onwards, when the impact of oil-dependence on manufacturing development became strong by investing in resource-based industries as a first step towards manufacturing growth.

The diversification index for the period 1990-2012 initially declined but then increased after 2000.

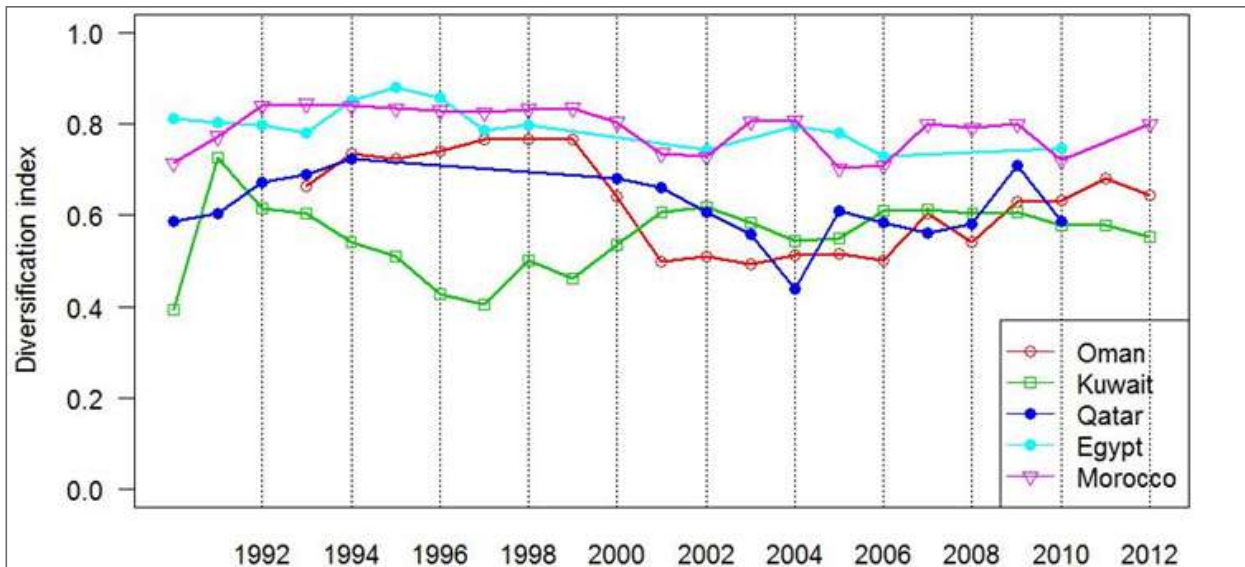


Figure 3-10: Coefficient of diversification, selected MENA countries, 1990-2012

Source: Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

Productivity

Measuring the productivity of the manufacturing sector and its industries can be done in various ways, among other: (a) Value added per capita provides an understanding of the size of the sector in relation to the size of the population. This allows for comparison with other countries; (b) Value added per employee (also referred to as labor productivity) is a partial measure of total productivity. Labor tends to produce more value added when endowed with more capital and skills (human capital). In this sense, labor productivity is an indication of the capital intensity of production; (c) Value added per unit of capital (or capital productivity) expresses the labor intensity of production or the technological level of capital equipment; and finally (d) Total factor productivity (TFP) provides a measure for the efficiency of the combined use of labor and capital. In the following, each of these measures will be used to assess the productivity of Oman's manufacturing sector – across industries and in comparison with other countries from the MENA region.

Manufacturing value added per capita

Table 3-19 gives the per capita manufacturing value added figures for the whole manufacturing sector. The column 'Index' shows that the manufacturing value added per capita has been rising by 76.8 percent from 2007 to 2012. Since inflation was low throughout the period, the figures in current and constant prices do not divert much (see Figure 3-11).

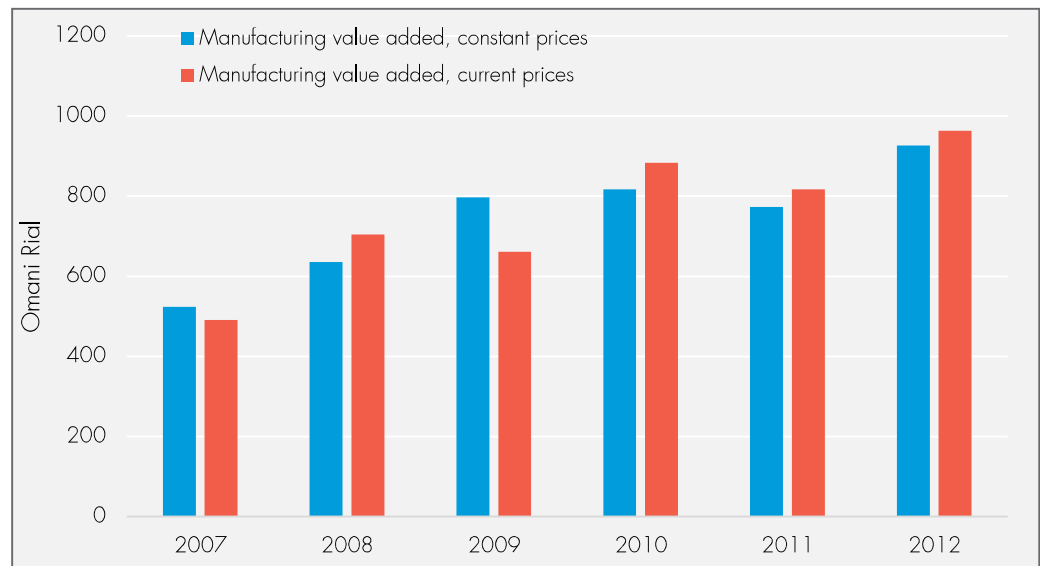


Figure 3-11: Manufacturing value added per capita, current and constant 2007 prices, 2007-2012

Note: Industry-level data at constant prices for the period 2007-2012 is available in Appendix C-9. Data in current prices based on Appendices C-4 and C-16.
Source: Ministry of Commerce and Industry (2005-2012).

Table 3-19: Manufacturing value added per capita, 2007-2012

	Manufacturing value added					Population (thousands)
	Millions (current Omani Rial)	Millions (constant 2007 Omani Rial)	Per capita	Growth in per capita value	Index	
2007	1,347	1,347	524		100.0	2,570
2008	2,020	1,648	635	21.3%	121.3	2,594
2009	2,100	2,122	797	25.4%	152.1	2,663
2010	2,450	2,290	817	2.5%	155.9	2,803
2011	2,692	2,338	773	-5.4%	147.5	3,025
2012	3,489	3,071	927	19.9%	176.8	3,314

Note: Unless otherwise specified manufacturing value added is calculated in constant 2007 Omani Rial. Industry-level data in constant prices for the period 2007-2012 is available in Appendix C-9. Data in current prices based on Appendices C-4 and C-16. Population data for the period 1998-2012 is available in Appendix C-16.
Source: Ministry of Commerce and Industry (2005-2012).

In a comparison with other MENA countries it is evident that Oman is in a process of catching up, especially with the GCC countries. While average manufacturing value added in the group overall dropped by 13 percent, the same figure increased by 38 percent in Oman.

Since 2005, Oman has occupied a middle position, ranking 4 out of 8. In 2012 its manufacturing value added per capita stood at 1,519 US dollars, with Qatar (5,455 US dollars), United Arab Emirates (2,524 US dollars), and Saudi Arabia (1,961 US dollars) leading before Oman. Of these countries, only Oman and Saudi Arabia are improving their manufacturing value added per capita, while Qatar is slowly declining and the United Arab Emirates declining very fast. Although slowly growing, the non-Gulf countries have substantially lower manufacturing value added per capita, the highest is Tunisia with 645 US dollars in 2012.

Compared to the selected MENA countries, Oman occupies a middle position in terms of MVA per capita.

Table 3-20: Manufacturing value added per capita, selected MENA countries, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012	Change 2005-2012
Egypt	209	217	229	243	248	256	250	247	18.2%
Jordan	372	404	432	444	443	442	450	450	21.0%
Morocco	295	301	311	315	312	317	322	322	9.2%
Oman	1,098	1,057	1,029	1,259	1,260	1,371	1,311	1,519	38.3%
Qatar	6,655	6,388	5,984	6,036	5,764	5,746	5,494	5,455	-18.0%
Saudi Arabia	1,270	1,361	1,473	1,599	1,615	1,748	1,906	1,961	54.4%
Tunisia	509	525	566	586	572	602	597	645	26.7%
United Arab Emirates	4,618	4,215	3,611	3,396	2,571	2,412	2,475	2,524	-45.3%

Note: Manufacturing value added at constant 2005 US dollars.

Source: World Development Indicators (World Bank 2014). Data for Oman is from the Ministry of Commerce and Industry (2005-2012) but aligned with World Bank data using approximate conversion factors.

Table 3-21: Manufacturing value added per employee, 2007-2012

	Manufacturing value added				Number of employees
	Millions	Per employee	Growth in per employee value	Index	
2007	1,347	29,132		100.0	46,228
2008	1,648	32,203	10.5%	110.5	51,185
2009	2,122	36,899	14.6%	126.7	57,504
2010	2,290	37,394	1.3%	128.4	61,239
2011	2,338	37,212	-0.5%	127.7	62,833
2012	3,071	43,939	18.1%	150.8	69,893

Note: Manufacturing value added is calculated in constant 2007 Omani Rial. Industry-level data is available in Appendix C-12.

Source: Ministry of Commerce and Industry (2005-2012).

Manufacturing value added per employee (or labor productivity)

Labor productivity in the manufacturing sector as a whole increased by 50.8 percent over the period 2007-2012 (Table 3-21 and Figure 3-12) and only declined slightly in 2011.

The fastest rise in labor productivity was in 'Chemicals and chemical products', followed by 'Electrical equipment' and 'Fabricated metal products, except machinery and equipment'.

Table 3-22 considers growth in labor productivity across industries in 2012 with a share in total manufacturing value added larger than 1 percent (for details on all industries, see Appendices C-12 and C-13). The largest increase in labor productivity was recorded in 'Chemicals and chemical products' (331 percentage points), which was also the largest industry with a share in total manufacturing value added of 39.5 percent. This was followed by 'Electrical equipment' (102 percentage points) and 'Fabricated metal products, except machinery and equipment' (61 percentage points). All other industries saw an increase below the total manufacturing sector (51 percent). Only two industries saw labor productivity decline: 'Beverages' (9 percentage points) and 'Rubber and

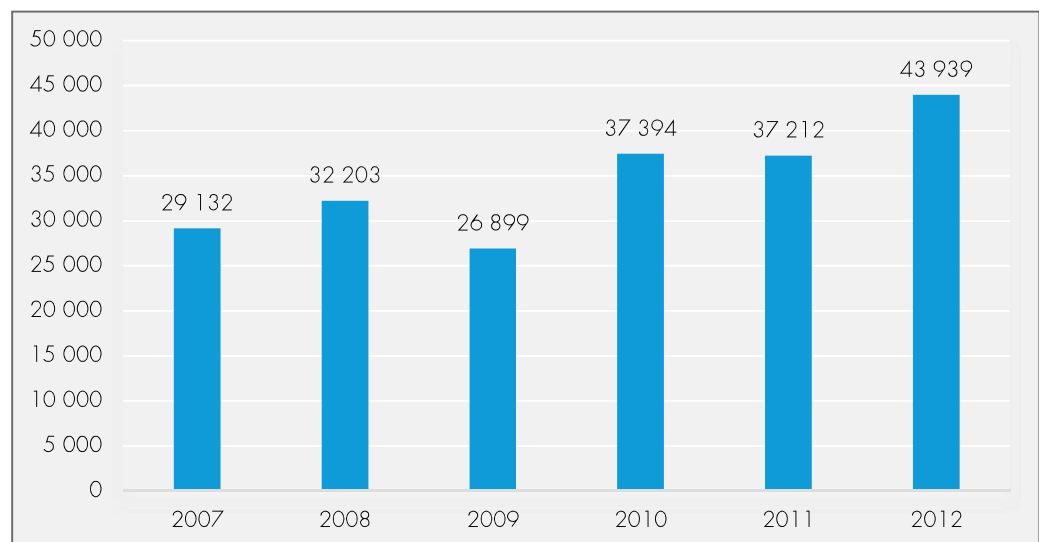


Figure 3-12: Manufacturing value added per employee, 2007-2012

Note: Industry-level data is available in Appendix C-12.
Source: Ministry of Commerce and Industry (2005-2012)

plastics products' (3 percentage points). This could be an indication of activities applying standardized technologies without much technological change. A simple regression analysis shows that, on average, wages are higher in industries with high labor productivity.

Table 3-22: Labor productivity, by industry, 2007-2012
(Index)

	2007	2008	2009	2010	2011	2012
Food products	100	98	145	116	131	132
Beverages	100	61	76	70	91	91
Printing and reproduction of recorded media	100	113	92	68	190	191
Coke and refined petroleum products	100	143	121	121	85	83
Chemicals and chemical products	100	103	237	183	405	431
Rubber and plastics products	100	111	137	135	96	97
Other non-metallic mineral products	100	109	99	101	103	109
Basic metals	100	45	177	176	132	135
Fabricated metal products, except machines and equipment	100	102	159	318	169	161
Computer, electronic and optical products	100	93	140	167	144	146
Electrical equipment	100	83	77	96	199	202
Total	100	111	127	128	128	151

Note: Manufacturing value added at constant 2007 Omani Rial. See Appendix C-13 for all industries.
Source: Ministry of Commerce and Industry (2005-2012).

Manufacturing value added per unit of capital (or capital productivity)

Table 3-23 presents data on capital productivity in the period 2005-2012 for industries with a share in total manufacturing value added larger than 1 percent. Data on capital used in production includes machinery and equipment, buildings and land. The accuracy of such data is variable due to different valuation methods between firms and accountancy problems. For example, capital assets can be valued at historic cost (acquisition cost), current replacement cost, current sale or resale value, average market value, business value, assuming a certain profit yield, value for tax purposes, value for insurance purposes, purchasing power parity value, or scrap value. Nevertheless, the data provide a rough and ready picture of the status quo.

Higher wages in sectors with high labor productivity.

The manufacturing sector has seen large fluctuations in capital productivity over the years, but there is an increasing trend in most industries.

The industry with the highest capital productivity in 2012 is 'Machinery and equipment n.e.c., repair and installation' (3.68), closely followed by 'Chemicals and chemical products, pharmaceuticals' (3.37). All industries saw large variations in capital productivity throughout the period, and in most of them. There is a rising trend (Appendix C-13 confirms this general picture). Noticeable exceptions to this trend are 'Coke and refined petroleum products', 'Rubber and plastics products', 'Basic metals', and 'Computer, electronic and optical products'. This may indicate of small change in the production technology used in these industries.

Table 3-23: Manufacturing value added per unit of capital, selected industries, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Food and beverages	0.48	0.54	0.78	0.83	1.14	0.85	0.80	0.90
Printing and reproduction of recorded media	0.47	0.50	0.53	1.06	0.52	0.04	1.77	2.32
Coke and refined petroleum products	1.17	0.57	0.50	1.11	0.61	0.74	0.96	1.20
Chemicals and chemical products, pharmaceuticals	0.32	0.32	0.36	0.46	0.59	0.62	1.76	3.37
Rubber and plastics products	0.58	0.62	0.68	0.73	0.87	0.43	0.43	0.49
Other non-metallic mineral products	0.57	0.78	0.82	0.84	0.78	0.58	0.61	0.75
Basic metals	0.24	0.50	0.93	0.93	0.23	0.34	0.21	0.26
Fabricated metal products, except machinery and equipment	0.93	1.61	1.66	1.71	2.13	4.90	1.03	1.33
Computer, electronic and optical products	1.06	1.41	1.74	2.45	3.07	3.35	0.68	0.74
Electrical equipment	0.55	0.57	1.87	1.76	1.16	1.23	2.14	2.33
Machinery and equipment n.e.c., repair and installation	0.99	1.21	1.59	1.53	0.57	0.98	1.43	3.68
Total	0.69	0.56	0.58	0.93	0.58	0.61	0.76	1.03

Note: Manufacturing value added at current Omani Rial. See Appendix C-14 for all industries. Source: Ministry of Commerce and Industry (2005-2012).

Capital-labor ratio

Indices for the capital-labor ratio are given in Table 3-23 for industries with a share in total manufacturing value added larger than 1 percent. With more capital per employee one would expect higher manufacturing value added per employee as well, but correlation analysis shows no association between the two.

Data on capital labor ratio are puzzling, but could be explained by the method of valuation of capital and labor redundancies.

For some industries, the indicator dropped considerably, especially for 'Chemicals and chemical products, pharmaceuticals' (35), 'Coke and refined petroleum products' (38). This is curious as the two latter showed large increases in labor productivity. One partial reason could be that the value of capital has been strongly depreciated but the physical capital remains as productive as before. Another partial reason could be that there were labor redundancies prior to 2012. Taken together these might account for this apparent contradiction.

Table 3-24: Growth in capital-labor ratio of the manufacturing sector, selected industries, 2007-2012 (Percent)

	2008	2009	2010	2011	2012
Food and beverages	83	103	98	112	98
Printing and reproduction of recorded media	52	107	985	58	45
Coke and refined petroleum products	68	97	84	47	38
Chemicals and chemical products, pharmaceuticals	68	141	92	65	35
Rubber and plastics products	99	121	203	128	107
Other non-metallic mineral products	96	129	151	123	101
Basic metals	48	635	442	522	391
Fabricated metal products, except machinery and equipment	95	122	95	219	158
Computer, electronic and optical products	59	67	76	320	271
Electrical equipment	78	105	128	150	126
Machinery and equipment n.e.c., repair and installation	152	191	82	222	148
Total	73	133	114	77	67

Note: Manufacturing value added at constant 2007 Omani Rial. Based on Appendix C-23, containing absolute values for all industries. Source: Ministry of Commerce and Industry (2005-2012).

Total factor productivity

Factors of production such as labor, capital (machines), organizational know-how and management together convert – more or less efficiently - inputs into outputs through a process of adding value. The value added is thus the product of these factors. In the sub-sections above, only partial productivity measures were discussed. It is interesting to find a measure of production efficiency (or productivity) that takes into account more than one factor of production. The so-called “Cobb-Douglas” production function combines the value of labor and capital in a very simple way:

$$\text{Value added} = A * L^{\alpha} * K^{1-\alpha}$$

where:

L: quantity of labor inputs

K: value of capital used

A: Total Factor Productivity (TFP)

W: wages and salaries

α : labor share in total factor costs: $W/(K+W)$

TFP is here used as a measure for efficiency; it combines all factors (other than capital and labor) that influence manufacturing value added. A percentage change in TFP reflects the increase/decrease in the efficiency of the combined use of labor and capital between any two periods. The measure should be used with caution as it is a simplified theoretical construct and, as discussed before, data on capital assets are often rather unreliable. Nevertheless, it provides a useful first approximation.

Table 3-25: Average annual percentage change in total factor productivity between selected survey years (Percent)

	2008	2012
2005	4.4	8.4
2008		11.4

Source: Ministry of Commerce and Industry (2005-2012).

Table 3-25 gives the average annual percentage change in TFP in selected intervals between 2005 and 2012. Over the period as a whole, TFP increased at an annual rate of 8.4 percent. Whereas it grew at a more moderate rate of 4.4 percent between 2005 and 2008, it accelerated to 11.5 percent annually in 2008-2012.

The years selected in Table 3-25 provide the 'nicest' picture. If other years would have been selected less consistent results would have been obtained. To check the consistency of the time trend in TFP a simple log-linear regression was used involving all data points from 2005-2012. The result shows that TFP increased by 5.8 percent annually and that the results were statistically sound.⁶

This analysis suggests that fruitful production conditions, including management, labor skills, technological capability and macroeconomic conditions, enabled Omani firms to obtain increasing value from capital and labor at the rate of 5.8 percent per year. These figures are viable in a newly industrializing country such as Oman.

Figure 3-8 shows that there is a trend for rising labor productivity (manufacturing value added per employee) as well as capital productivity (manufacturing value added per unit of capital).

Training and capacity building

In house training by firms is important to upgrade labor skills and enhance labor productivity. However, training efforts of employees in Omani companies are at a very low level. Little money is spend on in-house training; something which has a particular potential to upgrade labor skills and enhance labor productivity Table 3-26 shows expenses on training by industry, which is further disaggregated by nationality of employee's receiving training.

With few exceptions training efforts are very low across industries, meaning that there is an enormous scope for improving labor skills through in-house training.

The industry, which in 2012 invested the most in the upgrading of its labor is the 'Chemicals and chemical products' industry. Its share of total training expenses amount to 45.4 percent, it had the highest training expenses as percentage of its wages and salaries (1.63 percent), and spent the most on training per worker: 200 Omani Rial as compared to an average of 30 Omani Rial in the manufacturing sector overall. In relative terms, this is an impressive figure. Other industries that had a reasonable level of training expenses are 'Machinery and equipment n.e.c.' and 'Basic metals' with 57 and 54 Omani Rial per employee, respectively. Table 3-26 also reveals that the surveyed companies spent considerably less on training for foreigners.

⁶ Meaning that the results had a high level of confidence at >99%.

Table 3-26: Training expenses per employee and as a percentage of wages and salaries, by nationality and industry, 2012

	Share of training expenses in wages and salaries			Industry share of total training expenses	Training expenses per employee		
	Omanis	Expats	Total		Omanis	Expats	Total
Food products	0.42%	0.11%	0.53%	10.3%	54	8	24
Beverages	0.02%	0.02%	0.04%	0.3%	3	2	2
Chemicals and chemical products	1.10%	0.53%	1.63%	45.4%	283	124	200
Rubber and plastics products	0.14%	0.01%	0.15%	1.3%	20	1	6
Other non-metallic mineral products	0.43%	0.03%	0.46%	14.3%	73	2	20
Basic metals	0.43%	0.26%	0.68%	20.9%	94	32	54
Fabricated metal products, except machinery and equipment	0.20%	0.07%	0.27%	5.3%	45	5	13
Computer, electronic and optical products	0.01%	0.00%	0.01%	0.0%	2	0	1
Electrical equipment	0.02%	0.00%	0.03%	0.3%	4	1	2
Machinery and equipment n.e.c.	0.42%	0.24%	0.66%	1.9%	76	39	57
Total	0.38%	0.15%	0.53%	100.0%	70	12	30

Note: Only industries that reported expenses on training in 2012 are included in the table. Training expenses as well as wages and salaries are in current Omani Rial.

Source: Ministry of Commerce and Industry (2013).

Competitiveness

Sustained development of Oman's manufacturing sector will depend crucially on the improvement of its competitive position in net-exports. Since the rest of the world is continuously moving forward, this is a highly dynamic process.

Oman's Ministry of Commerce and Industry is the focal point for formulation and implementation of the country's trade policies. The broad objectives of these are (Government of Oman 2014, p. 6):

- "Expansion of trade leading to economic development of the country;
- Expansion and growth of production of tradable goods and services;
- Securing greater market access for Omani goods and services;
- Creation and expansion of employment opportunities for Omani people;
- Ensuring availability of goods and services at reasonable prices in the domestic market;
- Protecting the interests of consumers;
- Raising the living standards of the people of Oman."

Of the above objectives, the second and the third have to do with policies targeting the manufacturing sector. Such policies entail, among other things, competitive import substitution and export promotion. Manufacturing industries that are able to thrive in a competitive domestic market will export more. Export deepening, as a result of shifting towards higher value added domestic production away from imported inputs (backward linkages) or as a result of further processing of output (forward linkages), will result in increasing foreign exchange earnings, an improved competitive position of the manufacturing sector, and technological advancement.

Export performance of manufacturing

Oman’s export sector expanded markedly between 2005 and 2012. In this period, the average rate of growth in manufactured exports (in current prices) was 32 percent, and its share in total exports rose from 7.5 percent to 20.3 percent.

The average growth of exports (in current prices) between 2005 and 2012 was 32 percent.

Figure 3-13 illustrates the long term trend (1990-2013) of total and manufactured exports. Starting at a low level, both increased steadily throughout the period with brief negative fluctuations, particularly in 1998 and 2009.

87.6 percent of all manufactured exports was ‘Coke and refined petroleum products’, ‘Chemicals and chemical products’, ‘Basic metals’, and ‘Food products’.

The manufacturing industries with the largest export share in 2012 were ‘Coke and refined petroleum products’ (46.6 percent), ‘Chemicals and chemical products’ (24.4 percent), ‘Basic metals’ (10.5 percent), and ‘Food products’ (7.1 percent). Together these industries accounted for 87.6 percent of total manufactured exports (see Table 3-27 and Figure 3-14).

While almost doubling its exports in absolute terms, the relative share of the ‘Food products’ industry declined from 15.9 percent in 2006 to 7.1 percent in 2012. This was mainly due to the fast growth of the ‘Coke and refined petroleum products’ and ‘Chemicals and chemical products’ industries in the same period.

While exports are usually measured in terms of gross output (Table 3-27), the value added of exports is a better indication of manufacturing activity. It can be roughly approximated using the manufacturing value added to output ratio and assuming similar structure of the exports as the production structure. The obtained results are presented in Table 3-28. Using this measurement, ‘Coke and refined petroleum products’ (35.8 percent) was second to

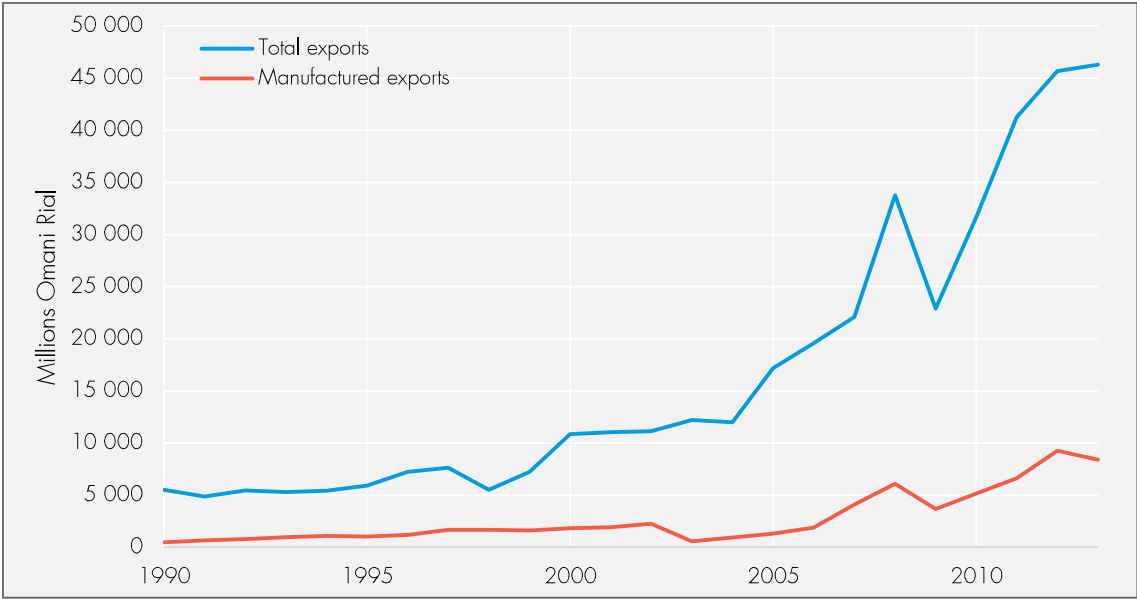


Figure 3-13: Total and manufactured exports, 1990-2013

Source: Directorate General of Customs, Oman. Data for 1990-2013 available in Appendix C-24.

Table 3-27: Share in total manufactured exports and exports as a percentage of output, industries with share >0.1 percent, 2006, 2009, and 2012 (Percent)

	Share in total manufactured exports			Exports as percentage of output		
	2006	2009	2012	2006	2009	2012
Food products	15.6	17.8	7.1	40.8	49.3	37.5
Paper and paper products	0.7	0.4	0.4	22.6	19.3	33.2
Coke and refined petroleum products	34.4	27.0	46.6	12.3	12.0	56.6
Chemicals and chemical products	4.9	26.2	24.4	16.7	45.0	28.1
Pharmaceuticals, medicinal chemical and botanical products	0.1	0.6	0.7	2.9	24.4	57.6
Rubber and plastics products	3.8	0.1	3.1	38.0	1.0	60.1
Other non-metallic mineral products	10.0	6.9	2.6	25.9	18.9	9.9
Basic metals	11.9	3.7	10.5	45.6	9.1	26.3
Fabricated metal products, except machinery and equipment	1.5	3.8	0.3	13.6	31.0	3.0
Electrical equipment	14.1	11.2	3.6	59.8	62.5	20.7
Furniture	1.7	1.4	0.4	38.0	43.5	22.8
Total	98.8	99.3	99.5			

Source: Industrial Demand-Supply Balance Database 2014 (UNIDO 2015c).

'Chemicals and chemical products' (37.5 percent) in 2012. Moreover, the 'Food product' industry was 7.1 percent in 2012 instead of 5.7 percent and the 'Basic metals' industry was 10.5 percent instead of 9.6 percent.

Turning to the balance of payments, the domestic content of exports is important and henceforth the origin of intermediate inputs, that is whether it is imported or domestically produced. In the 'Food products' industry most inputs are from agriculture – the industry hereby classifying as a resource-based activity - which in turn has a high value added per output ratio. Other resource-based activities are 'Coke and refined petroleum products' and 'Chemicals and chemical products'.⁷ For petroleum-related industries, the export figures, which are measured in gross output, are a close (but under-) approximation of the foreign exchange impact. These industries make use of limited imported goods and hence are less likely to be affected by fluctuating foreign exchange rates.⁸ For a medium-tech industry such as 'Basic metals' (consisting basically of iron and steel products) a large part of its intermediate inputs are imported. The same applies to 'Electrical products', which is generally considered a high-tech industry. An in-depth analysis would require elaborate input-output tables with more information on imported intermediate input per industry.

Resource based exports (mainly oil and gas, but also food products) grew faster than overall manufacturing exports.

Between 2005 and 2012, the share of resource-based exports (mainly oil, gas and food) in total manufactured exports increased from 49.3 percent to 60.1 percent (Table 3-29).⁹ Low- and medium-technology exports made up the rest of manufactured exports as there were virtually no high-technology exports. The foreign exchange impact of these activities is much lower than their reported export value.

7 See Lall (2000) for a classification of industries as either resource-based, and low-, medium- and high-technology manufacturing.

8 The foreign exchange impact per unit of exports is defined as the export value minus direct and indirect imports as a percentage of the export value.

9 The figures differ from the sum of 'Food sector', 'Coke and refined petroleum products' and 'Chemicals and chemical products' in Table 3-28 (together 78.1 percent). Data are from different sources and use different definitions. However the two data series are likely to follow the same trend.

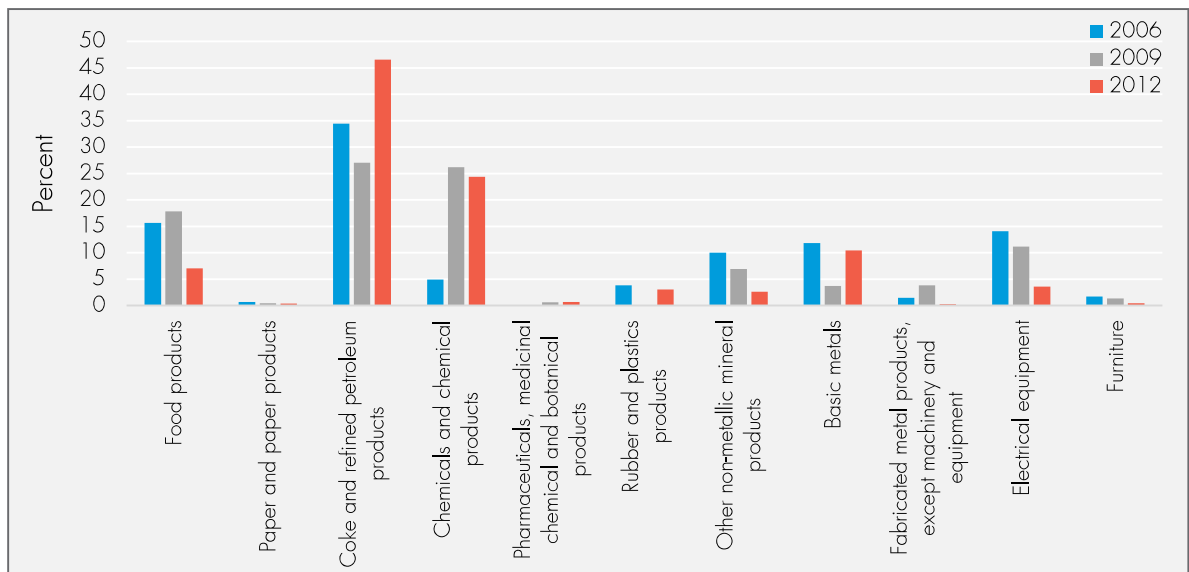


Figure 3-14: Industry share in total manufactured exports (industries with share > 0.1 percent), 2006, 2009 and 2012

Source: Industrial Demand-Supply Balance Database 2014 (UNIDO 2015c).

Table 3-28: Industry share in total manufactured exports value added, 2006, 2009 and 2012 (Percent)

	Share in total manufactured exports value added		
	2006	2009	2012
Food products	11.7	15.1	5.7
Paper and paper products	0.6	0.4	0.3
Coke and refined petroleum products	39.2	15.9	35.8
Chemicals and chemical products	9.6	43.4	37.5
Pharmaceuticals, medicinal chemical and botanical products	0.1	0.5	0.9
Rubber and plastics products	3.0	0.1	2.3
Other non-metallic mineral products	18.7	10.2	3.2
Basic metals	7.0	3.9	9.6
Fabricated metal products, except machinery and equipment	1.8	4.6	0.3
Electrical equipment	4.2	4.2	3.4
Furniture	2.8	1.0	0.5
Total	98.6	99.2	99.5

Source: Industrial Demand-Supply Balance Database 2014 UNIDO (2015c) and Industrial Statistics Database, INDSTAT2 (UNIDO 2015b).

Table 3-29: Manufacturing exports by technology level and shares in total exports, 2005–2012

	Manufactured exports (million Omani Rial)	Share of manufactured exports in total exports	Share in total manufactured exports			
			Resource based exports	Low-technology exports	Medium-technology exports	High-technology exports
2005	1,291	7.5%	49.3%	20.6%	30.0%	0.0%
2006	1,879	9.6%	49.9%	16.2%	33.9%	0.1%
2007	4,109	18.6%	64.7%	6.8%	28.2%	0.2%
2008	6,109	18.1%	65.6%	5.5%	28.8%	0.1%
2009	3,666	16.0%	42.6%	10.0%	46.8%	0.6%
2010	5,141	16.3%	50.6%	6.7%	42.1%	0.6%
2011	6,627	16.1%	43.9%	6.6%	49.1%	0.5%
2012	9,260	20.3%	60.1%	5.8%	33.6%	0.6%

Note: Data for 1990-2013 is available in Appendix C-24. See Lall (2000) for a classification of industries as either resource-based, and low-, medium- and high-technology manufacturing.
Source: Directorate General of Customs

Figure 3-15 shows the long-term trends (1990-2013) of low-, medium- and high-technology exports, resource-based exports and total manufactured exports. While the decline in 1998 was common for all types of exports, the drops in 2003, 2009, and 2013 were mainly driven by resource based exports in which price fluctuations play a strong role. Following a sharp decline in 2003, medium-technology exports picked up a steady rate of growth and had almost rivaled resource-based exports from 2009 onwards.

Regional comparison of Oman's competitive position

The competitiveness of Oman's manufacturing sector is compared to other MENA countries in terms of (a) the Competitive Industrial Performance (CIP) Index (by UNIDO) and the Global Competitiveness Index (GCI, by World Economic Forum), (b) key statistics on the manufacturing sector and manufactured exports, and (c) key indices on the production and trade environment.

Global Competitiveness Index and the Competitive Industrial Performance Index

The difference between the GCI and the CIP Index is that the former focuses on the conditions of production and trade, whereas the latter measures the actual relative performance of the manufacturing sector. Trends in the CIP Index can often be explained by changes in the GCI.

Three sub-indices form the basis of the CIP Index: (a) the capacity to produce and export (manufacturing value added per capita and manufacturing exports per capita, respectively), (b) technological deepening (the level of technology of manufacturing production) and upgrading (the technological level of manufactured exports), and (c) world impact (the share of manufacturing value added and trade in the world total). The GCI is composed of an index of institutions, infrastructure, macroeconomic environment, and health and primary education.

Table 3-30 summarizes the ranking and score of the manufacturing sector in Oman and other MENA-countries. The latest comparative figures for the CIP Index are available for 2012; therefore, the GCI is depicted for both 2012-2013 and 2013-2014.

In 2013-2014, Oman scored a relatively high GCI score of 33 out of a 148 countries, reflecting good conditions for production and trade. However, other GCC countries in the

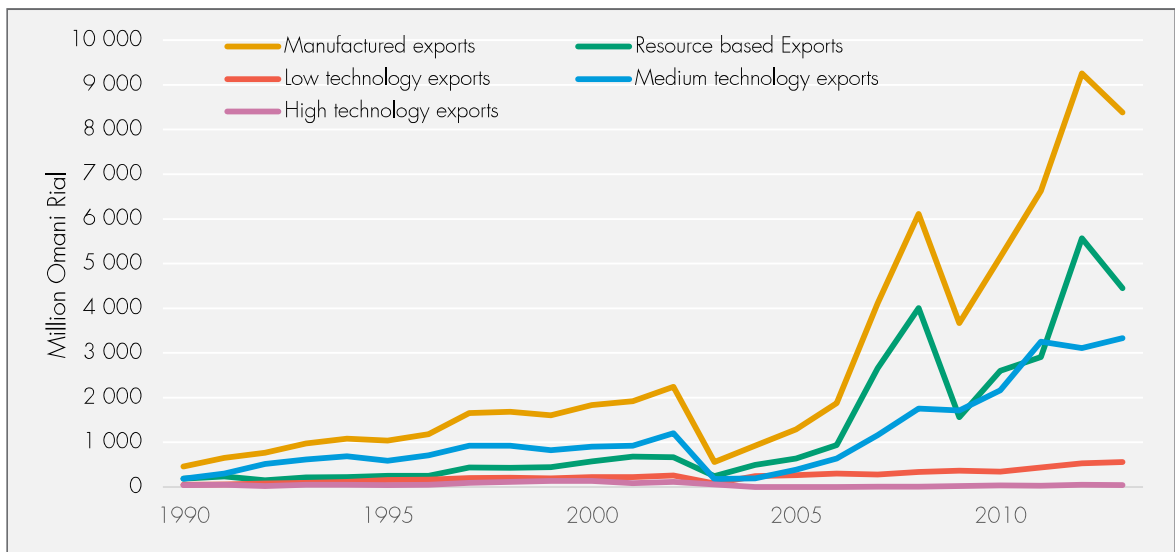


Figure 3-15: Manufactured exports, by technology level, 1990-2013

Note: Data for 1990-2013 is available in Appendix C-24.
Source: Directorate General of Customs

Table 3-30: Global Competitiveness Index and Competitive Industrial Performance Index, selected MENA countries, 2012-2014

	GCI Index						CIP Index 2012
	2013-2014		2012-2013		2011-2012		
	Rank	Score	Rank	Score	Rank	Score	
Qatar	13	5.24	11	5.38	14	5.24	43
United Arab Emirates	19	5.11	24	5.07	27	4.89	53
Saudi Arabia	20	5.1	18	5.19	17	5.17	37
Oman	33	4.64	32	4.65	32	4.64	64
Kuwait	36	4.56	37	4.56	34	4.62	49
Jordan	68	4.2	64	4.23	71	4.19	75
Morocco	77	4.11	70	4.15	73	4.16	70
Tunisia	83	4.06	n.a.	n.a.	40	4.47	61
Egypt	118	3.63	107	3.73	94	3.88	71

Note: The GCI Index included 148 countries in 2013-2014, 144 in 2012-2013 and 142 in 2011-2012. The CIP Index included 142 in 2012. As the CIP Index was restructured in 2012, it is not possible to show previous years for comparison.
Sources: Global Competitiveness Index (World Economic Forum 2013, 2014) and Competitiveness Industrial Performance Index (UNIDO 2015d).

region, not including Kuwait, are performing considerably better. The other MENA countries are ranked much lower. Comparing the relative ranking in 2012-2013 to that of 2013-2014 shows only a change in the second and third top positions within the group.

Oman ranks substantially lower in the CIP Index with a mid-ranging position of 64 among the 142 countries included in the Index. All GCC countries perform better. This indicates that the performance of Oman's manufacturing sector offers great scope for improvement. The non-GCC countries in the MENA region are all ranked lower. In these countries, the size of the manufacturing sector in terms of manufacturing value added as percentage of GDP is much larger than that of the GCC countries, highlighting the varying role of manufacturing in these non-oil dependent countries.

Key statistics on the manufacturing sector and manufactured exports

Table 3-31 provides key comparative statistics on the manufacturing sector in the same group of MENA countries. An index of manufacturing value added per capita shows that Oman has the smallest manufacturing sector (in these terms) compared to the GCC countries although much bigger than the other MENA countries without oil. In terms of shares in GDP the MENA countries are doing better than the GCC countries. This is another sign of the mixed blessing of large natural resource endowments when it comes down to manufacturing development.

Oman's manufacturing exports per capita are the lowest of the GCC countries.

As a share of Oman's total manufacturing value added, medium- and high-technology activities increased from 20.6 percent in 2005 to 23.6 percent in 2012. Since Oman does not have many high technology firms, the development was mainly driven by a rise in medium-technology activities. Nevertheless, it shows some technological advancement of its manufacturing sector. Jordan, Morocco, Qatar and Tunisia made more progress on the technology ladder.

Comparative information on manufactured export performance is given in Table 3-32. Oman's position in the manufactured exports per capita index is roughly in the range of the other GCC countries and much higher than that of the other MENA countries. But the picture is reversed for the share of manufactured exports in total exports where the other

Table 3-31: Indicators of industrial performance, manufacturing value added, selected MENA countries, 2005 and 2012

	Manufacturing value added per capita index (score)		Share of manufacturing value added in GDP		Share of medium- and high-technology activities in total manufacturing value added	
	2005	2012	2005	2012	2005	2012
Egypt	0.02	0.02	15.9%	15.6%	37.2%	28.0%
Jordan	0.04	0.03	16.3%	16.5%	28.9%	32.2%
Kuwait	0.26	0.17	7.3%	5.8%	25.1%	27.5%
Morocco	0.03	0.02	14.6%	12.8%	28.8%	34.0%
Oman	0.10	0.11	8.1%	9.7%	20.6%	23.6%
Qatar	0.53	0.33	9.9%	7.5%	28.4%	31.3%
Saudi Arabia	0.13	0.15	9.5%	11.4%	54.4%	50.1%
Tunisia	0.05	0.05	15.7%	16.2%	12.8%	26.6%
United Arab Emirates	0.48	0.22	10.6%	10.5%	11.4%	10.6%

Source: Competitiveness Industrial Performance Index (UNIDO 2015d).

MENA countries fare much better. In line with Table 3-32, the share of medium- and high-technology activities in manufactured exports for Oman has increased a little, mainly in the medium-technology exports. Finally, Oman's score in the Industrial Export Quality Index increased markedly (by about 50 percent) - a clear indication of the country's improved competitiveness. All other countries also advanced except for Qatar, who saw a decline of about 29 percent.

Table 3-32: Indicators of industrial performance, manufactured exports, selected MENA countries, 2005 and 2012

	Manufactured exports per capita index (score)		Share of world manufactured exports index		Share of medium-and high-technology activities in manufactured exports		Industrial Export Quality Index (score)	
	2005	2012	2005	2012	2005	2012	2005	2012
Egypt	0.00	0.01	0.007	0.009	11.8%	30.6%	0.36	0.50
Jordan	0.02	0.02	0.003	0.003	29.1%	43.8%	0.57	0.64
Kuwait	0.18	0.21	0.014	0.014	8.4%	13.5%	0.25	0.29
Morocco	0.01	0.01	0.010	0.009	27.6%	42.5%	0.57	0.66
Oman	0.02	0.09	0.001	0.005	30.1%	34.1%	0.22	0.31
Qatar	0.09	0.28	0.002	0.010	60.2%	35.9%	0.41	0.29
Saudi Arabia	0.06	0.07	0.044	0.037	23.6%	35.6%	0.25	0.31
Tunisia	0.03	0.04	0.010	0.007	31.4%	45.3%	0.62	0.70
United Arab Emirates	0.11	0.07	0.014	0.010	9.4%	21.2%	0.13	0.18

Source: Competitiveness Industrial Performance Index (UNIDO 2015d).

Indicators of competitiveness: production and trade environment.

Table 3-33 provides comparative information on the competitiveness of the production and trade environment. With the exception of the logistics performance index (amongst the lowest in the group of MENA countries) Oman score fairly well in all indicators, particularly in terms of 'Infrastructure'. Within the group, Oman ranks in the middle of the group for 'Higher education and training' and 'Ease of doing business index'. The country's export and import durations are the second lowest in the group. In short, Oman's production and trade environment is adequate, but there are still areas for improvement, particularly in 'Logistics performance' and in 'Ease of doing business'.

The indicators of the GCI allow for further insights. Fig. 3-16 compares Oman's position within each indicator to other so-called 'transition' countries in 2012-2013. These countries have a GDP per capita between 9,000 and 17,000 US dollars, and for who, if highly dependent on mineral resources, the export of mineral goods make up less than 30 percent of total export. In the figure, the GCI score or the level of competitiveness, is between 1 and 7. The higher the score, the more competitive a country is within an indicator.

Oman performs better than other transition countries in terms of quality of institutions, infrastructure, and macroeconomic environment.

Table 3-33: Indicators of competitiveness, production and trade, selected MENA countries, 2012

	Cost to export (US dollars per container)	Cost to import (US dollars per container)	Infrastructure (rank)	Higher education and training (rank)	Ease of doing business index (rank)	Logistics performance index: Overall (1=low to 5=high)	Time to export (days)	Time to import (days)
Egypt	625	755	83	109	113	2.98	12	15
Jordan	825	1,335	60	55	116	2.56	13	15
Kuwait	1,085	1,245	52	82	79	2.83	15	20
Morocco	577	950	61	101	68	3.03	11	15
Oman	745	680	33	61	60	2.89	10	9
Qatar	927	1,050	31	33	45	3.32	17	17
Saudi Arabia	765	936	26	40	44	3.18	13	17
Tunisia	773	858	77	73	56	3.17	13	17
United Arab Emirates	630	590	8	37	25	3.78	7	7

Source: World Development Indicators (World Bank 2016c, 2016d, 2016e, 2016f) and Global Competitiveness Index (World Economic Forum 2013).



Figure 3-16: Competitiveness indicators, Oman and other transition countries

Source: Global Competitiveness Index (World Economic Forum 2013).

Overall, Oman performs better than other transition countries. With a score of 5.7, it does particularly well in the category 'Basic requirements', which includes indicators for institutions, infrastructure, and macroeconomic environment. Only in higher education and training and market size do Oman have a lower score than the average.

The size of the market, which cannot be addressed by policy interventions, is a problem for promising establishments. Reaping economies of scale is required for competitive production, and entrepreneurs who start in the domestic market will find it difficult to enter export markets.

The problem of a small market size is aggravated by the market segmentation. The large numbers of expats in low paid jobs spend their money on basic necessities and remit the remainder. Expats in high paid jobs also remit part of their income and spend more on imported high quality and luxury goods. The expenditure pattern of Omani workers and employees is probably more continuous over the range of local and imported products. Data on the income distribution of Oman would shed more light on this but these are not readily available. Moreover, the high value of the Omani Rial makes imports relatively cheap. All these factors together make the market even smaller. A detailed market survey identifying possibilities for domestic production would be beneficial to domestic entrepreneurs. However, comparatively speaking, Figure 3-16 suggests that Oman is doing well in creating a competitive environment.

The problem of a small market size is aggravated by the market segmentation.

Firms still experience production problems, but comparatively speaking Oman is doing very well in creating a competitive production environment.

In the **Executive Opinion Survey** conducted by the World Economic Forum the industry businesses were asked to select and rank what they considered to be the most problematic factors for doing business in Oman. Figure 3-17 shows how businesses viewed the business environment at the time of the survey. The top three problems were: listed as restrictive labor regulations (28 percent of responses), an inadequately educated workforce (21.8 percent of responses), and poor work ethic in national labor force (17.5 percent of responses). On the other hand, the figure shows that few businesses experienced problems in terms of political instability, corruption, tax rates, foreign currency regulations, crime and theft, tax regulations, government instability, and public health.

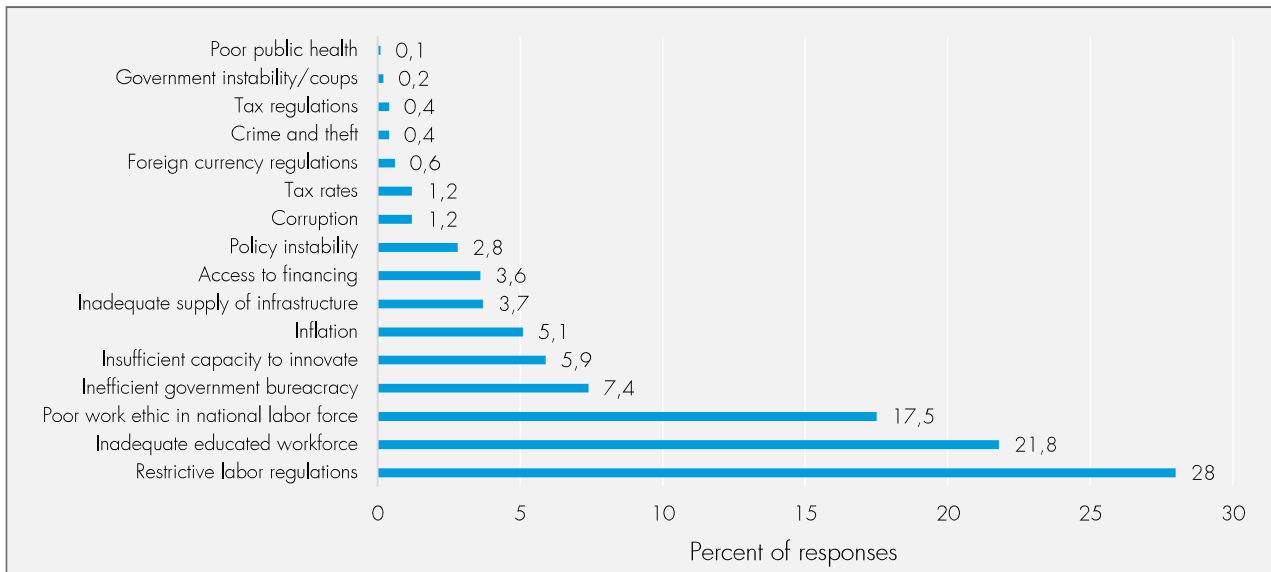


Figure 3-17: Problems of doing business in Oman

Source: Global Competitiveness Index (World Economic Forum 2013).

Summary: Evaluating Oman's manufacturing performance

In the period 2005-2012, the manufacturing sector has become an important engine of growth in Oman's economy. Overall, Oman's manufacturing sector is falling short in most performance indicators compared to the other GCC countries but in general does better than the remaining countries in the MENA group. It is the only country in the MENA region, which has experienced significant progress in every indicator of UNIDO's Competitiveness Industrial Performance Index between 2005 and 2012. Although the share of resource based exports had increased to about 60 percent of total manufactured exports in 2012 from constituting a little less than half seven years earlier, manufacturing export also grew to a share of about 20 percent. The government's policy efforts to create facilitating industrial infrastructures translated some structural changes within the sector towards more medium-tech production and export hereof.

Among the main problem for doing business in Oman, and hence impeding further and more rapid industrial development, is the size of its internal market, which limits the capacity of entrepreneurs to reach economies of scale and related export competitiveness. The top three problems experienced by firms are restrictive labor regulations, inadequately educated workforce, and poor work ethic in national labor force. Future policy making will have to deal with this.

4

Social and environmental impact of industrial development in Oman

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Industrialization is an engine of job creation and is also associated with better quality jobs that improve the wellbeing of the workforce. Compared to agriculture and non-tradable services, the productivity of manufacturing jobs is higher and hence so are wages, employee benefits and security (UNIDO 2013). There is ample evidence that industrial structural change can reduce poverty significantly as, for example, employment-intensive industries have low entry barriers, benefiting people with little skill and education (Weiss 2013; UNIDO 2013). Finally, in addition to inclusivity, sustainable industrial development entails economic growth that does not degrade the environment.

This section assesses the quantitative and qualitative impact of industrialization in Oman. First, it considers manufacturing employment growth in the period 2005-2012, and industries in which there is particular potential for future job creation. Secondly, by assessing differences in the distribution of resources across gender and geographical location, it assesses the inclusiveness of the manufacturing sector as a whole compared to other MENA countries as well as the relative inclusiveness within the sector. Finally, the section addresses the environmental footprint and energy efficiency of the manufacturing sector.

Employment creation

The ultimate objective of a nation's industrial policy is to provide gainful employment to its citizens by building an internationally competitive industrial sector. Industrial policy should be designed to encourage and support private initiatives enabling them to become a dynamic force of employment creation for entrepreneurs and for all categories of blue and white collar jobs. Another key policy objective is to attract foreign initiatives to complement domestic entrepreneurship and contribute with capital and technological know-how. Creating an enabling environment for private and foreign initiatives is not achievable alone through industrial policies and regulation. Public investments are needed to build effective infrastructures (physical and digital), and in some cases, such as when private investments is not forthcoming, productive investments are necessary too.

Table 4-1 shows manufacturing employment by industry in the period 2005-2012. In 2012, the industries with the largest shares in total manufacturing employment were 'Other non-metallic mineral products' (20.8 percent), 'Food products' (12.9 percent) 'Fabricated metal products, except machinery and equipment' (12.1 percent) and 'Basic metals' (11.7 percent). Together, these four industries accounted for 57.5 percent.

A number of industries stand out in terms of dynamic employment growth in the period: 'Basic metals' (444 percentage points), 'Other transport equipment' (383 percentage points), 'Wood products except furniture' (207 percentage points), 'Electrical equipment' (173 percentage points), 'Fabricated metal products, except machinery and equipment' (144 percentage points), Chemicals and chemical products (130 percentage points), and 'Computer, electronic and optical products' (118 percentage points). Also noticeable is the decline in the 'Wearing apparel' and 'Paper and paper products' industries with 56 percentage points and 26 percentage points, respectively.

Table 4-1: Manufacturing sector employment, by industry, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012	2012	
	Index								Absolute	Percent of total
Food products	100	105	119	134	143	144	136	141	9,050	12.9%
Beverages	100	94	104	123	126	151	165	161	2,804	4.0%
Textiles	100	92	80	77	74	74	232	198	660	0.9%
Wearing apparel	100	88	38	35	44	38	35	39	701	1.0%
Leather and related products	100	107	112	172	176	122	132	142	146	0.2%
Wood products except furniture	100	100	223	235	226	327	579	307	2,524	3.6%
Paper and paper products	100	93	111	110	116	93	88	69	482	0.7%
Printing and reproduction of recorded media	100	83	87	92	103	103	83	101	1,580	2.3%
Coke and refined petroleum products	100	105	185	177	177	202	139	159	1,906	2.7%
Chemicals and chemical products	100	98	111	122	148	154	157	230	4,833	6.9%
Pharmaceuticals, medicinal chemical and botanical products	100	121	97	169	183	134	120	134	669	1.0%
Rubber and plastics products	100	112	152	150	164	198	187	216	4,367	6.2%
Other non-metallic mineral products	100	107	112	125	151	149	147	169	14,536	20.8%
Basic metals	100	110	120	240	311	350	423	544	8,187	11.7%
Fabricated metal products, except machinery and equipment	100	129	190	175	202	217	157	244	8,457	12.1%
Computer, electronic and optical products	100	109	116	136	161	158	219	218	351	0.5%
Electrical equipment	100	114	151	175	188	205	246	273	3,152	4.5%
Machinery and equipment n.e.c.	100	85	104	138	135	160	158	177	695	1.0%
Motor vehicles, trailers and semi-trailers	100	118	145	138	149	447	474	141	133	0.2%
Other transport equipment	100	86	92	124	119	111	1143	483	406	0.6%
Furniture	100	105	176	187	194	214	224	186	2,905	4.2%
Other manufacturing	100	99	91	107	99	115	24	23	87	0.1%
Total	100	105	126	140	157	167	171	191	69,893	100.0%

Note: Based on Appendix C-20.
Source: Ministry of Commerce and Industry (2005-2012).

A graphical presentation of Table 4-1 allows for the identification of those industries, which are promising in terms of size and growth. Figure 4-1 shows that the only industries having experienced high employment growth and with a large share of total employment by the end of the period were 'Basic metals' and 'Fabricated metal products, except machinery and equipment'. Though second in size in 2012 and an overall growth of 41 percent over the period, 'Food products' had stagnated the last five years. Other relatively large such as 'Beverages', 'Furniture', 'Electrical equipment' and 'Wood products except furniture' increased steadily throughout the period.

Promising industries are 'Basic metals' and 'Fabricated metal products, except machinery and equipment'.

Identifying industries with real growth potential and diagnosing their opportunities and constraints is a crucial exercise in the policy planning process. This will feed into the design of industrial policies that effectively will target these industries with actions deemed appropriate to enhance their development.

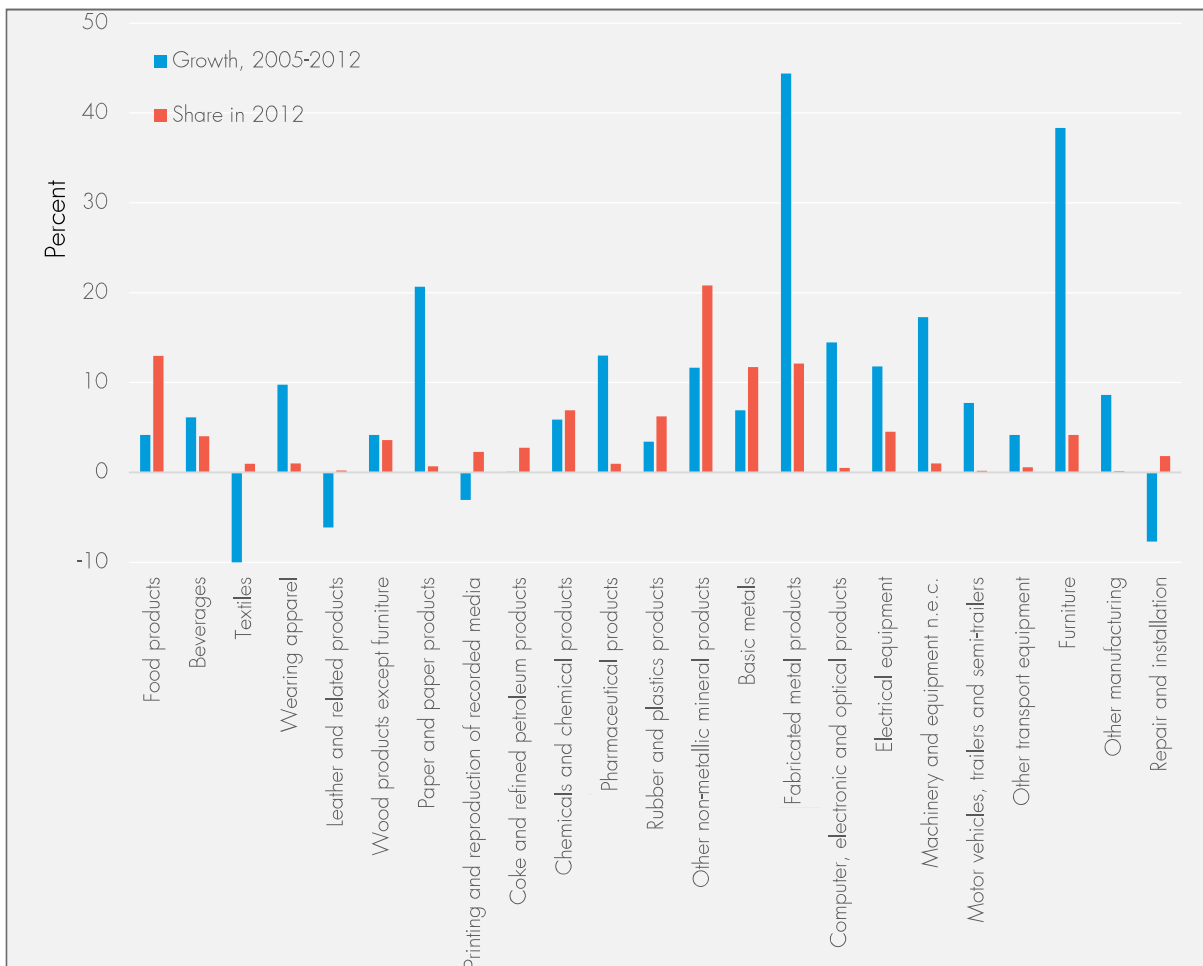


Figure 4-1: Identifying growth potential in manufacturing industries based on employment data, 2005-2012

Note: Growth percentages are multiplied by 10. Based on Appendix C-20, which contains employment data for all industries.
Source: Ministry of Commerce and Industry (2005-2012).

Omanization

Since the early 1990s, a central priority for the government of Oman has been to increase the participation rate of Omanis in the private sector. According to the Ministry of Development (1995, 2005), Omanization was 15 percent in 1995 and increased less than 10 percentage points over the course of a decade to 22.5 percent in 2005. Figure 4-2 suggest that a dominating share of Oman's workforce was still foreign workers in 2012. Relative to other GCC countries, Oman had, second to

Qatar, the highest proportion of expats in the private sector but the lowest in the public sector (see Callen et al., 2014). This highlights the important role of the country's public sector in providing employment to nationals.

Oman has the highest proportion of expat workers in the private sector compared to other GCC countries, but the lowest proportion in the public sector.

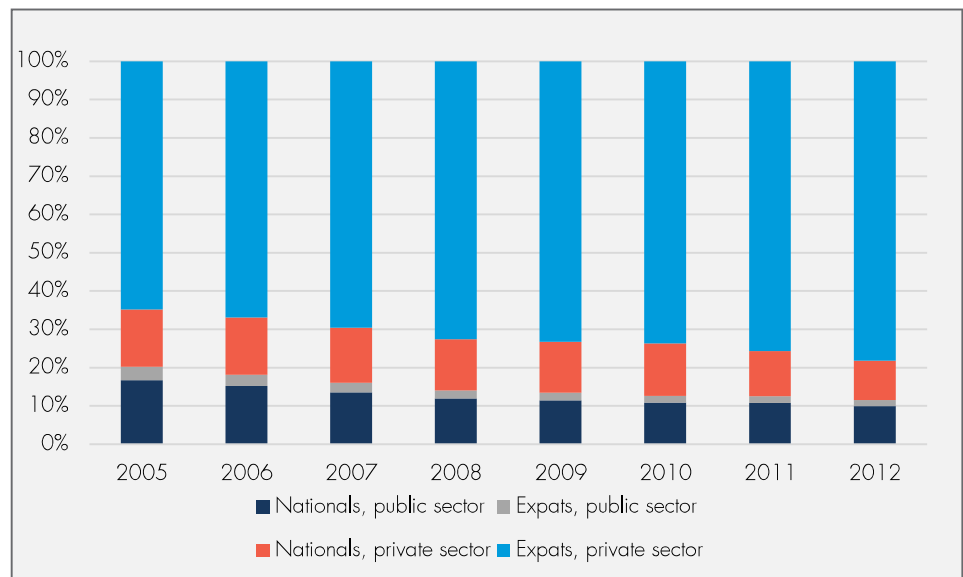


Figure 4-2: Expats and national workers in the private and public sector in Oman, 2005-2012

Notes: Data for Kuwait is from 2011.
Source: National Centre for Statistics and Information (2014).

The employment structure of the manufacturing sector was slightly different. Table 4-2 shows the distribution of Omanis and expats across different employment categories and selected industries in 2012. Overall, the share of Omanis in the manufacturing sector was approximately 30 percent. 64 percent of all employees in the selected industries were expats with the majority working in 'Other non-metallic mineral products', 'Food products', 'Fabricated metal products, except machinery and equipment' and 'Basic metals'. The industries with the highest share were 'Furniture' and 'Wearing apparel' with more than 80 percent expats. On the other hand, the lowest shares were found in the petroleum-related manufacturing industries 'Coke and refined petroleum products' (32.4 percent) and 'Chemicals and chemical products' (52.5 percent), whose development the government has been promoting.

Table 4-2: Persons engaged in the manufacturing sector, by type, industry and nationality, 2012

	Working proprietors, partners and unpaid family workers		Employees								Industry total	
			Managerial and professional staff		Skilled operatives		Unskilled operatives		Other		Total number of people engaged	Expatriate share
	O	E	O	E	O	E	O	E	O	E		
Food products	68	22	500	960	857	2,008	1,394	2,079	431	801	9,119	64.4%
Beverages	25	3	83	144	183	413	413	872	273	422	2,832	65.5%
Textiles	5	4	52	87	88	304	25	103	0	2	669	74.7%
Wearing apparel	6	4	29	15	23	379	73	167	0	15	711	81.6%
Wood products except furniture	87	0	24	279	1	1,847	326	42	5	0	2,611	55.0%
Coke and refined petroleum products	5	3	1,226	488	21	72	41	55	1	2	1,914	32.4%
Chemicals and chemical products	38	6	653	668	878	1,275	620	589	126	24	4,877	52.5%
Other non-metallic mineral products	732	73	869	1,170	1,154	5,188	850	4,506	273	516	15,332	74.7%
Basic metals	19	25	592	985	1,319	3,213	997	963	47	70	8,231	63.9%
Fabricated metal products, except machinery and equipment	80	21	216	593	620	4,445	750	1,512	216	106	8,557	78.0%
Computer, electronic and optical products	2	0	12	49	51	143	23	65	2	6	353	74.5%
Electrical equipment	9	3	271	543	758	1,052	219	290	12	7	3,164	59.9%
Furniture	13	9	97	305	207	1,706	81	462	12	35	2,927	86.0%
Total manufacturing sector	1,263	208	5,308	7,587	7,347	26,459	6,394	12,872	1,621	2,276	71,334	69.3%

Notes: 'O' is Omanis and 'E' is expats. See Appendix C-17 for all industries.
Source: Ministry of Commerce and Industry (2013).

On average, industries with higher wages employ more Omanis.

A relatively high skill level characterised the manufacturing sector and the selected industries. In the sector overall, the majority of employees were skilled operatives (39.5 percent) or had managerial or professional positions (15.3 percent), totaling more than 65 percent. Almost 40 percent of all manufacturing employees were skilled expats in the selected industries. The same industries also employed nearly the entire group of unskilled operatives (27 percent) in the manufacturing sector.

While expats dominated most employment categories in the selected industries, it is noticeable that the distribution was much more even among managerial and professional staff.

Such detailed employment data is not available for previous years, and it is henceforth not possible to assess to which extent the government's efforts have translated into increased Omanization across manufacturing industries.

Social inclusiveness in Oman's manufacturing sector

The unequal distribution of a country's resources between individuals and groups depending on their gender, geographical location, ethnicity etc. may lead to social exclusiveness. A central mean to reduce poverty and enhance shared prosperity is to increase the inclusiveness in a society (World Bank 2013). This can be measured by using various indicators such as multidimensional poverty, inequality, equity, social cohesion and empowerment. The UNDP's Human Development Index provides a recognized summary measure of social inclusiveness and ranks countries based on statistics of life expectancy, years of schooling and income per capita. In 2014, Oman was ranked number 52 out of 140 countries included in the index. As mentioned in Chapter 1, Oman was celebrated by the UNDP in 2010 as the country having achieved the biggest improvements in human development through the previous 40 years. Between 2010 and 2014, Oman's relative index position in the global ranking diminished slightly and it was the only country in the MENA group, who experienced a negative average annual growth in the index value. Nevertheless, with an index value of 0.792, Oman performs favorably compared to Jordan (ranked 78), Tunisia (ranked 96), Egypt (ranked 108), and Morocco (ranked 126), but worse compared to the other GCC countries: Kuwait ranked 47, United Arab Emirates ranked 40, Saudi Arabia ranked 39 and Qatar ranked 33.

Table 4-3: Human Development Index, selected MENA countries, 2010 and 2014

	2010		2014		Average annual HDI growth, 2010-2014
	Rank	Value	Rank	Value	
Egypt	107	0.68	108	0.69	0.33%
Jordan	73	0.74	80	0.75	0.17%
Kuwait	46	0.81	48	0.82	0.23%
Morocco	128	0.61	126	0.63	0.69%
Oman	49	0.80	52	0.79	-0.06%
Qatar	31	0.84	32	0.85	0.18%
Saudi Arabia	48	0.81	39	0.84	1.00%
Tunisia	94	0.71	96	0.72	0.26%
United Arab Emirates	35	0.83	41	0.84	0.21%

Source: Human development index (UNDP 2015).

Gender inequality

A key dimension of the Human Development Index is centered on the disparities between the genders. The Gender Inequality Index is useful for comparing gender disparity across countries. It is a composite measure capturing inequalities between men and women in terms of reproductive health, empowerment and labor force participation rate. Table 4-3 shows the Index ranking and values for Oman and other MENA countries. Compared to the other GCC countries, Oman ranks (53) behind United Arab Emirates (47) and better than Saudi Arabia (56), but far above Jordan (ranked 102), Morocco (ranked 117) and Egypt (ranked 131). Oman improved from a rank of 68 in 2010, which was the first year the index was presented.

Table 4-4: Gender Inequality Index, selected MENA countries, 2014

	Rank	Value
Egypt	131	0.57
Jordan	102	0.47
Kuwait	79	0.39
Morocco	117	0.53
Oman	53	0.28
Qatar	116	0.52
Saudi Arabia	56	0.28
Tunisia	48	0.24
United Arab Emirates	47	0.23

Source: Gender Inequality Index (UNDP 2015).

Another global index that sets to capture gender-based disparities is the Global Gender Gap Index, developed by the World Economic Forum. It ranks countries based on a summary measure of their economical, political educational and health performance evaluated through an extensive list of indicators. In 2013, Oman's overall ranking was 122 out of 133 countries – an unchanged position compared to 2010. While women and men are close to equal in terms of wages for similar work, health and education, the country falls particularly short in terms of labor force participation and political empowerment of which the latter is barely present.

Wage inequality between men and women is relatively low in Oman but the female participation rate is low.

Table 4-5 looks at indicators on economic participation and opportunity. With a rank of 126 and a female to male ratio of 0.36, the country ranks low in terms of equality in labor force participation. Relatively few women find employment as legislators, senior officials and managers – it has a female to male ratio of 0.1, which is low compared to the index sample. On the other hand, the share of women hired as professional and technical workers to that of men is closer to the index's average. On the other hand, Oman ranks very high (5) in terms of wage equality: on average women's wages are 79 percent of than of men. This is the only sub-indicator in which a mentionable improvement has taken place since 2010.

Omanis enjoy relatively low inequality when it comes to educational attainment. Though the country ranks 94, its index score is higher than the index's average. Moreover, Oman ranks first in 'enrolment in tertiary education' and its female-to-male ratio of 1.38 suggests that more women than men obtain university degrees or similar. The female position has strengthened since 2010.

Table 4-5: Gender gap index, indicators on economic participation and opportunity, 2010 and 2013

	2010				2013			
	Rank	Score	Sample average	Female to male ratio	Rank	Score	Sample average	Female to male ratio
Economic participation and opportunity	129	0.40	0.59		123	0.449	0.601	
Labor force participation	127	0.34	0.69	0.34	126	0.36	0.68	0.36
Wage equality for similar work (survey)	61	0.67	0.65	0.67	5	0.79	0.64	0.79
Estimated earned income (PPP US\$)	129	0.23	0.53	0.23	127	0.27	0.53	0.27
Legislators, senior officials and managers	112	0.10	0.27	0.10	106	0.10	0.26	0.10
Professional and technical workers	100	0.49	0.64	0.49	101	0.49	0.64	0.49

Note: A female to male ratio of 1 equals total equality, while a ratio of 0 equals total inequality.
Source: World Economic Forum (2013 and 2010).

Table 4-6: Gender gap index, indicators on educational attainment, 2010 and 2013

	2010				2013			
	Rank	Score	Sample average	Female to male ratio	Rank	Score	Sample average	Female to male ratio
Educational attainment	90	0.978	0.929		94	0.974	0.934	
Literacy rate	98	0.90	0.86	0.90	99	0.91	0.87	0.91
Enrolment in primary education	1	1.00	0.98	1.03	95	0.98	0.92	0.98
Enrolment in secondary education	87	0.99	0.92	0.99	79	1.00	0.60	1.00
Enrolment in tertiary education	1	1.00	0.86	1.18	1	1.00	0.87	1.38

Note: A female to male ratio of 1 equals total equality, while a ratio of 0 equals total inequality.
Source: World Economic Forum (2013 and 2010).

Table 4-7 shows that the share of women employees in the manufacturing sector has decreased from 7.5 percent in 2005 to 4.7 percent in 2012. This is primarily due to a significant drop in the 'Wearing apparel' industry - which in 2005 was the biggest industrial employer of women in Oman - from 55.1 percent to 32.7 percent. In all other industries, the actual number of female employees increased but for the most part more men were hired in the period. Nevertheless, the female employment share did increase in some industries including 'Chemicals and chemical products', 'Pharmaceuticals', 'Rubber and plastics products', 'Basic metals' and 'Electrical equipment'. In these industries, the number of female workers more than doubled and several times in some cases.

The share of women in total employment has decreased in most industries.

Table 4-7: Total and female employment (>100), selected industries, 2005, 2006 and 2012

	2005			2006			2012		
	Total employment	Female		Total employment	Female		Total employment	Female	
		Absolute	Share		Absolute	Share		Absolute	Share
Food and beverages	8,134	656	8.1%	8,368	685	8.2%	11,854	818	6.9%
Wearing apparel	1,809	996	55.1%	1,599	786	49.2%	701	229	32.7%
Printing and reproduction of recorded media	1,568	142	9.1%	1,307	111	8.5%	1,580	165	10.4%
Coke and refined petroleum products	1,201	90	7.5%	1,261	109	8.6%	1,906	129	6.8%
Chemicals and chemical products, pharmaceuticals	2,700	169	6.3%	2,770	185	6.7%	5,502	370	6.7%
Rubber and plastics products	2,018	62	3.1%	2,264	80	3.5%	4,367	236	5.4%
Other non-metallic mineral products	8,599	212	2.5%	9,175	150	1.6%	14,536	325	2.2%
Basic metals	1,405	22	1.6%	1,653	29	1.8%	8,187	186	2.3%
Fabricated metal products, except machinery and equipment	3,559	88	2.5%	4,458	106	2.4%	8,457	235	2.8%
Electrical equipment	1,024	16	1.6%	1,294	18	1.4%	3,152	139	4.4%
Furniture, other manufacturing	1,966	99	5.0%	2,043	99	4.8%	2,992	131	4.4%
Total manufacturing sector	36,743	2,768	7.5%	38,680	2,525	6.5%	69,893	3,299	4.7%

Notes: See Appendix C-21 for all industries.
Source: Ministry of Commerce and Industry (2005-2012).

Only in 'Wearing apparel' does foreign female labor make up a sizeable share.

Female expats make up 18 percent of total female employment in the manufacturing industries presented in Table 4-8 (see Appendix C-19 all industries). The majority of them are employed as skilled operatives or have managerial and professional staff positions. Only the 'Wearing apparel' industry has more female expats than Omani female employees. The industries with the least are 'Furniture, other manufacturing', 'Rubber and plastic products' and 'Chemicals and chemical products, pharmaceuticals'.

Table 4-8: Number of females engaged in the manufacturing sector (>100), by activity and nationality, selected industries, 2012

	Working proprietors, partners and unpaid family workers		Employees								Total			
			Managerial and professional staff		Skilled operatives		Unskilled operatives		Other					
	O	E	O	E	O	E	O	E	O	E	O	E	Total	Omani share
Food products	3	2	77	22	167	34	355	12	72	9	673	79	753	89.4%
Wearing apparel	1	0	7	2	20	128	71	0	0	0	99	130	229	43.2%
Printing and reproduction of recorded media	5	0	47	4	27	12	68	0	2	0	149	16	165	90.3%
Coke and refined petroleum products	0	0	112	14	0	1	2	0	0	0	114	15	129	88.4%
Chemicals and chemical products	7	0	164	14	73	9	21	1	2	0	267	24	291	91.8%
Rubber and plastics products	2	0	70	8	65	3	72	4	11	1	220	16	236	93.2%
Other non-metallic mineral products	13	5	174	31	23	5	45	1	20	7	276	48	325	84.9%
Basic metals	0	0	124	26	29	1	2	0	4	0	159	27	186	85.5%
Fabricated metal products, except machinery and equipment	8	0	79	11	86	24	18	3	3	3	193	42	235	82.1%
Electrical equipment	1	0	50	17	50	7	13	0	0	1	114	25	139	82.0%
Furniture	2	0	41	2	68	2	0	0	0	0	111	4	115	96.5%
Total	101	7	1,051	201	805	238	713	22	133	27	2,804	493	3,298	85.0%

Notes: 'O' is Omanis and 'E' is expats. See Appendix C-19 for all industries.
Source: Ministry of Commerce and Industry (2013).

Table 4-9 shows that with the exception of 'Pharmaceuticals, medical and chemical products' the industries with the highest female participation are those with average wages below the manufacturing sector's average. Large industries such as 'Coke and refined petroleum products', 'Chemical and chemical products', and 'Basic metals' have high average wages and low female participation. Other large industries such as 'Rubber and plastic products', 'Fabricated metal products', and 'Other non-metallic products' have lower than average wages.

The industries with the highest female participation rate are those with average wages below the manufacturing total average.

In addition, the correlation coefficients in Table 4-10 indicate that women in the period 2005-2012 to an increasing extent concentrated more in lower wage activities. This negative relationship may however be due to factors such as the nature of the job, the capital intensity and cultural preferences.

Table 4-9: Persons engaged in the manufacturing sector and average wage, by gender and selected industries, 2012

	Number of persons engaged	Share in manufacturing sector total	Male share	Female share	Average annual nominal wage (Omani Rial)
Wearing apparel	711	1.0%	67.8%	32.2%	2,452
Leather and related products	149	0.2%	69.8%	30.2%	2,898
Other manufacturing	92	0.1%	82.6%	17.4%	2,179
Textiles	669	0.9%	85.8%	14.2%	4,383
Pharmaceuticals, medicinal and chemical products	670	0.9%	88.2%	11.8%	6,688
Printing and reproduction of recorded media	1,621	2.3%	89.8%	10.2%	4,317
Motor vehicles, trailers and semi-trailers	133	0.2%	90.6%	9.4%	3,637
Food products	9,119	12.8%	91.7%	8.3%	4,608
Coke and refined petroleum products	1,914	2.7%	93.3%	6.7%	8,580
Chemicals and chemical products	4,877	6.8%	94.0%	6.0%	12,352
Rubber and plastics products	4,431	6.2%	94.7%	5.3%	4,390
Fabricated metal products, exc. machinery and equipment	8,557	12.0%	97.3%	2.7%	5,067
Basic metals	8,231	11.5%	97.7%	2.3%	8,013
Other non-metallic mineral products (a.o. cement)	15,332	21.5%	97.9%	2.1%	4,580
Subtotal	56,506	79.2%			
Total manufacturing sector	71,334	100.0%	95.4%	4.6%	5,741

Note: For detailed data for total and female engagement in the manufacturing sector see Appendix B-4, Tables B-17 and B-18, respectively. See Appendix B-4, Table B-21 for industry-level wage data.
Source: Ministry of Commerce and Industry (2013).

Table 4-10: Correlation between percentage women and average wage across manufacturing industries, 2005, 2006 and 2012

	2005	2006	2012
Correlation coefficient	-0.17	-0.18	-0.32

Source: Ministry of Commerce and Industry (2005-2012).

Regional differences

This section considers geographic inequalities in terms of differences in employment and income opportunities in Oman's manufacturing sector.

Table 4-11 shows the shares of employment and value added by region in 2012. Muscat (49.1 percent), Al Batinah North (28.1 percent), Dhofar (7.4 percent) and Al Dakhliya (5.2 percent) were the regions with the highest employment shares, together accounting for 89.8 percent of total national employment. The shares (for both employment and value added) in the remaining regions ranged between 0.1 to 2.5 percent. The regions' ranking is noticeably different when considering value added. Al Batinah North (43.6 percent), Ash Sharkiya North (28.5 percent), Muscat (19.5 percent), and Dhofar (3.9 percent) rank the highest, and together they account for 95.5 percent. These distributions have changed significantly since 2005. Back then, the majority of manufacturing value added was generated in the Ash Sharkiya region (61.2 percent), which in 2012 was responsible for less than a third (28.5 percent). On the other hand, Al Batinah, the leading region in 2012, had a value added share of just 5.4 percent. In terms of employment, the Al Batinah region was also the big advancer as its share in 2005 was just 5.4 percent. Most other regions saw a decline, particularly Muscat.

Table 4-11: Distribution of manufacturing sector employment and value added, by region, 2005 and 2012 (Percent)

Region	2005		2012	
	Employment share	Value added share	Employment share	Value added share
Musandam	-	-	0.1	0.0
Ash Sharkiya South1	3.3	61.2	0.4	0.0
Al Wusta	-	-	0.7	0.0
Adh Dhahirah	5.9	1.8	2.0	0.5
Ash Sharkiya North1	3.3	61.2	2.2	28.5
Al Batinah South2	16.7	5.4	2.2	0.5
Al Buraimi	-	-	2.5	0.6
Al Dakhliya	3.0	1.1	5.2	2.8
Dhofar	7.8	4.0	7.4	3.9
Al Batinah North2	16.7	5.4	28.1	43.6
Muscat	63.4	26.4	49.1	19.5

Note: Manufacturing value added at current Omani Rial. In 2005, Ash Sharkiya South and North was united as was Al Batinah South and North, and their shares in that year should be aggregated.
Source: Ministry of Commerce and Industry (2005-2012).

The differences between the order of value added shares and employment shares across regions indicate the extent to which labor productivity (measured as value added over employment) in the manufacturing sector varies geographically. A simple regression analysis reveals a significantly positive relation between the two indicators.¹⁰ Table 4-11 shows that the region Ash Sharkiya North has the highest labor productivity in the country with a level more than eight times higher than the country average. At the other end of the specter is Al Wusta whose level is not even one percentage of the average level.

Table 4-12 also shows the regional distribution of employment per capita, which gives an indication of the probability of finding a manufacturing job within each region. The highest probability is in Al Batinah North, followed by Muscat and Al Buraimi, while the lowest is in Ash Sharkiya South. Such differences may be explainable by higher possibilities of finding jobs in other sectors such as agriculture.

The highest probability of finding employment is in Al Batinah North, Muscat and Al Buraimi, while the lowest is in Ash Sharkiya South and Musandam.

Not only is it more likely to find a manufacturing job in Al Batinah North, the region also has the second highest level of labor productivity. As the latter is positively correlated with average wages (see Section 4),¹¹ there is a good chance of getting a high paid job here. However, the correlation between employment per capita and labor productivity is not significant across regions, and even negative in some cases, making Al Batinah North an exception.

While the above tables give a snapshot of the inequalities between regions, in the following, the so-called Lorenz Curve provides an illuminating graphical depiction of these differences (Figure 4-3). Moreover, calculation of the Gini coefficient (Table 4-13) gives a precise mathematical measure of the geographical inequality in Oman.

Table 4-12: Labor productivity and employment per capita in the manufacturing sector, by region, 2012

Region	Employment	Value added	Labor productivity	Employment per capita
Al Wusta	518	221,146	427	0.014
Ash Sharkiya South	258	1,516,128	5,876	0.001
Al Batinah South	1,568	17,034,603	10,864	0.005
Al Buraimi	1,772	19,777,837	11,161	0.020
Adh Dhahirah	1,432	17,202,821	12,013	0.008
Musandam	64	1,073,723	16,777	0.002
Muscat	34,391	672,668,735	19,559	0.031
Dhofar	5,161	134,818,135	26,122	0.015
Al Dakhliya	3,662	96,959,236	26,477	0.010
Al Batinah North	19,662	1,501,709,316	76,376	0.033
Ash Sharkiya North	1,535	983,819,506	640,925	0.007

Note: Manufacturing value added at current Omani Rial.
Source: Ministry of Commerce and Industry (2013).

¹⁰ A simple regression (with intercept zero) between employment share and value added share shows a significant coefficient with a t-value of 3.2 and an adjusted R square of only 41 percent.

¹¹ Data on average wages is not available on a regional level.

Per capita value added is more unequally distributed than employment. Rural or non-estate industries may be more labor intensive.

The Lorenz Curve in Figure 4-3 depicts the cumulative distribution of per capita value added (orange line) and per capita employment (blue line) across the total number of regions in Oman. It shows that a little more than 80 percent of the regions hold about 20 percent of the total value added per capita, and almost 60 percent of the total per capita employment. A comparison of the orange and the blue line shows that the per capita employment distribution is closer to the 45-degree line than the per capita value added distribution. This means that per capita value added is more unequally distributed in the country than employment. One explanation may be that rural industries or no-estate industries are more labor intensive and therefore have relatively higher employment compared to value added.

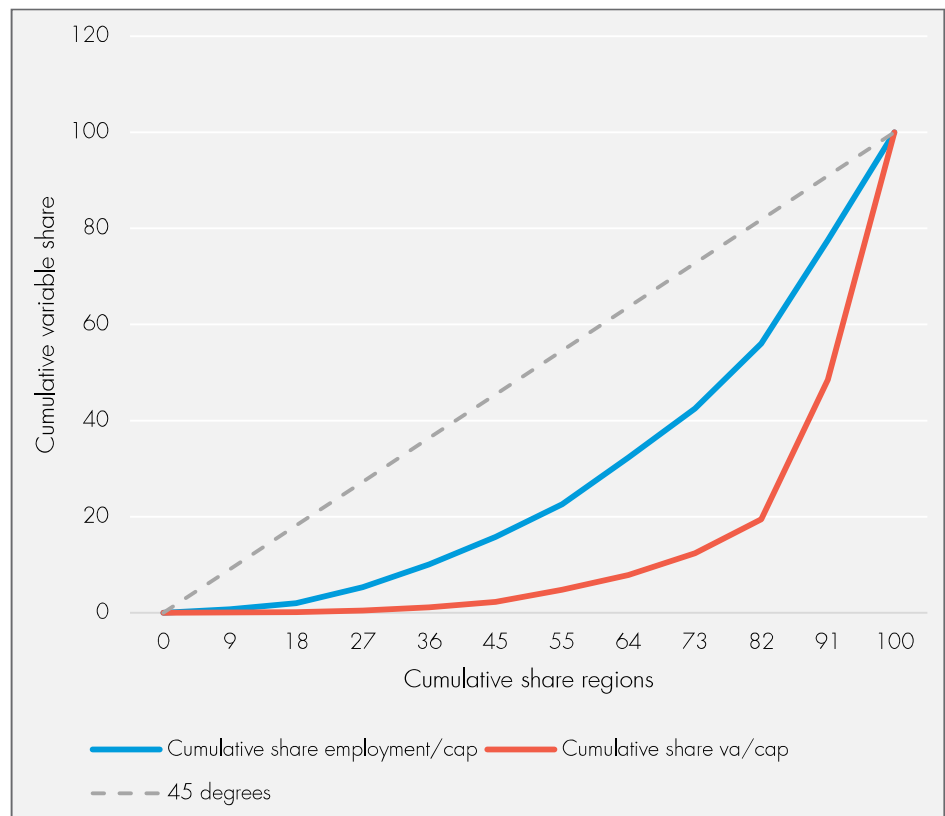


Figure 4-3: Lorenz Curve of per capita employment and per capita value added in the manufacturing sector across Oman's regions, 2012

Note: Calculated based on Table 4-12.
Source: Ministry of Commerce and Industry (2013).

The Gini coefficient measures the inequality among values of a frequency distribution. A coefficient of zero expresses perfect equality and a coefficient of one expresses maximal inequality. In Figure 4-3, it can be understood as the ratio of the area between the 45-degree line (perfect equality), and the blue line (observed equality) and the area under the 45-degree line. If the blue line and the 45 degree line should coincide, it would imply that all regions enjoyed equal shares of employment and the ratio between the two areas would be zero.

In the case of full inequality (all employment is concentrated in a single region), the blue line would be zero along the horizontal axis until it reached 100 percent. At this point it would increase to 100 percent on the vertical axis and meet the 45-degree line – hereby representing the “line of perfect inequality”. The area between the two lines would now be equal to the area under the 45-degree line and thus their ratio would equal one.

The same interpretation holds for the value added distribution represented by the orange line in Figure 4-3. However, in general, as the Gini coefficient is highly dependent on the level of aggregation, comparisons over time and between different variables is only feasible if the same spatial unit is used.

Table 4-13 shows various Gini coefficients for employment and value added in Oman’s manufacturing sector between 2005 and 2012. For all years, the lowest coefficient is employment per capita, implying that the regions are more equal in terms of this measure compared to any of the other three. The regions are most unequal in terms of manufacturing value added, closely followed by value added per capita. Over the period, the inequality increased for all indicators, however, this is not necessarily bad as manufacturing development needs a certain degree of concentration and some regions just have better opportunities for expansion.

Environmental footprint of the manufacturing sector

In both developed and developing countries, along with improvements to general living standards from industrial development have also followed environmental hazards. Industries’ energy usage continuous to affect the environment through, among other things, natural resources depletion and pollution of air, water and land, ultimately alternating the climate and causing extreme weather events. At the same time, manufacturing production is vulnerable to all of these impacts, which may impede economic and industrial development. (UNIDO 2011)

Table 4-13: Measures of regional inequality in per capita employment and per capita value added in the manufacturing sector, 2005-2012

	Gini value added	Gini value added per capita	Gini employment	Gini employment per capita
2005	65.2	66.3	56.0	31.0
2006	63.1	64.5	56.0	31.4
2007	57.7	51.7	59.4	35.5
2008	61.0	63.9	57.6	31.3
2009	48.4	45.6	55.0	30.6
2010	51.0	44.8	58.5	34.7
2012	70.8	68.6	64.9	35.1

Note: Calculated based on on Table 4-12.

Source: Ministry of Commerce and Industry (2005-2012).

Frequently assessing the environmental performance of industries is vital for a country to secure a path towards sustainable industrial development. Limited time-series data is available on industry-level energy consumption and emissions in Oman's manufacturing sector. This makes it difficult to provide more than a snapshot of the industries' relative performance to one another. On the other hand, data allows for a comparison of the sector's total emissions compared to other MENA group countries.

Efficiency and intensity of energy consumption in manufacturing production

In economics, energy efficiency is a measure for the amount of economic activity produced per unit of energy, or put differently, the ratio between the value of output to the cost of energy inputs. The inverse hereof is energy intensity, which is the energy usage for the production of one unit of economic activity (UNIDO 2011). Reducing energy intensity, and hence improving energy efficiency, in the manufacturing sector is a key imperative for a country to improve economic competitiveness and sustain growth momentum (UNIDO 2014a).

If measuring energy input in tones of oil equivalent and economic activity in value added, the energy intensity of a manufacturing process can also be described as the energy usage per unit of value produced (UNIDO 2011). Figure 4-4 shows energy intensity (energy purchased per unit of value added) in selected manufacturing industries in Oman in 2012. Unfortunately, data is not available for other years and no insights can be gained on any developments in energy intensity. Still, the figure does provide a useful snapshot of the relative difference between industries, and it is possible to interpret the data when analyzed in parallel to the industry-specific energy intensity classification given in Table 4-14.

'Basic metals' was the most energy intensive industry in 2012. This is not surprising as heavy use of energy is intrinsic to the industry's production processes. The same applies to 'Other non-metallic mineral products' and 'Rubber and plastic products', which ranked fourth and fifth in terms of energy intensity.

On the other hand, data suggests that 'Wearing apparel' and 'Computer, electronic and optical products' were very energy intensive industries, while they usually have a low or moderate (respectively) insensitivity. These seemingly high values might be due to data problems.

At the other end of the scale is 'Coke and refined petroleum products' and 'Chemicals and chemical products' with records demonstrating a much lower energy intensity than usually seen in these industries. This could mean several things: a) the value added contains a large proportion of economic rent, b) the value added process is indeed not energy intensive, c) the industries utilize their own energy resources, or d) any combination of the above. In the same way, 'Textiles' and 'Paper and paper products' are usually classified as high energy-intensive sectors but data does not conform to this.

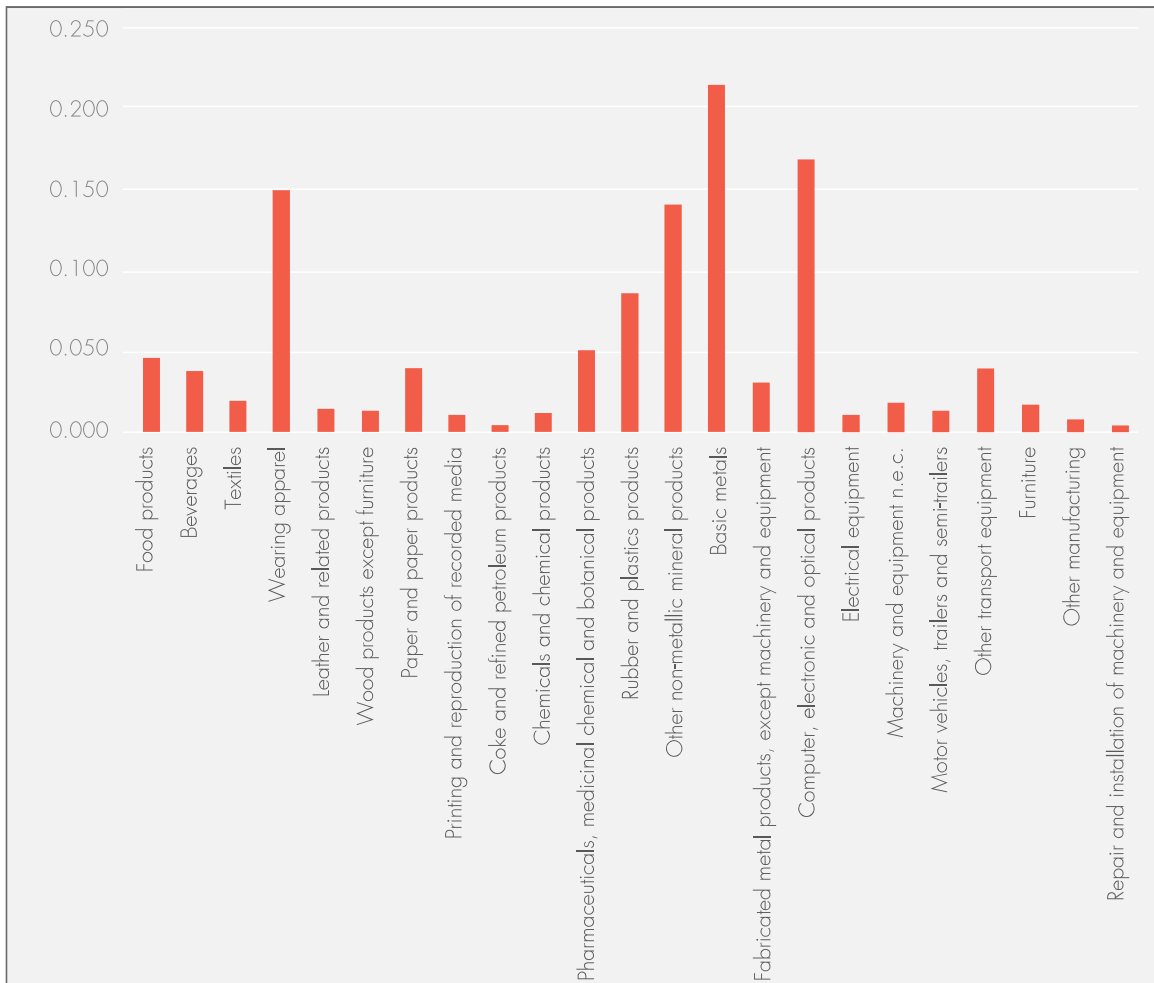


Figure 4-4: Manufacturing energy intensity, by industry, 2012

Source: Ministry of Commerce and Industry (2013).

Thus, the energy intensities recorded across Oman's manufacturing industries do not tally with general observations. Unless industry-specific circumstances can explain these discrepancies, more attention must be given to develop the existing survey data. Data from the International Energy Agency (2014) allow for a time series analysis of the 'Chemical and chemical products' and 'Non-metallic minerals' industries in the period 2005-2011. The energy intensity of both industries increased vastly; the former with 213 percent (from 813 to 2,546 tones of oil equivalent at an average annual rate of 44 percent) and the latter with 119 percent (but from a significantly lower level at 31 tones of oil equivalent in 2005).

The survey data on energy purchased by establishments seems to be unreliable. More attention to develop such data is needed in the future.

Carbon emissions from energy consumption

Oman's sizeable oil-export and its industrial structure makes the country a net exporter of carbon emissions. Both globally and in the developing country group, metals, chemicals and chemicals products and non-metallic minerals are the top energy consuming industries. If Oman continues its rapid development of these energy intensive industries (unless special conditions apply, see above), the emission balance is likely to worsen unless appropriate mitigation and adaption measures are implemented on an industry-wide scale.

Part of the growth in Oman's manufacturing sector was in polluting industries. All other MENA countries except United Arab Emirates reduced their emissions.

In the period 2005-2011, Oman's emissions of CO₂ per 1,000 US dollars of manufacturing value added increased from 2.3 grams to 4.8 grams (Figure 4-5). This makes it the highest carbon emitter in the MENA group of countries. Only Oman and the United Arab Emirates increased their emissions in the period, Morocco remained unchanged at 0.8 grams and the four remaining countries decreased their emissions with 32 percent on average.

Table 4-14: Energy intensity classification by industry

High energy-intensive	Moderate energy-intensive	Low energy-intensive
Textiles	Food products and beverages	Tobacco products
Paper and paper products	Wearing apparel	Machinery and equipment n.e.c.
Coke and refined petroleum products	Leather products	Office, accounting and computing machinery
Chemical products	Wood and wood products	Electrical machinery and apparatus n.e.c.
Non-metallic mineral products	Printing and publishing	Radio, TV and communication equipment
Basic metals	Rubber and plastic products	Medical, precision and optical instruments
	Fabricated metal products	Motor vehicles, trailers and semi-trailers
		Other transport equipment
		Furniture and other manufacturing n.e.c.
		Recycling

Note: Industry classification by 2-digit ISIC branches.
Source: Upadhyaya (2010).

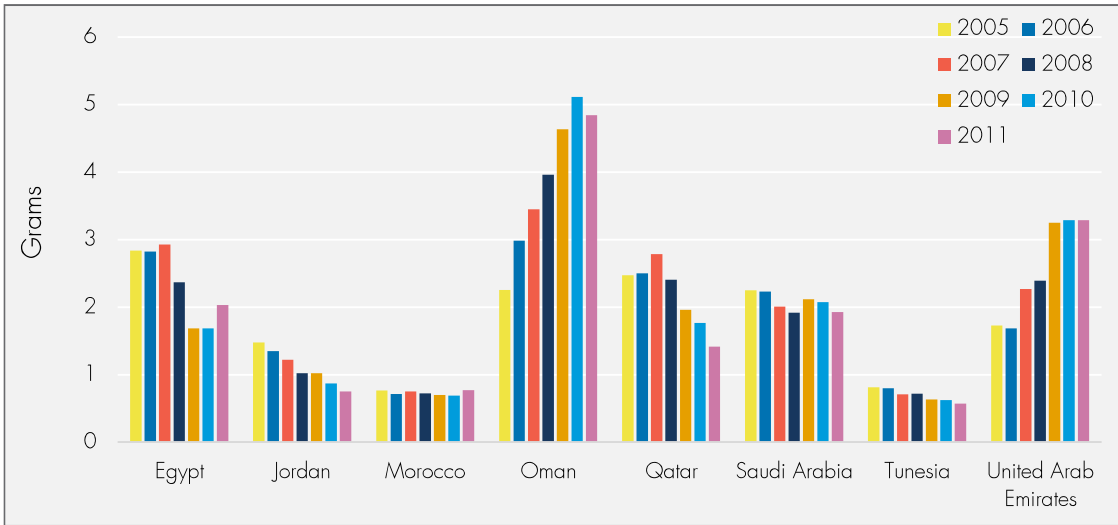


Figure 4-5: CO2 emissions from manufacturing and construction in grams per 1000 US dollars, manufacturing value added, selected MENA countries, 2005-2011

Note: Data for Kuwait are not available.
 Source: World Development Indicators (World Bank 2015).

Considering instead emissions in per capita terms (Figure 4-6), Oman set the record in 2011 with 1.6 grams, which was more than 60 times higher than Egypt (0.03 grams) and Morocco (0.02 grams), and a little more than twice that of Qatar (0.7 grams). Oman was the only country in the group to experience an increase in per capita emissions between 2005 and 2011. While its emissions rose with 79 percent over the period, all other MENA

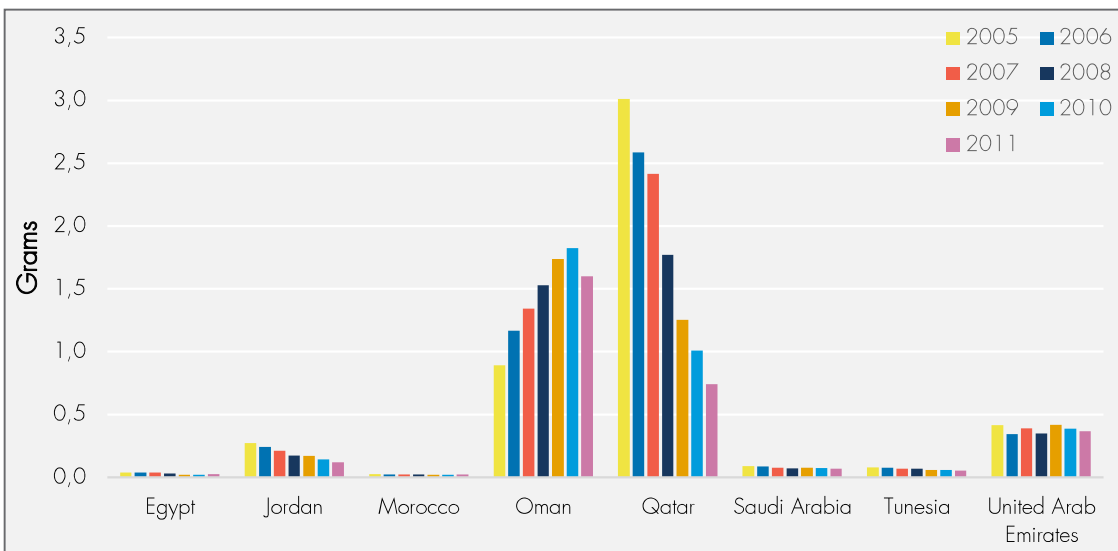


Figure 4-6: CO2 emissions in manufacturing and construction in grams per capita, selected MENA countries, 2005-2011

Note: Data for Kuwait are not available.
 Source: World Development Indicators (World Bank 2015).

countries reduced theirs, notably Qatar and Jordan with 75 percent and 55 percent, respectively.

Summary: Seizing the potentials

When Oman in 2010 was recognized for its remarkable improvements in human development, it was based on advances made over a 40 year period during which the country's new oil-wealth allowed it to evolve from a very poor to a very rich country, successfully converting oil to health and education. This section offers a snapshot of the country's progress in a shorter but more recent time interval. Particularly, it attempts to identify the manufacturing sector's contribution. The sector has proven to be an engine of job generation. Between 2005 and 2012, the sector expanded with 91 percent to almost 70,000 workers in the surveyed firms (>10 employees). The fact that these jobs were created in dynamic sectors, particularly in the basic metals and fabricated metal industries, both of which are medium-tech industries, is an indication of higher living standards as they promise higher wages and benefits for workers.

Progress has also been made in terms of Omanization. In 2012, 30.7 percent of workers in the (surveyed) manufacturing sector were Omanis. However, this is still a far cry from the aspirations in the Vision 2020, which targeted an Omanization degree of 75 percent in the private sector and 5 percent in the public sector by 2020 (Ministry of Development 1995). Compared globally, Oman ranks poorly in terms of gender equality, noticeable due to low female participation on the labor market. In the manufacturing sector, the female participation share has decreased since 2005. Moreover, substantial regional differences have occurred in the period, with the majority of value added and employment concentrated in three of the country's regions.

The section also considers the environmental performance of the manufacturing sector. It is particularly noteworthy that the industries generating the most jobs in 2005-2012, also were most energy intensive ones. The changes in the structure of Oman's economy towards more sophisticated and energy-intensive manufacturing products are likely to have contributed to the increasing emission levels. As do other developing countries, Oman faces the great challenge of industrializing while keeping emission levels under control. At the same time, there are major economic and social benefits from encouraging manufacturing industries to adopt energy efficient systems and behavior, and to develop new greener and higher-value added products (see UNIDO 2011).

The 2012 manufacturing sector survey was the first of its kind to collect detailed information about engagement levels based on activity and nationality, and energy consumption. Future surveys will need to continue this level of data collection as to allow for more accurate measurement of the environmental performance of the industries, the extent to which they absorb Omani and female workers, and their capacity to create new jobs. This will enable policy makers to design and implement appropriate policy measures to steer the economy towards inclusive and environmentally sound industrial development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987).

5

Conclusion

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Oman's natural resource rent peaked in 2006 at 53 percent and has since then declined to 36.7 percent in 2012 possibly due to increased production costs, which may indicate limits to future oil exploitation. This, together with the instability of global oil prices, affects state balances and underpins the government's quest to facilitate non-oil based industrial development.

Since 1975, the Government of Oman has been keenly aware that the development of the non-oil sector was to be a key policy priority to achieve sustained economic growth. In every Five-Year Development Plan since 1976 and till today as well as the in Vision 2020 - the long-term economic strategy of Oman - the manufacturing sector was highlighted as a central pillar for a diverse economy.

Main priorities throughout the years have been to develop the private sector, attract foreign direct investments, increase export competitiveness, promote education and skill training, stimulate domestic entrepreneurship and SMEs and Omanization. The policies formulated and progressively implemented have provided for a conducive institutional and infrastructural environment, and the manufacturing sector has undergone significant changes. Almost two decades after the Vision 2020 was formulated it is timely to assess if the manufacturing sector has fulfilled the objectives envisaged.

Key observations: structure and changes in Oman's manufacturing sector

- **Improved position of the manufacturing sector:** The manufacturing sector expanded rapidly between 2005 and 2012. With an annual average growth of 8.5 percent, the sector grew faster than economy overall (5.1 percent) and activities related to petroleum, services and agriculture and fishing. As a result, manufacturing comprised almost 11 percent of the total economy in 2012 compared to 8.6 percent in 2005. In terms of per capita value added, the sector showed a healthy growth performance of 4.2 percent over the period. Its value added share of GDP does well in a regional comparison: while Oman outperformed the other GCC countries, the remaining MENA countries – those whose export did not depend on oil - did better.
- **Structures of a growing sector:** As of 2012, industrial estates were home to a sizeable share of Oman's manufacturing establishments (37.2 percent) and employees (45.5 percent), suggesting that the average firm size was larger inside the estates than outside. Average firm size in terms of employment and value added per establishment for the manufacturing sector increased from 74 employees and 2,800 Omani Rial per firm in 2005 to 100 employees and 4,381 Omani Rial in 2012. Most establishments are Omani-owned (77.6 percent) and 2.1 percent full foreign ownership – the rest has mixed ownership. Between 2009 and 2012, the manufacturing sector was on average the largest receiver of FDI in the economy. However, Oman's attractiveness as an FDI destination appears to have eroded compared to other countries in the MENA region FDI during this period.
- **Signs of structural change – moving towards higher value added production:** The composition of Oman's manufacturing sector has also changed notably. Previously, the 'Coke and refined petroleum products' industry comprised more than half of the sector's value added but in 2012 'Chemicals and chemical products' took the largest share. However, the sector had become more diverse with more industries assuming a mentionable share, including 'Basic metals' and 'Electrical equipment', both of which experienced significant growth rates. For the mentioned industries – expect the latter, which is not directly or indirectly related to oil exploitation – variations in oil prices may explain the large fluctuations in their growth rates. Oman's diversification level is closer to other GCC countries than to the remaining MENA countries, which enjoy a more balanced industrial development process.

Although overall, the material intensity and hereby the depth of the manufacturing process did not change in the period 2005-2012, substantive with-in sector changes occurred. While most of the large oil-related industries saw an increase in their material intensity, it significantly declined in 'Basic metals' and 'Electrical equipment'. Compared to other

MENA countries, Oman's has the second lowest material intensity, suggesting that the country has relatively more complex industrial processes.

Two measures of structural change, the so-called integral coefficient and rank correlation coefficient, show that significant change took place between 2006 and 2012 in terms of value added, but less in terms of employment and number of establishments. This, together with a relatively low (value added) diversification level, may suggest that capital-intensive firms carry industrial growth in Oman. To accurately account for structural changes in the manufacturing sector, future surveys will need to collect the statistics needed to construct input-output tables, which will enable detailed analyses of the sector's depth and integration.

- **Rising productivity of labor and capital:** In 2005-2012, labor productivity increased by 25.8 percent and took place across industries of all technological levels. For example, the three fastest growing industries were 'Chemicals and chemical products', 'Electrical equipment' and 'Printing and reproduction of recorded media'. A simple regression analysis shows that, on average, wages are higher in industries with high labor productivity, and correspondingly the growth of the wages and salary rates in these industries were among the highest. However, with few exceptions training efforts are very low in the manufacturing sector, which means that there is an enormous scope for improving labor skills, and hence wages, through in-house training in establishments. Although one must be careful interpreting data on capital used in production, it suggests a rising trend in capital productivity for all industries. Moreover, improvements in management, labor skills, technological capability, macroeconomic conditions and all other conditions of production facilitated an annual increase in total factor productivity of 5.8 percent enabled firms to make more efficient use of capital and labor. These figures seem realistic for a country like Oman, which is in the midst of industrializing.
- **Competitiveness – gaining a competitive edge:** Oman's manufacturing sector achieved momentum in the period 2005-2012 as the share of manufactured exports in total export rose from 7.5 percent to 20.3 percent. Despite such progress, Oman ranks second to worst compared to the other MENA countries. In terms of export per capita Oman's performs averagely but much higher than the non-GCC MENA countries.

In terms of quality, Oman's manufactured export has also undergone changes. Since 2005, resource based exports, i.e. products based on oil and gas, and food, has continued to gain momentum, comprising about 60 percent of all manufactured export. Medium- and high-tech exports have grown slightly while low-tech export has dropped significantly. Underlying these trends appear to be a general increase in the quality of the resource-based production – in the period 2005-2012, Oman's position in UNIDO's global Industrial Export Quality Index increased by almost 50 percent. This is an indication of improved competitiveness. According to UNDP's Global Competitive Index Oman has built a lucrative business environment, offering institutions, infrastructure, and macroeconomic conditions that outperform those of other transition countries.

Key observations: Social and environmental impacts of industrialization

- **Manufacturing as an engine of job creation but much still to be done for Omani and female participation:** The manufacturing sector has been an important driver for employment generation in Oman. Between 2005 and 2012, the sector expanded with 91 percent, employing almost 70,000 people in companies with more than 10 employees at the end of the period. Dynamic growth was particularly in 'Basic metals' and 'Fabricated metal products, except machinery and equipment'. These are the most dynamic industries in terms of growth and size. However, with almost 70 percent expats, the sector has not achieved the degree of Omanization as hoped for by the government. In comparison with the GCC countries, Oman has, second to Qatar, the highest proportion of expats in the private sector, while it has the lowest proportion in the public sector. This underlines the role the public sector continues to play in providing employment for locals.

Human development has improved remarkably in Oman in the last 40 years but slowed down in 2010-2014, where it actually declined slightly in comparison to the other MENA countries. This is not attributable to gender inequality, which generally improved in this period. While the wage gap between men and women is not large internationally speaking (on average women wages are 79 percent of those of men's), the female participation rate is very low. Overall, the share of women in total employment decreased from 7.5 percent in 2005 to 4.7 percent in 2012 but increased in certain higher value added sectors including 'Chemicals and chemical products, pharmaceuticals', 'Rubber and plastics products', 'Basic metals', and 'Electrical equipment'.

Industrialization is not occurring at the same pace across Oman's regions. Rather, employment creation is concentrated in Al Batinah North and Muscat, while very few jobs are created in Musandam. Even greater regional imbalances are found in per capita value added with the majority generated in the same two regions as well as Ash Sharkiya North. These differences may be explained by the presence of industrial estates and other industrial infrastructure creating better opportunities for manufacturing employment in some regions, while there may be better opportunities for finding jobs in for example the agriculture sector elsewhere.

- **Rising environmental footprint:** Oman's manufacturing sector is by far the most polluting in the MENA region in terms of carbon emissions per thousand US dollars value added. Together with the United Arab Emirates, it was the only country to increase its manufacturing emissions in 2005-2011. This reflects that Oman is shifting towards production (especially in 'Chemical and chemical products' and 'Non-metallic minerals' industries) that is of higher quality but also more energy intensive

Factors impeding manufacturing development

Although the sector demonstrated good progress in many aspects between 2005 and 2012, it has not happened swiftly enough to ensure Oman's transition away from oil dependence before 2020.

Current manufacturing production relies too much on oil-related activities, on cheap foreign labor and faces a number of institutional constraints that are not easily tackled in the short run. Moreover, manufactured export development needs a base in domestic competitiveness but the domestic goods market is small and fragmented. Under such circumstances only foreign investors will have the necessary experience to handle the challenges associated with product quality requirements, and the informational, financial, logistical and procedural hurdles of the export market.

Important weaknesses remain and continue to limit the role that the manufacturing sector can play in the medium term. First of all, the government has failed to achieve its Omanization objectives. Secondly, the growth of the manufacturing sector derives to a large extent from the success of oil-related sectors, directly as the upstream production process and indirectly through demand generated by economic rents. Thirdly, the manufacturing sector heavily relies on cheap foreign labor in both low and high skill activities. Entrepreneurs mention 'high cost of production', 'unfair competition', and 'shortage of skilled operatives', 'restrictive labor regulations' and 'poor work ethic in national labor force' as major problems, while the SME sector faces additional constraints in finance, and institutional and infrastructural support. Fourthly, inter-industry linkages in terms of domestically produced manufacturing inputs for other manufacturing sectors do not seem to be well developed.

Beyond the Vision 2020 objectives

A perspective beyond the horizon of 2020 is needed to strengthen, expand and complement the positive achievements of the past policy and planning efforts. For the manufacturing sector to play a leading role in achieving a path of sustained inclusive economic growth not based on oil, Oman must strengthen its policy efforts in a number of inter-dependent areas.

First, foreign ownership caps must be liberalized, hereby allowing more FDI to enter the country, creating more manufacturing jobs in the process. Secondly, the ability of locals to compete with expat labor must be enhanced through the expansion of technical and vocational training and cultivation of home-grown entrepreneurship. Programs to empower women to participate in manufacturing production processes would ease the pressures on the labor market and sustain family income even when overall wages in the private sector are lower than in the public sector.

Thirdly, more policy measures, such as higher minimum wages and benefits, must be introduced to encourage locals to look for employment in the private sector. In general, jobs in the public sector are much better paid than most jobs in the private sector, and the public sector is simply not capable to absorb the excess supply of labor (ILO, 2010; Saleh al-Shaibany 2013). To this end, targeted policy measures must be designed to nurture an industrial structure relying on technological sophistication and capability, where labor productivity is high and wages and salaries attractive. Again, the limiting factor is the lack of domestic entrepreneurial experience so that reliance on foreign direct investment would seem to be the logical but not necessarily desirable outcome. Of course, this is a matter of balance, form and conditions, not an either/or question.

Future policy formulation must be aided by industry-level studies, tracing the value chains of promising manufacturing activities, and identifying where public support could relieve the constraints and fulfill the potentials. This could lead to deeper integration between manufacturing industries, stimulation of business support activities in the private sector, cooperation between universities and private sector laboratories and research departments, and identification of areas for collaboration between manufacturing establishments.

Developing detailed statistical databases and strong analytical capacities will be essential to support the policy decision-making process at the Ministry of Commerce and Industry. Strengthening collaborations with the National Centre for Statistics and Information, the Customs Department, Ministry of Finance, the Chamber of Commerce and Industry and other available organs of expertise could facilitate this.

The Ministry's existing manufacturing sector statistics can be improved and expanded with firm level data on exports, imported inputs, domestically produced inputs, environmental indicators and capital assets (of which particularly the latter will require close scrutiny). Data should be available on different levels such as by region, gender, nationality and employment category.

The development of detailed input-output tables would provide the opportunity to investigate inter-industry linkages, and could form an important element in the development of nationwide supply and use tables. These could be further developed into a so-called social accounting matrix to be used for multi-industry macro-economic modeling. Such statistical tools can contribute to improved policy making at both macro- and industry level.

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Appendix A Annual Industrial Survey

About

The Annual Industrial Survey (AIS) (or annual survey of manufacturing industries) is an annual survey of businesses covering the manufacturing sector. It was introduced in 1993 by the Directorate General of Industry at the Center of Industrial statistics, which was founded at the Ministry of Commerce and Industry (henceforth, the “Ministry”) in the same year in cooperation with the Japanese Agency for International Cooperation (JICA). The first study dealt with the first industrial census in 1993, which covered all industrial enterprises registered and operating in all regions and provinces of Oman. The survey was conducted regularly since then and has provided very important data on the type of industrial production and the nature and structure of existing industries in terms of quality and size of the workforce and geographical distribution, wages, volume of industrial investment and the consumed energy and materials in the production processes. In 2003 the scope was modified to include only establishments with 10 and more employees. Establishments with less than 10 employees were served only once in three years.

The AIS is the largest business survey conducted by the Ministry, and is a key resource for understanding the structure and performance of businesses across the Sultanate. A large number of variables are available from the AIS; each survey respondent is about 70 different questions, with the responses then being used to derive further variables. Some of the most frequently used variables for analytical purposes include: turnover (the total value of businesses’ sales); purchases (the total value of goods and services purchased during the year and consumed by businesses in order to generate turnover); and approximate gross value added, a measure of the amount that businesses contribute to the economy.

The 2013 survey: Methodology and implementation

After almost 20 years of operation, the system needed to be revised and brought to the level of best international practices. In 2012, a UNIDO project was initiated, following a request by the government of Oman. The following needs had to be served by the project: (i) Improving the statistical methodology to keep in line with the International Recommendations for Industrial Statistics (IRIS 2008), which included a revision of the questionnaire and customization of the relevant parts to reflect the policy objectives in Oman; (ii) updating the statistical database system, the software for data entry, data processing and report generation and revision of the data dissemination plans (iii) development of indicators for monitoring and measuring both the overall performance of the industrial sector as a whole and the performance of its divisions; (iv) in order to achieve the above goals, the internal process and staffing currently in place in the Industrial Information Department had to be reviewed and alternatives to be suggested, in order to ensure effective implementation of the annual survey.

The main objective of the survey is to produce basic statistics for the manufacturing sector in the Sultanate of Oman. It provides information about the composition and structure of the organized Manufacturing Sector. More specifically, the survey is used to: (i) collect statistics on the operating characteristics and structure of manufacturing establishments operating in the Sultanate of Oman; (ii) assess the contribution of the Manufacturing Sector in the overall economy; (iii) provide statistics to monitor the performance of the Manufacturing Sector with current plans and strategies adopted by the Ministry as well as to obtain benchmark data for computing national accounts estimates by the National Centre for Statistical Information and to obtain benchmark data for the construction of Input-Output tables.

The 2013 survey covered all large manufacturing establishments licensed with the Ministry of Commerce and Industry and operating in Oman. Large establishments were defined as those employing 10 or more persons engaged. The initial frame comprised around 900 establishments as per list submitted by the Ministry. Establishments not licensed by the Ministry were not covered given that the list of such establishments was not available. The Ministry is advised to increase the coverage of the survey in future to include these

establishments as well as the small ones in order to have a global picture of the whole Manufacturing Sector.

According to International Standard Industrial Classification, ISIC Revision 4 (UN 2008a) manufacturing is defined as “the physical or chemical transformation of materials or components into new products, whether the work is performed by power-driven machines or by hand, whether it is done in a factory or in the worker’s home, and whether the products are sold at wholesale or retail. The assembly of the component parts of manufactured products is also considered as manufacturing activities.”

The survey questionnaire was designed according to “The International Recommendations for Industrial Statistics” (UN 2008b) of the United Nations and took into consideration the requirements of the Ministry as well as the National center for Statistical Information (NCSI). The information collected satisfies the needs of national accounts and should prove very useful to the government, business users and researchers. The questionnaire, in English, was drafted by an UNIDO expert, finalized after consultation with the Ministry and approved by the Ministry. It was later translated into Arabic by the Ministry and the bilingual version was used on field. A copy of the questionnaire in English as well as the instructions for filling the questionnaire can be found in the statistical report (Ministry of Commerce and Industry 2013).

The statistical unit of the survey was the establishment, defined as an economic unit, engaged in one, or predominantly one kind of economic activity at a single physical location under a single ownership or control. However, industrial enterprises, which are engaged in production of more than one related activity in one location or one activity in several locations, were treated as one unit of enumeration whenever no separate records are available. For certain firms which could not furnish separate data on an establishment basis, the enterprise was used as the unit of enquiry.

The data collection was undertaken by a trained team of enumerators and supervisors recruited by the Ministry. The field staff dropped the questionnaire in the business offices of the establishments, gave information and guidance on the filling in of the questionnaire. Some questionnaires were sent by mail as well. Detailed data were collected from November 2013 to November 2014 and refer to calendar 2012. Respondents were asked to provide the data from their accounting records.

Completed questionnaires were edited and coded by staff from the Ministry and entered into the new system designed within the context of the project. Entered data were checked for accuracy and consistency using broad parameters including technical/operation ratios in the field of industrial statistics. A control table comprising these parameters were also sent to the UNIDO Statistical Expert in MS-Excel format. The Expert submitted his comments which were used for final editing.

The response rate for the survey was nearly 95 percent in terms of employment. Estimates for non-responding establishments were made based on their activity and employment size and thus the results presented in this report refer to both responding and non-responding establishments. Details about the procedures for treatment of nonresponse can be found in Ministry of Commerce and Industry (2013).

This cleaned dataset was used to generate statistical tables according to an agreed tabulation plan which comprise a comprehensive set of basic statistics for the manufacturing sector, which will prove useful to the Ministry and other users. However, there were some limitations, which should be taken into consideration. A complete list with detailed explanations is provided in the statistical report, here follows a brief overview: (i) data inconsistencies which as far as possible have been corrected at the editing stage; (ii) a number of establishments are engaged in several equally important but dissimilar activities and figures relating to a particular ISIC group might, therefore, include data for other secondary activities as well; (iii) many establishments could not provide detailed information for certain items, mainly

related to the intermediate consumption while others did not provide information on the level of stocks and assets; (iv) it was not possible to produce reliable tables by detailed product group for sales and purchases by the establishments and these data are presented at the broad section level of the Central Product Classification (CPC 2.0).

The above limitations, however, have no serious effect on the overall quality and reliability of the major indicators at broad ISIC level. Statistics used in this report reflect the current status and structure of the Manufacturing Sector in the Sultanate of Oman by 2 digit industry group. The Government, business community and other users can make good use of these results, which constitute the only available set of information of this kind based on the latest recommendations. When making use of the survey results in certain statistical/economic analysis, users should, however, keep in mind the above limitations.

The following list presents the **concepts and definitions** used in the survey: **Gross Output, Intermediate Consumption, Value of stocks, Value Added, Compensation of Employees, Wages and salaries, Gross Operating Surplus**. Detailed explanation is to be found in the statistics report (Ministry of Commerce and Industry (Sultanate of Oman), 2013).

The experience with the survey organization and implementation leads to the following **recommendations** for the future:

1. It is necessary to increase the coverage of the survey to include all manufacturing establishments. Only large manufacturing establishments licensed with the Ministry were covered. The coverage should be extended to (i) non-licensed ones, as well as to (ii) the small establishments to have a better picture of the whole manufacturing sector. The frame, i.e. list of establishments to be covered by the survey should be prepared by the different stakeholders well before the launching of the survey to avoid exclusion of important establishment from being covered.
 2. The Ministry agrees with the inclusion of the small establishments in the survey and has requested assistance in designing a shorter questionnaire (to reduce respondent burden) and its processing within the same system.
 3. It was already noted that some questionnaires were not properly edited. It is highly recommended that emphasis be laid on this exercise during future surveys by insisting that questionnaires are edited in the field by both enumerators and supervisors and off-field by staff in the office before data entry. Additionally, use should be made of the computer editing facilities offered by the new system by definition of additional validation rules in the system. The quality of the data can be further improved by the following proposals:
 - Extensive training to enumerators and supervisors to be provided by staff from the Ministry only.
 - Need to have the support of manufacturing industries and employers' associations before the launching of the survey. This may be done through a workshop to sensitize participants on the importance of statistical data for policy decision making.
 4. Future surveys to be based on lessons learnt from the technical assistance received from the UNIDO. It is firmly believed that the project has been fruitful in building the appropriate capacity for the collection, processing and dissemination of industrial statistics as per internationally agreed principles and recommendations.
 5. For the sustainability of the project, it is advised that all recipients of technical training in the context of project implementation should be intensively involved in activities of the project.
 6. The present survey has provided a wealth of information on the Manufacturing Sector. This information can now be used as benchmark for the production of other short-term industrial indicators such as the Producer Price Index (PPI) and the Index of Industrial Production (IIP). The PPI is already produced by the National Centre for Statistics and Information (NCSI) but needs to be rebased using the detailed data from the survey. The computation of the accompanying IIP should also be considered. This can be done through a joint collaboration between the Ministry and the NCSI.
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7. An important issue was the adjustment for nonresponse and UNIDO was requested to provide more in depth training in the computation of estimates for non-responding establishments.

Appendix B Industrial estates and free zones

Unless otherwise specified, all information in Appendix B is sourced from the 'Annual Industrial Report 2014' by Oman's Ministry of Commerce and Industry 2014.

B-1: Rusayl Industrial Estate

Rusayl Industrial Estate was established in 1983 and was Oman's first industrial estate. Its convenient location just 10 kilometers from Muscat International Airport quickly made it attractive to businesses. By 2014, a little more than 60 percent of all available space in Rusayl has been leased. 211 businesses had established themselves, producing a diverse pool of products, including chemicals, batteries, electrical components, fiber optic cables, building materials, paint, garments, stationery, etc. Among the incentives offered by the authorities are cheap annual land rent of 0.5 Omani Rial per square meter as well as first-year concessions and exemption from equipment import duties.

Table B-1: Key information on Rusayl Industrial Estate

Location	Rusayl
Governorate	Muscat
Total estate area	7,894,841 square meters
Rent	0.5 Omani Rial per square meters annually. Common area maintenance service is provided
Lease	Annual lease renewable.
Insurance	Liability coverage is required for each tenant
Space rented	3,336,000 square meters
Expansion plans	Under consideration
Space available for investment/lease	5,336,000 square meters
Number of existing businesses	211
Topography	Hills
Flood plan	Yes
Curb	Yes
Paved street	Yes
Gutter	Yes
Streetlight	Yes
Parking	Yes

Transport

Nearest major highway(s)	Rusayl - Nizwa
Lanes	2
Nearest airport	Muscat International Airport
Distance to airport	10 kilometers
Nearest port facility	Mina Sultan Qaboos
Distance to port	45 kilometers

Utilities

Electricity supplier	Muscat Electricity Company
3 phase electric available	Yes
Gas supplier	Oman Gas Company
Municipal water	Yes
Water main size	300 millimeters AC pipe
Water source	Public authority for electricity and water.
Water later size	200-150 millimeters
Sanitary sewer main size	400-300 millimeters
Sanitary sewer later size	200-150 millimeters
Storm sewer	Yes
Digital switching	Yes

B-2: Sohar Industrial Estate

Sohar Industrial Estates was established in 1992 and is second in size among Oman's eight industrial estates but with the largest developed area of approximately 8.6 million square meters, corresponding to 81 percent of the total estate area. It is located halfway between Muscat (200 kilometers) and Dubai (180 kilometers) and between major local and Gulf ports. The port of Sohar is just 6 kilometers away – a trait that has given it a distinguished position and attracted a mixture of 230 local and foreign investors and another 108 planned.

Table B-2: Key information on Sohar Industrial Estate

Location	Sohar
Governorate	Batinah North
Total estate area	21,237,225.16 square meters
Rent	0.5 Omani Rial per square meters annually.
service is provided	Common area maintenance
Lease	Annual lease renewable
Insurance	Liability coverage is required for each tenant
Space rented	8,612,500 square meters
Expansion plans	108
Space available for investment/ lease	17,221,990 square meters
Number of existing businesses	239
Topography	Plain Area
Flood plan	Yes
Curb	Yes
Paved street	Yes
Gutter	Yes
Streetlight	Yes
Parking	Yes

Transport

Nearest major highway(s)	Al Batinah
Lanes	2
Nearest airport	Muscat International Airport
Distance to airport	200 kilometers
Nearest port facility	Sohar Port
Distance to port	6 kilometers

Utilities

Electricity supplier	Majan Electricity Company
3 phase electric available	Yes
Gas supplier	Oman Gas Company.
Municipal water	No
Water main size	300 millimeters diameter DI
Water source	Bore wells
Water later size	200–100 millimeters
Sanitary sewer main size	200–250 millimeters
Sanitary sewer later size	150 millimeters
Storm sewer	Yes
Digital switching	Yes

Residing businesses are ensured a high degree of flexibility in terms of transportation options to and from the domestic and foreign markets. Production activities on the estate includes many consumables such as beverages, ice cream, toothpaste, detergents and food products, as well as aluminum, marble, paper recycling, leather, furniture, resins, glass, steel bars and engine oil.

B-3: Rasyut Industrial Estate

Established in 1992 Raysut Industrial Estate is Oman's smallest industrial estate of 3.1 million square meters. With 92 percent of all available space rented, it has the highest lease intensity among all the estates. The developed area, which includes warehouse facilities, is serviced and industrial plots range from 1,350 to 11,000 square meters. Currently, 116 businesses are residing in Raysut, producing a wide range of products, such as school stationery, ice, processed fish and meat, PVC pipes, steel fabrication, medical supplies, solar heaters, flour, fertilizer and vegetable oil. Expansion plans for the estate are under development.

Rasyut is located just 4 kilometers from Port Salalah, which is the only port that connects Europe and Singapore and accommodates the world's largest class of container vessels. Via this port, Rasyut residing businesses have easy access to the Gulf, the Red Sea, the Indian Ocean and the east coast of Africa and hence to ships carrying cargo between the east coast of the United States, Europe and the Far East. There are great future prospects for the port of Salalah. The government has plans of establishing an adjacent free zone with the ambition to make the port a major air-sea cargo hub, capable of handling next generation container ships (10,000-12,000 twenty-foot equivalent unit) carrying very large containers.

Table B-3: Key information on Raysut Industrial Estate

Location	Raysut
Governorate	Dhofar
Total estate area	3,069,607 square meters
Rent	0.25 Omani Rial per square meters annually. Common Area Maintenance service is provided
Lease	Depends on cost of construction and size of the units.
Insurance	Liability coverage is required for each tenant
Space rented	2,100,343 square meters
Expansion plans	Yes
Space available for investment / lease	2,282,493 square meters
Number of existing businesses	116
Topography	Mostly flat with some hills and wades
Flood Plan	Yes
Curb	Yes
Paved street	Yes
Gutter	Yes
Streetlight	Yes
Parking	Yes

Transport

Nearest major highway(s)	Salalah - Raysut
Lanes	2
Nearest commercial airport	Salalah Airport
Distance to airport	15 kilometers
Nearest port facility	Port Salalah
Distance to port	4 kilometers

Utilities

Electricity supplier	Dhofar Power Company
3 phase electric available	Yes
Gas supplier	Oman Gas Company
Municipal water	Yes
Water main size	200 millimeters pipe
Water source	Office of the Minister of State and Governor of Dhofar
Water later size	150-100 millimeters
Sanitary sewer main size	200 millimeters pipe
Sanitary sewer later size	150 millimeters
Storm sewer	Open ditch drains
Digital switching	Yes

B-4: Sur Industrial Estate

With an area of more than 3.6 million square meters, Sur Industrial Estate, established in 1999, has grown to be Oman's largest industrial estate. It is located 300 kilometers from Muscat and 200 kilometers from the nearest airport and port. However, Sur has its own deep water harbor. Although only 27 percent of all available space is leased to just 64 businesses, the estate is home to major companies including Oman LNG, the National Gas Company and Oman India Fertilizer Company. Given the nature and international stature of these tenants, Sur has been rapidly developing expertise and competitive advantage in the area of natural gas and gas-related industries and services. The estate has made great efforts to promote Omanization and as of 2013, 70 percent of employees were Omanis.

Table B-4: Key information on Sur Industrial Estate

Location	Sur
Governorate	Al Sharqiya
Total estate area	36,100,000 square meter
Rent	0.25 Omani Rial per square meter annually. Common Area Maintenance service is provided
Lease	Annual lease renewable
Insurance	Liability coverage is required for each tenant
Space rented	6,417,193 square meter
Expansion plans	Sufficient area for future expansion.
Space available for investment/ lease	23,661,200 square meter
Number of existing businesses	64
Topography	Naturally leveled area close to the sea
large plots	
Flood Plan	Yes
Curb	Yes
Paved street	Yes
Gutter	Yes
Streetlight	Yes
Parking	Yes

Transport

Nearest major highway(s)	Sur - Muscat
Lanes	2
Nearest airport	Muscat International Airport (New airport at Sur under construction)
Distance to airport	200 kilometers (distance to the new Sur airport will be 60 kilometers)
Nearest port facility	Sultan Qaboos Port
Distance to port	200 kilometers

Utilities

Electricity supplier	Mazoon Electricity Company
3 phase electric available	Yes
Gas supplier	Petroleum Development Oman PDO
Municipal water	Yes
Water main size	250-200 mm
Water source	Public Authority for Electricity and Water
Sanitary sewer main size	200-400 millimeter
Sanitary sewer later size	100 millimeter
Storm sewer	Yes
Digital switching	Yes

B-5: Nizwa Industrial Estate

Nizwa Industrial Estate, established in 1994, is Oman's second smallest industrial estate covering an area of 3,08 square meters. The estate has a very high land and lease intensity – 86 percent of the total estate area is developed, and hereof 73 percent has been leased. Industrial plots on the estate range from 1,200 to 8,000 square meters. Work is in progress to complete infrastructure and service projects for the estate's expansion. In 2012 alone, the estate attracted more than 70 projects worth over 230 million Omani Rial, of which many were foreign investments. The businesses residing produce a diverse range of products, including ceramics, plastics, medical products, plywood, tea packaging, mineral water, water tanks, ferrous casting, oil services and food products.

Table B-5: Key information on Nizwa Industrial Estate

Location	Nizwa
Governorate	Dakhliya
Total estate area	3,079,935 square meters
Rent	0.25 Omani Rial per square meter annually.
Lease	Annual lease renewable.
Insurance	Liability coverage is required for each tenant
Space rented	1,912,931
Expansion plans	185 hectares
Space available for investment/ lease	2,639,639 square meters
Number of existing businesses	96
Topography	Flat area
Flood Plan	Partial provision
Curb	Yes
Paved street	Yes
Gutter	Road drain
Streetlight	Yes
Parking	Yes
Parking	Yes

Transport

Nearest major highway(s)	Nizwa - Salalah
Lanes	Single
Nearest commercial airport	Muscat International Airport
Distance to airport	140 kilometers
Nearest port facility	Mina Sultan Qaboos
Distance to port	200 kilometers

Utilities

Electricity supplier	Mazoon Electricity Company
3 phase electric available	Yes
Gas supplier	Oman Gas Company
Water main size	200 millimeter diameter GRP
Water source	Well water from Izz
Water later size	150 millimeter diameter dia AC pipe, 100 millimeter diameter AC pipe
Sanitary sewer main size	200 millimeter diameter GRP
Sanitary sewer later size	100 millimeter diameter upvc, 150 millimeter diameter GRP
Storm sewer	Culverts available
Digital switching	Yes. ATM telephony is likely to be installed in the future.

B-6: Buraimi Industrial Estate

Established in 1998, Buraimi Industrial Estate, bordering the United Arab Emirates, has a strategic business location. Tenants not only benefit from the close proximity to air and seaports in both Oman and the United Arab Emirates but they can also easily take advantage of domestic and emerging business-to-commercial and business-to-business market opportunities - particularly in the Gulf region and Central Asia.

Buraimi is divided into two, almost equally big, parts: one part (2.5 million square meters) is dedicated to 'light industries', i.e. food and beverages, clothing and some electronics, and a second part (3 million square meters) focused on industrial activities. The plots on the estate range from 500 to 33,000 square meters. As of 2014, 331 businesses had established themselves in Buraimi, representing, among others, the automotive, carpentry and steel industries. Only 55 percent of the developed space has been leased.

Table B-6: Key information on Buraimi Industrial Estate

Location	Buraimi
Governorate	Al Buraimi
Total estate area	5,537,000 kilometers
Rent	0.25 Omani Rial per kilometers annually.
service is provided	Common Area Maintenance
Lease	Annual lease renewable.
Insurance	Liability coverage is required for each tenant
Space rented	2,478,354 kilometers
Expansion plans	Under consideration
Space available for investment/ lease	4,486,000 kilometers
Number of existing businesses	331
Topography	Mountainous
Flood Plan	Yes
Curb	Yes
Paved street	Yes
Gutter	Yes
Streetlight	Yes
Parking	Yes

Transport

Nearest major highway(s)	Buraimi - Mandah
Lanes	2
Nearest commercial airport	Dubai International Airport
Distance to airport	120 kilometers
Nearest port facility	Sohar Port
Distance to port	120 kilometers

Utilities

Electricity supplier	Majan Electricity Company
3 phase electric available	Yes
Gas supplier	In process
Municipal water	Yes
Water main size	350 millimeters
Water service	Electricity and Water Authority
Water later size	Not available
Sanitary sewer main size	Not available
Sanitary sewer later size	Not available
Storm sewer	Yes
Digital switching	Yes

B-7: Smail Industrial Estate

The development plans of Smail Industrial Estate were first announced in 2010, making it the 'youngest' industrial estate in Oman. It is close to Muscat International Airport (50 kilometers) and to the Mina Sultan Qaboos port. Moreover, a 3-laned highway currently being construction will provide tenants easy access to different ports. Already by 2013, investments amounting to more than 100 million Omani Rial had been placed, 77 percent of which were from national investors and 7 percent from other Gulf countries. Key industries in the Omani economy is represented at Smail including steel, building materials and chemicals industries. The estate is accelerating its efforts to implement appropriate infrastructures.

Table B-7: Key information on Smail Industrial Estate

Location	Smail industrial estate
Governorate	Al Dhakliya
Total estate area	7,315,775 square meters
Rent	0.5 Omani Rial per square meters annually. Common Area Maintenance
service is provided	
Lease	Annual lease renewal for 25 year.
Insurance	Liability coverage is required for each tenant
Space rented	2,506,854 square meters
Expansion plans	Under consideration
Space available for investment/lease	3,851,745 square meters
Number of existing businesses	183
Topography	Flat
Flood plan	Yes

Transport

Nearest major highway(s)	(Muscat - Nizwa) + (Muscat - Sur)
Lanes	3 lanes under construction
Nearest airport	Muscat International Airport
Distance to airport	50 kilometers
Nearest port facility	Mina Sultan Qaboos
Distance to port	85 kilometers

Utilities

Electricity supplier	Mazoon Electricity Company
3 phase electric available	Yes
Gas supplier	Oman Gas Company.
Municipal water	Yes
Water main size	300 millimeters AC pipe
Water source	Public authority for electricity and water.
Water later size	200-150 millimeters
Sanitary sewer main size	400-300 millimeters
Sanitary sewer later size	200-150 millimeters
Digital switching	Yes. ATM telephony is likely to be installed in the future.

B-8: Al Mazunah Free Zone

Located close to the border of Yemen, the Al Mazunah Free Zone, which began operations in 1999, caters especially to businesses wishing to trade through Oman into Yemen. It covers an area of 4.5 million square meters divided into industrial plots ranging from 2,000 to 16,000 square meters. Al Mazunah key purpose is to facilitate trade and storage of goods including automobiles, fruits and vegetables, livestock, fresh and frozen meat, machinery and equipment.

The incentives offered by Al Mazunah Free Zone are:

- Waiving all economical and business revenues for 30 years from income tax and income statements submissions.
- Free money transactions.
- No agencies representation system, implemented in the free zone.
- Imported or exported commodities within the free zone are waived from custom duties.
- All commodities from - to the free zone are free of official import-export licenses. Except materials prohibited to be exchanged.
- No restricts to invested capitals, minimum or maximum.
- 100 percent owned capital of investment to non Omani investors.
- Nationalization (Omanization) is only 10 percent of staff..
- Exemption from all of cial fees (Municipality, real estate, lands, etc.) except fees due to the One System Station.

Table B-8: Key information on Al Mazunah Free Zone

Location	Mazunah
Region	Dhofar
Total estate area	4,500,000 square meters
Type	Square meter of the land space: 1,000 Omani Rial
Rent	Square meter of ready concrete building: 37,500 Omani Rial
	Square meter of mineral deposits: 8,000 Omani Rial
	Square meter of exhibition vehicles and equipment:
Lease	Two types of leasing are available commercial shops and land.
Insurance	Liability coverage is required for each tenant
Number of square meters rented	3,081,350 square meters
Expansion plans	Yes
Space available for investment/ lease	4,000,000 square meters
Number of existing businesses	36
Topography	Flat

Transport

Nearest major highway(s)	Al Mazyona (Oman) - Shipping (Yemen)
Lanes	2
Nearest commercial airport	Salalah Airport
Distance to airport	260 kilometers
Nearest port facility	Salalah Port
Distance to port	275 kilometers

Utilities

Electricity supplier	Ministry of Housing, Electricity and Water
3 phase electric available	Yes
Municipal water	Yes
Water main size	150 millimeter pipe
Water source	Office of the Minister of State and Governor of Dhofar
Water later size	100 millimeter pipe
Digital switching	Yes
Sanitary sewer main size	Not available
Sanitary sewer later size	Not available
Storm sewer	Yes
Digital switching	Yes

B-9: Duqm Special Economic Zone

Duqm Special Economic Zone – stretching over 1,745 square kilometers with 60 kilometer coast line - is the largest economic zone in the MENA region and one of the largest in the world. As of 2013, 45 percent of the areas had been developed. (SEZAD 2013) It offers, among other things, an industrial zone favoring particularly export processing industries based on petrochemicals, mineral resources and fisheries, a sea port, a fishing harbor, a central business district, a residential zone, a tourism and recreational zone, a logistics hub and an education and training zone. A multimodal transport system connects Duqm with the surrounding regions. The Duqm Special Economic Zone Authority is responsible for the administration, regulation and development of the zone, and is a financially and administratively independent government entity established in 2011.

The incentives offered by Duqm Special Economic Zone are:

- 100 percent foreign ownership;
 - Free repatriation of profits and capital;
 - No currency restrictions;
 - No minimum capital requirement;
 - Exemption from import and export duties;
 - Zero personal income tax;
 - Pre-built offices, warehouses and light industry;
 - One-stop shop;
 - Quality customer service at international standards;
 - Company registration in less than one week;
 - No duties on sales to domestic and GCC markets;
 - Simplified and flexible customs procedures;
 - Long term land lease (up to 50 years) at competitive prices;
 - Access to first class infrastructure;
 - Online portal to provide 24/7 access to Duqm's services
-

Appendix C Statistical tables

Table C-1: GDP by economic activity, 2003-2012
(Million Omani Rial)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total petroleum activities	9,576.5	9,254.8	9,227.6	8,940.0	8,588.3	9,197.4	9,852.4	10,388.4	10,597.4	11,004.1
Crude petroleum	9,034.9	8,697.8	8,622.3	8,175.6	7,805.2	8,427.0	9,042.7	9,526.6	9,716.6	10,103.6
Natural gas	541.6	557.0	605.3	764.3	783.0	770.4	809.7	861.8	880.8	900.5
Total non-petroleum activities	6,951.8	7,483.3	8,171.8	9,291.3	10,310.4	11,428.0	12,064.4	12,633.7	13,399.6	14,330.7
Agriculture and fishing	253.0	263.0	256.0	248.8	258.8	270.5	284.7	311.7	310.1	338.6
Industry	1,785.40	1,837.0	2,145.4	2,645.9	2,941.7	3,382.8	3,819.3	4,061.6	4,195.1	4,440.2
of which:										
Mining and quarrying	28.1	33.2	35.7	34.9	49.5	69.2	85.1	91.7	86.2	86.3
Manufacturing	1,311.7	1,322.2	1,471.9	1,834.0	1,884.4	2,010.7	2,241.9	2,385.2	2,422.2	2,572.2
Manufacturing of refined petroleum	52.9	50.9	56.1	55.3	45.0	70.5	67.1	55.4	72.8	71.8
Manufacturing of chemicals	805.5	805.3	884.3	1,178.7	1,117.3	1,090.8	1,202.3	1,284.9	1,302.1	1,382.7
Other manufacturing	453.3	466.1	531.5	600.0	722.0	849.4	972.5	1,044.8	1,047.3	1,117.6
Electricity and water supply	139.4	157.2	154.0	185.5	195.5	219.9	245.0	271.0	308.5	352.1
Building and construction	306.1	324.4	483.7	591.5	812.3	1,082.9	1,247.3	1,313.7	1,378.1	1,429.6
Services	4,913.4	5,383.2	5,770.4	6,396.6	7,109.9	7,774.7	7,960.5	8,260.5	8,894.4	9,551.9
Financial intermediation services	-220.1	-221.8	-249.7	-265.4	-309.0	-374.0	-422.4	-468.3	-525.7	-535.7
GDP at basic prices	16,308.2	16,516.3	17,149.8	17,965.9	18,589.6	20,251.3	21,494.4	22,553.8	23,471.2	24,799.1
Plus: Taxes less subsidies on products	91.4	95.1	-124.7	-26.2	148.8	23.7	19.9	-6.2	-726.1	-743.1
GDP at market prices	16,399.5	16,611.4	17,025.1	17,939.7	18,738.5	20,275.0	21,514.3	22,547.6	22,745.2	24,056.1

Note: GDP at constant 2010 Omani Rial.

Source: National Centre for Statistics and Information (2013).

Table C-2: Composition of GDP, by economic activity, 1998-2012
(Percent)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total petroleum activities	67.9	68.3	68.4	66.1	63.3	59.9	57.1	54.7	50.5	46.8	45.8	46.1	46.2	45.2	44.4
Crude petroleum	67.5	67.9	66.9	63.3	60.3	56.5	53.7	51.1	46.2	42.5	41.9	42.3	42.4	41.4	40.7
Natural gas	0.4	0.4	1.5	2.7	3.0	3.4	3.4	3.6	4.3	4.3	3.8	3.8	3.8	3.8	3.6
Total non-petroleum activities	35.7	35.3	34.9	37.2	40.0	43.5	46.2	48.5	52.5	56.1	56.9	56.4	56.2	57.1	57.8
Agriculture and fishing	1.5	1.6	1.5	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.4	1.3	1.4
Industry	5.7	5.3	6.5	8.7	10.1	11.2	11.3	12.7	15.0	16.0	16.8	17.9	18.1	17.9	17.9
of which:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mining and quarrying	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.3
Manufacturing	2.3	2.5	4.5	6.6	7.5	8.2	8.2	8.7	10.4	10.3	10.0	10.5	10.6	10.3	10.4
- Manufacturing of refined petroleum	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.2	0.3	0.3
- Manufacturing of chemicals	0.1	0.1	2.0	4.0	4.5	5.0	5.0	5.2	6.7	6.1	5.4	5.6	5.7	5.5	5.6
- Other manufacturing	1.8	2.0	2.1	2.3	2.7	2.8	2.9	3.2	3.4	3.9	4.2	4.5	4.6	4.5	4.5
-Electricity and water supply	0.7	0.8	0.7	0.8	0.8	0.9	1.0	0.9	1.0	1.1	1.1	1.1	1.2	1.3	1.4
-Building and construction	2.5	1.8	1.0	1.2	1.5	1.9	2.0	2.9	3.3	4.4	5.4	5.8	5.8	5.9	5.8
Services	0.0	0.0	0.0	0.0	0.0	30.7	33.2	34.2	36.1	38.7	38.7	37.2	36.7	37.9	38.5
of which:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-Wholesale and retail trade	6.7	6.6	6.1	6.1	6.3	7.1	7.8	7.5	7.7	9.3	8.8	7.8	7.4	7.6	8.1
-Hotels and restaurants	0.6	0.7	0.6	0.6	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.8
-Transport, storage and communication	1.9	1.8	1.8	2.0	2.3	2.6	3.2	3.6	4.2	4.7	5.4	5.1	5.3	5.5	5.7
-Financial intermediation	2.7	2.9	2.6	2.7	2.9	3.1	3.2	3.4	3.7	4.3	4.7	4.5	4.4	4.5	4.6
-Real estate and business activities	3.9	3.9	3.7	3.7	3.9	4.4	4.5	4.6	4.6	4.8	4.5	4.5	4.4	4.3	4.1
-Public administration and defense	7.0	6.9	6.5	6.3	6.6	6.6	7.2	7.2	7.8	7.6	7.1	7.1	7.1	8.0	8.2
-Education	3.0	3.0	3.0	3.0	3.2	3.5	3.8	4.1	4.2	4.3	4.2	4.4	4.4	4.2	4.0
-Health	1.3	1.3	1.3	1.2	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.5
-Other community, social and personal services	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.0
-Private household with employed persons	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Financial intermediation services indirectly measured	-3.6	-3.6	-3.4	-3.2	-3.3	-3.3	-3.3	-3.2	-3.0	-2.9	-2.7	-2.5	-2.4	-2.3	-2.2
GDP at basic prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Plus: Taxes less subsidies on products	-5.0	-5.0	-4.7	-4.5	-4.5	-4.6	-4.6	-4.4	-4.2	-4.0	-3.7	-3.5	-3.3	-3.2	-3.0
GDP at market prices	95.0	95.0	95.3	95.5	95.5	95.4	95.4	95.6	95.8	96.0	96.3	96.5	96.7	96.8	97.0

Note: GDP at constant 2010 Omani Rial.
Source: National Centre for Statistics and Information (2013).

Table C-3: GDP annual growth rates, by economic activity, 2005-2012
(Percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Total petroleum activities	-0.3	-3.1	-3.9	7.1	7.1	5.4	2.0	3.8
Crude petroleum	-0.9	-5.2	-4.5	8.0	7.3	5.4	2.0	4.0
Natural gas	8.7	26.3	2.4	-1.6	5.1	6.4	2.2	2.2
Total non-petroleum activities	9.2	13.7	11.0	10.8	5.6	4.7	6.1	6.9
Agriculture and fishing	-2.7	-2.8	4.0	4.5	5.2	9.5	-0.5	9.2
Industry	16.8	23.3	11.2	15.0	12.9	6.3	3.3	5.8
of which:								
- Mining and quarrying	7.5	-2.2	41.8	39.8	23.0	7.8	-6.0	0.1
- Manufacturing	11.3	24.6	2.7	6.7	11.5	6.4	1.6	6.2
- Manufacturing of refined petroleum	10.2	-1.4	-18.6	56.7	-4.8	-17.4	31.4	-1.4
- Manufacturing of chemicals	9.8	33.3	-5.2	-2.4	10.2	6.9	1.3	6.2
- Other manufacturing	14.0	12.9	20.3	17.6	14.5	7.4	0.2	6.7
- Electricity and water supply	-2.0	20.5	5.4	12.5	11.4	10.6	13.8	14.1
- Building and construction	49.1	22.3	37.3	33.3	15.2	5.3	4.9	3.7
- Services	7.2	10.9	11.2	9.4	2.4	3.8	7.7	7.4
Financial intermediation services indirectly measured	12.6	6.3	16.4	21.0	12.9	10.9	12.3	1.9
GDP at basic prices	3.8	4.8	3.5	8.9	6.1	4.9	4.1	5.7

Note: See Appendix C-1 for values of all economic activities in constant 2010 prices and the composition of these activities in Table C-2.

Source: National Centre for Statistics and Information (2014).

Table C-4: Manufacturing value added at current prices, by industry, 2005-2012
(Thousand Omani Rial)

	2005	2006	2007	2008	2009	2010	2011	2012
Food products	62,744	61,325	81,940	108,990	156,751	126,355	148,360	157,541
Beverages	14,492	15,457	24,499	21,516	24,942	27,516	42,675	42,476
Tobacco products
Textiles	3,617	1,962	1,076	2,244	1,503	8,379	9,280	7,990
Wearing apparel	3,402	3,190	1,557	2,069	2,003	2,091	2,015	2,243
Leather and related products	596	855	1,026	1,641	1,220	321	1,015	1,109
Wood products except furniture	7,146	10,670	7,719	10,757	13,026	17,031	26,387	14,997
Paper and paper products	5,182	5,612	7,063	10,150	9,534	19,113	9,224	7,814
Printing and reproduction of recorded media	9,678	7,872	13,246	18,028	15,682	13,244	31,393	39,473
Coke and refined petroleum products	589,372	675,680	639,423	1,122,912	680,158	940,161	555,993	653,256
Chemicals and chemical products	134,743	121,643	147,056	197,347	494,999	385,417	897,546	1,377,664
Pharmaceuticals, medicinal chemical and botanical products	3,836	5,184	14,305	13,163	10,133	7,867	14,012	15,954
Rubber and plastics products	15,365	16,748	27,797	36,045	44,098	50,563	34,873	40,367
Other non-metallic mineral products	127,564	153,746	178,707	242,414	278,576	277,756	273,537	329,692
Basic metals	20,827	32,644	57,217	67,207	218,619	292,476	306,456	377,085
Fabricated metal products, except machinery and equipment	17,435	28,320	48,865	54,018	76,712	169,108	70,221	105,010
Computer, electronic and optical products	3,126	3,459	5,604	6,677	8,674	12,218	16,725	15,909
Electrical equipment	16,917	14,912	45,167	47,637	34,710	56,535	160,929	170,183
Machinery and equipment n.e.c.	7,289	9,263	13,716	21,197	9,276	10,421	22,391	24,043
Motor vehicles, trailers and semi-trailers	2,387	515	442	192	362	1,435	10,697	3,034
Other transport equipment	699	257	-20	1,087	4,785	1,003	1,961	921
Furniture	15,933	15,489	25,430	31,045	11,577	28,158	29,139	24,879
Other manufacturing	2,576	3,297	4,848	3,354	2,363	2,717	2,629	2,597
Total manufacturing	1,064,925	1,188,099	1,346,682	2,019,691	2,099,700	2,449,886	2,692,259	3,489,477

Note: Manufacturing value added at current Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-5: Industry share in total manufacturing value added, by industry, 2005–2012
(Percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Food products	5.9	5.2	6.1	5.4	7.5	5.2	5.5	4.5
Beverages	1.4	1.3	1.8	1.1	1.2	1.1	1.6	1.2
Tobacco products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Textiles	0.3	0.2	0.1	0.1	0.1	0.3	0.3	0.2
Wearing apparel	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1
Leather and related products	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Wood products except furniture	0.7	0.9	0.6	0.5	0.6	0.7	1.0	0.4
Paper and paper products	0.5	0.5	0.5	0.5	0.5	0.8	0.3	0.2
Printing and reproduction of recorded media	0.9	0.7	1.0	0.9	0.7	0.5	1.2	1.1
Coke and refined petroleum products	55.3	56.9	47.5	55.6	32.4	38.4	20.7	18.7
Chemicals and chemical products	12.7	10.2	10.9	9.8	23.6	15.7	33.3	39.5
Pharmaceuticals, medicinal chemical and botanical products	0.4	0.4	1.1	0.7	0.5	0.3	0.5	0.5
Rubber and plastics products	1.4	1.4	2.1	1.8	2.1	2.1	1.3	1.2
Other non-metallic mineral products	12.0	12.9	13.3	12.0	13.3	11.3	10.2	9.4
Basic metals	2.0	2.7	4.2	3.3	10.4	11.9	11.4	10.8
Fabricated metal products, except machinery and equipment	1.6	2.4	3.6	2.7	3.7	6.9	2.6	3.0
Computer, electronic and optical products	0.3	0.3	0.4	0.3	0.4	0.5	0.6	0.5
Electrical equipment	1.6	1.3	3.4	2.4	1.7	2.3	6.0	4.9
Machinery and equipment n.e.c.	0.7	0.8	1.0	1.0	0.4	0.4	0.8	0.7
Motor vehicles, trailers and semi-trailers	0.2	0.0	0.0	0.0	0.0	0.1	0.4	0.1
Other transport equipment	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0
Furniture	1.5	1.3	1.9	1.5	0.6	1.1	1.1	0.7
Other manufacturing	0.2	0.3	0.4	0.2	0.1	0.1	0.1	0.1
Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Manufacturing value added at current Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-6: Manufacturing value added to output ratio, by industry, 2005-2012 (Percent)

	2005	2006	2007	2008	2009	2010	2011	2012
Food products	28.6	26.1	26.5	22.3	37.2	28.9	30.9	30.9
Beverages	35.1	38.9	47.7	37.2	41.8	42.7	42.4	42.4
Textiles	48.4	43.9	29.7	46.3	40.1	64.0	38.4	38.4
Wearing apparel	44.2	47.1	60.8	59.5	64.9	51.3	42.5	42.5
Leather and related products	36.6	44.4	41.5	42.8	42.2	17.2	46.8	46.8
Wood products except furniture	58.7	63.0	57.4	56.4	56.7	72.9	44.2	44.2
Paper and paper products	31.6	30.8	33.4	32.8	36.1	57.7	24.8	24.8
Printing and reproduction of recorded media	51.8	38.6	60.1	61.9	58.1	50.9	65.2	65.2
Coke and refined petroleum products	41.6	39.5	28.8	27.1	25.8	28.7	29.4	29.4
Chemicals and chemical products	72.3	67.2	59.3	52.4	73.0	65.6	58.8	58.8
Pharmaceuticals, medicinal chemical and botanical products	18.9	27.4	47.0	43.1	33.1	32.3	49.0	49.0
Rubber and plastics products	32.4	27.0	32.0	31.6	41.8	41.9	29.3	29.3
Other non-metallic mineral products	63.5	64.5	64.1	61.1	65.2	67.5	45.7	45.7
Basic metals	15.7	20.4	27.0	21.1	45.9	46.5	35.0	35.0
Fabricated metal products, except machinery and equipment	40.7	42.6	47.0	49.5	53.3	74.4	45.0	45.0
Computer, electronic and optical products	52.9	45.2	47.0	47.9	46.4	74.3	35.5	35.5
Electrical equipment	19.3	10.3	16.9	12.6	16.7	20.1	36.1	36.1
Machinery and equipment n.e.c.	50.8	59.6	56.3	68.3	44.8	57.5	58.9	58.9
Motor vehicles, trailers and semi-trailers	88.9	64.0	67.1	41.1	64.1	40.4	37.9	37.9
Other transport equipment	62.5	38.6	-6.7	72.5	91.4	72.0	38.3	38.3
Furniture	55.1	55.5	54.3	51.8	31.6	47.8	46.6	46.6
Other manufacturing	43.7	49.2	63.3	59.4	36.9	33.4	22.1	22.1
Total manufacturing	42.3	39.8	33.9	30.5	39.2	39.1	40.7	42.3

Note: Manufacturing value added at current Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-7: Manufacturing value added, by industry, at constant 2007 prices, 2007-2012
(Thousand Omani Rial)

	2007	2008	2009	2010	2011	2012
Food products	81,940	89,520	14,1640	114,340	122,298	128,122
Beverages	24,499	17,672	22,537	24,899	35,178	34,544
Tobacco products	-	-	-	-	-	-
Textiles	1,076	2,100	1,470	7,688	7,431	7,047
Wearing apparel	1,557	2,011	1,942	1,846	1,533	1,671
Leather and related products	1,026	1,591	1,148	315	1,004	1,087
Wood products except furniture	7,719	10,172	12,698	15,729	23,976	13,256
Paper and paper products	7,063	9,296	9,330	17,938	7,604	6,170
Printing and reproduction of recorded media	13,246	15,894	14,352	10,574	24,048	29,307
Coke and refined petroleum products	639,423	874,509	737,530	844,977	410,176	453,451
Chemicals and chemical products	147,056	166,076	462,543	372,071	842,735	1,311,711
Pharmaceuticals, medicinal chemical and botanical products	14,305	12,285	11,221	7,558	12,057	13,720
Rubber and plastics products	27,797	30,333	41,207	48,813	32,743	38,434
Other non-metallic mineral products	178,707	217,524	238,443	239,888	242,882	295,515
Basic metals	57,217	51,343	262,014	294,303	266,510	349,645
Fabricated metal products, except machinery and equipment	48,865	45,762	82,283	176,732	68,174	101,240
Computer, electronic and optical products	5,604	6,109	10,880	12,732	15,235	15,410
Electrical equipment	45,167	43,587	43,540	58,915	146,589	164,838
Machinery and equipment n.e.c.	13,716	20,506	8,712	9,806	20,253	21,854
Motor vehicles, trailers and semi-trailers	442	156	384	1,319	8,410	2,303
Other transport equipment	0	883	5,070	921	1,542	699
Furniture	25,430	27,938	10,698	26,066	25,939	21,662
Other manufacturing	4,848	3,018	2,183	2,515	2,340	2,261
Total manufacturing	1,346,702	1,647,263	2,116,431	2,287,732	2,309,093	3,011,767

Note: Manufacturing value added at constant 2007 Omani Rial.
Deflators only available from 2007.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-8: Manufacturing value added annual growth rate, by industry, 2007-2012 (Percent)

	2008	2009	2010	2011	2012	Average annual growth 2007-2012
Food products	9.3	58.2	-19.3	7.0	4.8	3.9
Beverages	-27.9	27.5	10.5	41.3	-1.8	1.8
Tobacco products						
Textiles	95.1	-30.0	423.1	-3.3	-5.2	38.4
Wearing apparel	29.2	-3.4	-4.9	-16.9	9.0	-3.6
Leather and related products	55.1	-27.9	-72.6	219.0	8.2	-3.9
Wood products except furniture	31.8	24.8	23.9	52.4	-44.7	5.9
Paper and paper products	31.6	0.4	92.3	-57.6	-18.9	-7.5
Printing and reproduction of recorded media	20.0	-9.7	-26.3	127.4	21.9	11.4
Coke and refined petroleum products	36.8	-15.7	14.6	-51.5	10.6	-11.3
Chemicals and chemical products	12.9	178.5	-19.6	126.5	55.6	47.2
Pharmaceuticals, medicinal chemical and botanical products	-14.1	-8.7	-32.6	59.5	13.8	-5.7
Rubber and plastics products	9.1	35.8	18.5	-32.9	17.4	1.4
Other non-metallic mineral products	21.7	9.6	0.6	1.2	21.7	5.1
Basic metals	-10.3	410.3	12.3	-9.4	31.2	36.5
Fabricated metal products, except machinery and equipment	-6.4	79.8	114.8	-61.4	48.5	9.9
Computer, electronic and optical products	9.0	78.1	17.0	19.7	1.1	16.4
Electrical equipment	-3.5	-0.1	35.3	148.8	12.4	23.1
Machinery and equipment n.e.c.	49.5	-57.5	12.5	106.5	7.9	4.3
Motor vehicles, trailers and semi-trailers	-99.5	116.1	271.1	588.4	-71.6	32.2
Other transport equipment		405.3	-80.4	80.6	-53.0	
Furniture	9.9	-61.7	143.7	-0.5	-16.5	-8.0
Other manufacturing	-37.7	-27.7	15.2	-7.0	-3.4	-18.4
Total manufacturing	22.3	28.5	8.1	0.9	30.4	12.1

Note: Manufacturing value added at constant 2007 Omani Rial. Deflators only available from 2007.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-9: Per capita manufacturing value added, by industry, 2007-2012
(Omani Rial)

	2007	2008	2009	2010	2011	2012
Food products	31.9	34.5	53.2	40.8	40.4	38.7
Beverages	9.5	6.8	8.5	8.9	11.6	10.4
Tobacco products						
Textiles	0.4	0.8	0.6	2.7	2.5	2.1
Wearing apparel	0.6	0.8	0.7	0.7	0.5	0.5
Leather and related products	0.4	0.6	0.4	0.1	0.3	0.3
Wood products except furniture	3.0	3.9	4.8	5.6	7.9	4.0
Paper and paper products	2.7	3.6	3.5	6.4	2.5	1.9
Printing and reproduction of recorded media	5.2	6.1	5.4	3.8	7.9	8.8
Coke and refined petroleum products	248.8	337.1	277.0	301.5	135.6	136.8
Chemicals and chemical products	57.2	64.0	173.7	132.7	278.6	395.8
Pharmaceuticals, medicinal chemical and botanical products	5.6	4.7	4.2	2.7	4.0	4.1
Rubber and plastics products	10.8	11.7	15.5	17.4	10.8	11.6
Other non-metallic mineral products	69.5	83.9	89.5	85.6	80.3	89.2
Basic metals	22.3	19.8	98.4	105.0	88.1	105.5
Fabricated metal products, except machinery and equipment	19.0	17.6	30.9	63.1	22.5	30.5
Computer, electronic and optical products	2.2	2.4	4.1	4.5	5.0	4.6
Electrical equipment	17.6	16.8	16.3	21.0	48.5	49.7
Machinery and equipment n.e.c.	5.3	7.9	3.3	3.5	6.7	6.6
Motor vehicles, trailers and semi-trailers	0.2	0.1	0.1	0.5	2.8	0.7
Other transport equipment	0.0	0.3	1.9	0.3	0.5	0.2
Furniture	9.9	10.8	4.0	9.3	8.6	6.5
Other manufacturing	1.9	1.2	0.8	0.9	0.8	0.7
Total manufacturing	524.0	635.4	796.8	817.0	772.9	926.7

Note: Manufacturing value added at constant 2007 Omani Rial. Deflators only available from 2007.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-10: Annual growth in per capita manufacturing value added, by industry, 2007-2012 (Percent)

	2008	2009	2010	2011	2012	Average annual growth 2007-2012
Food products	8.2	54.1	-23.3	-0.9	-4.4	6.7
Beverages	-28.5	24.2	5.0	30.9	-10.4	4.2
Tobacco products						
Textiles	93.3	-31.8	396.9	-10.4	-13.4	86.9
Wearing apparel	28.0	-5.9	-9.7	-23.0	-0.5	-2.2
Leather and related products	53.7	-29.8	-73.9	195.6	-1.2	28.9
Wood products except furniture	30.6	21.6	17.7	41.2	-49.5	12.3
Paper and paper products	30.4	-2.2	82.7	-60.7	-25.9	4.9
Printing and reproduction of recorded media	18.9	-12.0	-30.0	110.7	11.2	19.8
Coke and refined petroleum products	35.5	-17.8	8.8	-55.0	0.9	-5.5
Chemicals and chemical products	11.9	171.3	-23.6	109.9	42.1	62.3
Pharmaceuticals, medicinal chemical and botanical products	-14.9	-11.0	-36.0	47.8	3.9	-2.0
Rubber and plastics products	8.1	32.3	12.5	-37.8	7.1	4.4
Other non-metallic mineral products	20.6	6.8	-4.4	-6.2	11.1	5.6
Basic metals	-11.1	397.1	6.7	-16.1	19.8	79.3
Fabricated metal products, except machinery and equipment	-7.2	75.1	104.1	-64.3	35.6	28.7
Computer, electronic and optical products	8.0	73.5	11.2	10.9	-7.7	19.2
Electrical equipment	-4.4	-2.7	28.6	130.6	2.6	30.9
Machinery and equipment n.e.c.	48.1	-58.6	6.9	91.4	-1.5	17.3
Motor vehicles, trailers and semi-trailers	-99.5	110.5	252.5	537.9	-74.1	145.5
Other transport equipment		392.2	-81.4	67.3	-57.1	80.3
Furniture	8.8	-62.7	131.5	-7.8	-23.8	9.2
Other manufacturing	-38.3	-29.5	9.5	-13.8	-11.8	-16.8
Total manufacturing	21.2	25.2	2.7	-6.5	19.1	12.3

Note: Manufacturing value added at constant 2007 Omani Rial. Deflators only available from 2007.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-11 Manufacturing value added per establishment, by industry, 2007-2012
(Thousand Omani Rial)

	2007	2008	2009	2010	2011	2012	Average annual growth 2007-2012
Food products	1,051	1,066	1,628	1,330	1,359	1,424	6.3%
Beverages	1,289	884	980	859	1,135	1,234	-0.9%
Tobacco products	-	-	-	-	-	-	-
Textiles	269	525	490	2,563	1,858	705	21.2%
Wearing apparel	519	503	486	615	511	418	-4.2%
Leather and related products	513	530	383	157	502	543	1.2%
Wood products except furniture	772	1,130	1,058	1,430	2,180	780	0.2%
Paper and paper products	543	775	666	1,495	634	686	4.8%
Printing and reproduction of recorded media	473	530	448	352	802	792	10.9%
Coke and refined petroleum products	49,186	51,442	46,096	49,705	22,788	50,383	0.5%
Chemicals and chemical products	4,202	4,258	11,013	7,916	15,901	26,234	44.2%
Pharmaceuticals, medicinal chemical and botanical products	3,576	3,071	2,805	2,519	4,019	4,573	5.0%
Rubber and plastics products	618	674	858	976	595	663	1.4%
Other non-metallic mineral products	1,625	1,611	1,548	1,454	1,285	1,449	-2.3%
Basic metals	5,202	3,667	17,468	19,620	12,691	10,284	14.6%
Fabricated metal products, except machinery and equipment	922	880	1,553	3,156	1,065	1,298	7.1%
Computer, electronic and optical products	1,401	1,527	2,720	3,183	7,617	3,852	22.4%
Electrical equipment	3,226	2,724	2,419	2,946	6,373	6,594	15.4%
Machinery and equipment n.e.c.	1,715	2,051	871	981	2,025	2,185	5.0%
Motor vehicles, trailers and semi-trailers	147	52	96	440	2,102	768	39.1%
Other transport equipment	0	441	2,535	307	385	349	
Furniture	1,589	1,643	563	1,372	1,038	1,274	-4.3%
Other manufacturing	693	431	364	419	390	1,131	10.3%
Total manufacturing	2,800	3,104	3,703	3,855	3,527	4,381	9.4

Note: Manufacturing value added at constant 2007 Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-12: Manufacturing value added per employee, by industry, 2007-2012
(Omani Rial)

	2007	2008	2009	2010	2011	2012
Food products	10,722	10,473	15,527	12,455	14,023	14,157
Beverages	13,535	8,297	10,324	9,485	12,292	12,319
Tobacco products						
Textiles	4,015	8,139	5,927	31,001	9,589	10,677
Wearing apparel	2,293	3,178	2,462	2,680	2,407	2,384
Leather and related products	8,921	8,991	6,340	2,499	7,384	7,443
Wood products except furniture	4,202	5,262	6,827	5,851	5,033	5,252
Paper and paper products	9,185	12,168	11,576	27,683	12,425	12,800
Printing and reproduction of recorded media	9,697	10,976	8,881	6,552	18,385	18,548
Coke and refined petroleum products	287,510	412,504	347,564	348,300	245,614	237,907
Chemicals and chemical products	62,979	64,722	149,256	115,121	255,065	271,407
Pharmaceuticals, medicinal chemical and botanical products	29,740	14,608	12,344	11,348	20,162	20,509
Rubber and plastics products	9,066	10,028	12,438	12,237	8,676	8,801
Other non-metallic mineral products	18,613	20,237	18,398	18,735	19,253	20,330
Basic metals	31,647	14,203	55,914	55,845	41,884	42,707
Fabricated metal products, except machinery and equipment	7,416	7,568	11,766	23,552	12,525	11,971
Computer, electronic and optical products	29,969	27,896	41,846	49,931	43,158	43,902
Electrical equipment	25,898	21,588	20,018	24,922	51,507	52,296
Machinery and equipment n.e.c.	33,618	37,834	16,408	15,589	32,614	31,445
Motor vehicles, trailers and semi-trailers	3,247	1,202	2,740	3,140	18,856	17,316
Other transport equipment	0	8,490	50,703	9,907	1,606	1,721
Furniture	9,278	9,597	3,526	7,825	7,420	7,457
Other manufacturing	14,052	7,435	5,791	5,743	25,437	25,989
Total manufacturing	29,132	32,203	36,899	37,394	37,212	43,939

Note: Manufacturing value added at constant 2007 Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-13: Index of manufacturing value added per employee, by industry, 2007-2012
(Index)

	2007	2008	2009	2010	2011	2012
Food products	100	98	145	116	131	132
Beverages	100	61	76	70	91	91
Tobacco products	-	-	-	-	-	-
Textiles	100	203	148	772	239	266
Wearing apparel	100	139	107	117	105	104
Leather and related products	100	101	71	28	83	83
Wood products except furniture	100	125	162	139	120	125
Paper and paper products	100	132	126	301	135	139
Printing and reproduction of recorded media	100	113	92	68	190	191
Coke and refined petroleum products	100	143	121	121	85	83
Chemicals and chemical products	100	103	237	183	405	431
Pharmaceuticals, medicinal chemical and botanical products	100	49	42	38	68	69
Rubber and plastics products	100	111	137	135	96	97
Other non-metallic mineral products	100	109	99	101	103	109
Basic metals	100	45	177	176	132	135
Fabricated metal products, except machinery and equipment	100	102	159	318	169	161
Computer, electronic and optical products	100	93	140	167	144	146
Electrical equipment	100	83	77	96	199	202
Machinery and equipment n.e.c.	100	113	49	46	97	94
Motor vehicles, trailers and semi-trailers	100	37	84	97	581	533
Other transport equipment	-	100	597	117	19	20
Furniture	100	103	38	84	80	80
Other manufacturing	100	53	41	41	181	185
Total manufacturing	100	111	127	128	128	151

Note: Manufacturing value added at constant 2007 Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-14: Manufacturing value added per unit of capital, by industry, 2005-2012

	2005	2006	2007	2008	2009	2010	2011	2012
Food and beverages	0.48	0.54	0.78	0.83	1.14	0.85	0.80	0.90
Tobacco products								
Textiles	0.60	0.31	0.18	0.44	0.13	1.75	1.11	1.05
Wearing apparel	1.08	3.97	2.94	1.20	1.17	2.34	0.94	1.24
Leather and related products	0.61	1.02	0.83	1.77	1.97	0.33	1.02	1.20
Wood products except furniture	2.31	6.20	3.08	2.08	2.49	3.73	9.80	2.79
Paper and paper products	0.44	0.60	0.63	0.85	0.56	1.94	0.66	0.70
Printing and reproduction of recorded media	0.47	0.50	0.53	1.06	0.52	0.04	1.77	2.32
Coke and refined petroleum products	1.17	0.57	0.50	1.11	0.61	0.74	0.96	1.20
Chemicals and chemical products, pharmaceuticals	0.32	0.32	0.36	0.46	0.59	0.62	1.76	3.37
Rubber and plastics products	0.58	0.62	0.68	0.73	0.87	0.43	0.43	0.49
Other non-metallic mineral products	0.57	0.78	0.82	0.84	0.78	0.58	0.61	0.75
Basic metals	0.24	0.50	0.93	0.93	0.23	0.34	0.21	0.26
Fabricated metal products, except machinery and equipment	0.93	1.61	1.66	1.71	2.13	4.90	1.03	1.33
Computer, electronic and optical products	1.06	1.41	1.74	2.45	3.07	3.35	0.68	0.74
Electrical equipment	0.55	0.57	1.87	1.76	1.16	1.23	2.14	2.33
Machinery and equipment n.e.c., repair and installation	0.99	1.21	1.59	1.53	0.57	0.98	1.43	3.68
Motor vehicles, trailers and semi-trailers	192.85	5.09	1.91	0.73	0.53	0.28	7.75	2.33
Other transport equipment	-	-	-	7.90	15.57	3.25		
Furniture, Other manufacturing	1.39	1.32	2.70	3.76	1.71	1.96	3.17	2.22
Total	0.69	0.56	0.58	0.93	0.58	0.61	0.76	1.03

Note: Manufacturing value added and capital are at current Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-15: Number of manufacturing establishments, by location of operation, origin of ownership and industry, 2012

	Location of operation			Origin of ownership							
				Absolute				Share			
	Within industrial estate	Outside	Total	Omani	Foreign	Mixed	Total	Omani	Foreign	Mixed	Total
Food products	29	61	90	75	0	15	90	13.8%	0.0%	10.6%	12.8%
Beverages	6	22	28	26	0	2	28	4.8%	0.0%	1.4%	4.0%
Tobacco products	0	0	0	0	0	0	0	0.0%	0.0%	0.0%	0.0%
Textiles	6	4	10	9	0	1	10	1.7%	0.0%	0.7%	1.4%
Wearing apparel	0	4	4	4	0	0	4	0.7%	0.0%	0.0%	0.6%
Leather and related products	2	0	2	2	0	0	2	0.4%	0.0%	0.0%	0.3%
Wood products except furniture	1	16	17	15	0	2	17	2.8%	0.0%	1.4%	2.4%
Paper and paper products	5	4	9	5	0	4	9	0.9%	0.0%	2.8%	1.3%
Printing and reproduction of recorded media	6	31	37	32	0	5	37	5.9%	0.0%	3.5%	5.3%
Coke and refined petroleum products	5	4	9	4	0	5	9	0.7%	0.0%	3.5%	1.3%
Chemicals and chemical products	25	25	50	42	2	6	50	7.7%	13.3%	4.2%	7.1%
Pharmaceuticals, medicinal chemical and botanical products	2	1	3	2	0	1	3	0.4%	0.0%	0.7%	0.4%
Rubber and plastics products	26	32	58	43	2	13	58	7.9%	13.3%	9.2%	8.3%
Other non-metallic mineral products	54	150	204	165	5	34	204	30.3%	33.3%	23.9%	29.1%
Basic metals	16	18	34	21	4	9	34	3.9%	26.7%	6.3%	4.9%
Fabricated metal products, except machinery and equipment	38	40	78	56	1	21	78	10.3%	6.7%	14.8%	11.1%
Computer, electronic and optical products	2	2	4	2	0	2	4	0.4%	0.0%	1.4%	0.6%
Electrical equipment	17	8	25	16	1	8	25	2.9%	6.7%	5.6%	3.6%
Machinery and equipment n.e.c.	8	2	10	9	0	1	10	1.7%	0.0%	0.7%	1.4%
Motor vehicles, trailers and semi-trailers	1	2	3	1	0	2	3	0.2%	0.0%	1.4%	0.4%
Other transport equipment	0	2	2	2	0	0	2	0.4%	0.0%	0.0%	0.3%
Furniture	7	10	17	9	0	8	17	1.7%	0.0%	5.6%	2.4%
Other manufacturing	0	2	2	1	0	1	2	0.2%	0.0%	0.7%	0.3%
Repair and installation of machinery and equipment	5	0	5	3	0	2	5	0.6%	0.0%	1.4%	0.7%
Total manufacturing	261	440	701	544	15	142	701	100.0%	100.0%	100.0%	100.0%

Table C-16: Population, 1998-2012
(Thousands)

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
2,287	2,325	2,402	2,478	2,538	2,341	2,416	2,509	2,577	2,743	2,867	3,174	2,773	3,295	3,623

Table C-17: Persons engaged in the manufacturing sector, by location of operation, origin of ownership and industry, 2012

	Location of operation			Origin of ownership			
	Within industrial estate	Outside	Total	Omani	Foreign	Mixed	Total
Food products	3,922	5,197	9,119	6,449	0	2,670	9,119
Beverages	733	2,099	2,832	1,833	0	999	2,832
Textiles	458	211	669	595	0	74	669
Wearing apparel	0	711	711	711	0	0	711
Leather and related products	149	0	149	149	0	0	149
Wood products except furniture	33	2,578	2,611	2,534	0	77	2,611
Paper and paper products	355	141	496	313	0	183	496
Printing and reproduction of recorded media	393	1,228	1,621	1,436	0	185	1,621
Coke and refined petroleum products	168	1,746	1,914	1,720	0	194	1,914
Chemicals and chemical products	2,879	1,998	4,877	3,396	142	1,339	4,877
Pharmaceuticals, medicinal and chemical products	479	191	670	421	0	249	670
Rubber and plastics products	1,923	2,508	4,431	2,991	367	1,073	4,431
Other non-metallic mineral products	4,538	10,794	15,332	12,103	244	2,985	15,332
Manufacture of basic metals	6,683	1,548	8,231	2,329	982	4,920	8,231
Manufacture of fabricated metal products, exc. machinery	4,413	4,144	8,557	4,737	83	3,737	8,557
Other manufacturing	214	139	353	139	0	214	353
Electrical equipment	2,609	555	3,164	2,068	99	997	3,164
Machinery and equipment n.e.c.	627	74	701	551	0	150	701
Motor vehicles, trailers and semi-trailers	36	97	133	36	0	97	133
Other transport equipment	0	474	474	474	0	0	474
Furniture	546	2,381	2,927	822	0	2,105	2,927
Other manufacturing	0	92	92	12	0	80	92
Repair and installation of machinery and equipment	1,270	0	1,270	1,012	0	258	1,270
Total	32,428	38,906	71,334	46,831	1,917	22,586	71,334

Source: Ministry of Commerce and Industry (2013).

Table C-18: Persons engaged in the manufacturing sector, by nationality and industry, 2012

	Working proprietors, partners and unpaid family workers		Employees								Total persons engaged, manufacturing sector		
			Managerial and professional staff		Skilled operatives		Unskilled operatives		Other				
	O	E	O	NE	O	E	O	E	O	E	O	E	Total
Food products	68	22	500	960	857	2,008	1,394	2,079	431	801	3,250	5,869	9,119
Beverages	25	3	83	144	183	413	413	872	273	422	977	1,855	2,832
Tobacco products													
Textiles	5	4	52	87	88	304	25	103	0	2	170	500	669
Wearing apparel	6	4	29	15	23	379	73	167	0	15	131	580	711
Leather and related products	3	0	8	13	56	69	0	0	0	0	67	82	149
Wood products except furniture	87	0	24	279	1	1,847	326	42	5	0	443	2,168	2,611
Paper and paper products	4	10	26	82	69	191	19	68	9	18	127	369	496
Printing and reproduction of recorded media	34	7	173	257	144	752	113	83	17	40	481	1,140	1,621
Coke and refined petroleum products	5	3	1,226	488	21	72	41	55	1	2	1,294	620	1,914
Chemicals and chemical products	38	6	653	668	878	1,275	620	589	126	24	2,315	2,562	4,877
Pharmaceuticals, medicinal chemical and botanical products	1	0	17	126	117	336	8	29	21	15	164	506	670
Rubber and plastics products	56	8	292	526	512	1,943	304	551	111	127	1,275	3,156	4,431
Other non-metallic mineral products	732	73	869	1,170	1,154	5,188	850	4,506	273	516	3,879	11,453	15,332
Basic metals	19	25	592	985	1,319	3,213	997	963	47	70	2,975	5,256	8,231
Fabricated metal products, except machinery and equipment	80	21	216	593	620	4,445	750	1,512	216	106	1,881	6,676	8,557
Computer, electronic and optical products	2	0	12	49	51	143	23	65	2	6	90	263	353
Electrical equipment	9	3	271	543	758	1,052	219	290	12	7	1,269	1,895	3,164
Machinery and equipment n.e.c.	3	3	69	94	179	226	41	32	38	16	330	371	701
Motor vehicles, trailers and semi-trailers	0	0	5	14	14	53	5	18	9	16	33	101	133
Other transport equipment	68	0	34	34	0	68	0	271	0	0	102	372	474
Furniture	13	9	97	305	207	1,706	81	462	12	35	410	2,517	2,927
Other manufacturing	0	5	9	11	0	63	0	4	0	0	9	83	92
Repair and installation of machinery and equipment	6	2	52	144	96	711	92	112	17	38	263	1,007	1,270
Total persons engaged, manufacturing sector	1,263	208	5,308	7,587	7,347	26,459	6,394	12,872	1,621	2,276	21,933	49,401	71,334

Note: 'O' is Omanis and 'E' is expats.
Source: Ministry of Commerce and Industry (2013).

Table C-19: Female persons engaged in the manufacturing sector, by industry and nationality, 2012

	Working proprietors, partners and unpaid family workers		Employees								Total		
			Managerial and professional staff		Skilled operatives		Unskilled operatives		Other				
	O	E	O	NE	O	E	O	E	O	E	O	E	Total
Food products	3	2	77	22	167	34	355	12	72	9	673	79	753
Beverages	1	0	18	2	19	5	15	0	1	3	54	11	64
Tobacco products													
Textiles	1	0	31	6	37	1	19	0	0	0	88	7	95
Wearing apparel	1	0	7	2	20	128	71	0	0	0	99	130	229
Leather and related products	0	0	0	0	45	0	0	0	0	0	45	0	45
Wood products except furniture	56	0	8	11	0	0	0	0	0	0	64	11	75
Paper and paper products	0	0	7	4	19	0	4	0	0	0	30	4	34
Printing and reproduction of recorded media	5	0	47	4	27	12	68	0	2	0	149	16	165
Coke and refined petroleum products	0	0	112	14	0	1	2	0	0	0	114	15	129
Chemicals and chemical products	7	0	164	14	73	9	21	1	2	0	267	24	291
Pharmaceuticals, medicinal chemical and botanical products	0	0	6	12	48	0	3	0	10	0	67	12	79
Rubber and plastics products	2	0	70	8	65	3	72	4	11	1	220	16	236
Other non-metallic mineral products	13	5	174	31	23	5	45	1	20	7	276	48	325
Basic metals	0	0	124	26	29	1	2	0	4	0	159	27	186
Fabricated metal products, except machinery and equipment	8	0	79	11	86	24	18	3	3	3	193	42	235
Computer, electronic and optical products	0	0	3	2	5	2	6	0	1	1	15	5	20
Electrical equipment	1	0	50	17	50	7	13	0	0	1	114	25	139
Machinery and equipment n.e.c.	1	0	16	3	12	3	0	0	5	0	34	6	40
Motor vehicles, trailers and semi-trailers	0	0	1	0	12	0	0	0	0	0	13	0	13
Other transport equipment	0	0	0	0	0	0	0	0	0	0	0	0	0
Furniture	2	0	41	2	68	2	0	0	0	0	111	4	115
Other manufacturing	0	0	8	8	0	0	0	0	0	0	8	8	16
Repair and installation of machinery and equipment	0	0	9	2	0	0	1	0	2	1	12	3	15
Total	101	7	1,051	201	805	238	713	22	133	27	2,804	493	3,298

Source: Ministry of Commerce and Industry (2012).

Table C-20: Manufacturing employment, by industry, 2005-2012
(Index)

	2005	2006	2007	2008	2009	2010	2011	2012	Industry employment, 2012	Share in total manufacturing employment, 2012
Food products	100	105	119	134	143	144	136	141	9,050	12.9%
Beverages	100	94	104	123	126	151	165	161	2,804	4.0%
Textiles	100	92	80	77	74	74	232	198	660	0.9%
Wearing apparel	100	88	38	35	44	38	35	39	701	1.0%
Leather and related products	100	107	112	172	176	122	132	142	146	0.2%
Wood products except furniture	100	100	223	235	226	327	579	307	2,524	3.6%
Paper and paper products	100	93	111	110	116	93	88	69	482	0.7%
Printing and reproduction of recorded media	100	83	87	92	103	103	83	101	1,580	2.3%
Coke and refined petroleum products	100	105	185	177	177	202	139	159	1,906	2.7%
Chemicals and chemical products	100	98	111	122	148	154	157	230	4,833	6.9%
Pharmaceuticals, medicinal chemical and botanical products	100	121	97	169	183	134	120	134	669	1.0%
Rubber and plastics products	100	112	152	150	164	198	187	216	4,367	6.2%
Other non-metallic mineral products	100	107	112	125	151	149	147	169	14,536	20.8%
Basic metals	100	110	120	240	311	350	423	544	8,187	11.7%
Fabricated metal products, except machinery and equipment	100	129	190	175	202	217	157	244	8,457	12.1%
Computer, electronic and optical products	100	109	116	136	161	158	219	218	351	0.5%
Electrical equipment	100	114	151	175	188	205	246	273	3,152	4.5%
Machinery and equipment n.e.c.	100	85	104	138	135	160	158	177	695	1.0%
Motor vehicles, trailers and semi-trailers	100	118	145	138	149	447	474	141	133	0.2%
Other transport equipment	100	86	92	124	119	111	1143	483	406	0.6%
Furniture	100	105	176	187	194	214	224	186	2,905	4.2%
Other manufacturing	100	99	91	107	99	115	24	23	87	0.1%
Total manufacturing	100	105	126	140	157	167	171	191	69,893	100.0%

Source: Ministry of Commerce and Industry (2005-2012).

Table C-21: Manufacturing employment by gender and industry, 2005, 2006 and 2012

	2005				2006				2012			
	Total	Male	Female	Female share of total	Total	Male	Female	Female share of total	Total	Male	Female	Female share of total
Food and beverages	8,134	7,478	656	8.1%	8,368	7,683	685	8.2%	11,854	11,036	818	6.9%
Textiles	334	271	63	18.9%	307	282	25	8.1%	660	565	95	14.4%
Wearing apparel	1,809	813	996	55.1%	1,599	813	786	49.2%	701	472	229	32.7%
Leather and related products	147	104	43	29.3%	110	87	23	20.9%	146	101	45	30.8%
Wood products except furniture	823	806	17	2.1%	822	807	15	1.8%	2,524	2,449	75	3.0%
Paper and paper products	695	642	53	7.6%	649	582	67	10.3%	482	448	34	7.1%
Printing and reproduction of recorded media	1,568	1,426	142	9.1%	1,307	1,196	111	8.5%	1,580	1,415	165	10.4%
Coke and refined petroleum products	1,201	1,111	90	7.5%	1,261	1,152	109	8.6%	1,906	1,777	129	6.8%
Chemicals and chemical products, pharmaceuticals	2,700	2,531	169	6.3%	2,770	2,585	185	6.7%	5,502	5,132	370	6.7%
Rubber and plastics products	2,018	1,956	62	3.1%	2,264	2,184	80	3.5%	4,367	4,131	236	5.4%
Other non-metallic mineral products	8,599	8,387	212	2.5%	9,175	9,025	150	1.6%	14,536	14,211	325	2.2%
Basic metals	1,405	1,383	22	1.6%	1,653	1,624	29	1.8%	8,187	8,001	186	2.3%
Fabricated metal products, except machinery and equipment	3,559	3,471	88	2.5%	4,458	4,352	106	2.4%	8,457	8,222	235	2.8%
Computer, electronic and optical products	60	57	3	5.0%	61	57	4	6.6%	351	331	20	5.7%
Electrical equipment	1,024	1,008	16	1.6%	1,294	1,276	18	1.4%	3,152	3,013	139	4.4%
Machinery and equipment n.e.c., repair and installation	607	571	36	5.9%	428	397	31	7.2%	1,957	1,902	55	2.8%
Motor vehicles, trailers and semi-trailers	94	93	1	1.1%	111	109	2	1.8%	133	121	12	9.0%
Other transport equipment	-	-	-	-	-	-	-	-	406	406	0	0.0%
Furniture, other manufacturing	1,966	1,867	99	5.0%	2,043	1,944	99	4.8%	2,992	2,861	131	4.4%
Total	36,743	33,975	2,768	7.5%	38,680	36,155	2,525	6.5%	69,893	66,594	3,299	4.7%

Source: Ministry of Commerce and Industry (2005-2012).

Table C-22: Average annual nominal manufacturing wages and salaries, by industry, 2005-2012
(Omani Rial)

	2005	2006	2007	2008	2009	2010	2011	2012
Food products	2,623	2,521	2,689	3,044	3,054	3,535	4,503	4,608
Beverages	2,880	3,135	3,018	3,247	3,560	3,925	5,274	5,357
Tobacco products								
Textiles	3,282	3,071	3,503	3,926	3,789	4,303	4,336	4,383
Wearing apparel	1,212	1,270	1,124	1,246	1,103	1,133	2,424	2,452
Leather and related products	1,942	1,967	2,081	2,429	2,230	2,143	2,847	2,898
Wood products except furniture	2,176	2,005	2,046	2,445	2,442	2,266	2,641	2,833
Paper and paper products	2,714	2,712	2,498	2,885	2,984	3,099	5,575	5,997
Printing and reproduction of recorded media	2,921	2,680	2,847	3,335	3,539	3,410	4,148	4,317
Coke and refined petroleum products	11,761	9,943	7,909	7,179	12,650	7,891	8,335	8,580
Chemicals and chemical products	4,480	4,781	8,260	6,119	6,501	6,440	11,771	12,352
Pharmaceuticals, medicinal chemical and botanical products	2,753	2,651	4,655	3,353	3,729	3,023	6,571	6,688
Rubber and plastics products	2,182	2,285	2,297	2,604	2,679	2,615	4,388	4,390
Other non-metallic mineral products	2,501	2,569	2,848	3,152	3,227	3,616	4,378	4,580
Basic metals	3,472	3,502	6,778	3,284	3,376	5,093	8,379	8,013
Fabricated metal products, except machinery and equipment	2,252	2,324	2,673	2,762	3,243	2,995	5,265	5,067
Computer, electronic and optical products	5,051	4,981	5,714	5,936	6,477	6,866	6,082	5,818
Electrical equipment	3,641	3,039	3,108	4,636	3,957	5,110	7,300	6,970
Machinery and equipment n.e.c.	3,345	3,778	3,792	4,542	4,626	4,503	9,006	8,641
Motor vehicles, trailers and semi-trailers	2,143	1,766	1,759	1,636	1,884	2,353	3,824	3,637
Other transport equipment	3,560	4,083	2,627	2,920	3,754	3,868	1,970	2,188
Furniture	1,940	1,925	2,200	2,274	2,243	2,903	3,495	3,591
Other manufacturing	2,479	2,434	2,562	2,203	2,491	2,804	2,086	2,179
Total manufacturing	2,949	2,891	3,381	3,363	3,673	3,844	5,380	5,741

Note: Wages and salaries at current Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-23: Capital per employee in manufacturing sector, by industry, 2007-2012
(Omani Rial)

	2007	2008	2009	2010	2011	2012
Food and beverages	14,442	12,023	14,885	14,103	16,108	14,161
Tobacco products	-	-	-	-	-	-
Textiles	22,859	16,153	48,979	17,737	8,469	11,552
Wearing apparel	781	2,210	2,289	1,189	2,657	1,955
Leather and related products	10,687	4,265	3,621	7,128	5,738	4,808
Wood products except furniture	1,365	2,171	2,978	1,561	444	1,618
Paper and paper products	14,475	12,652	22,367	14,004	17,852	17,482
Printing and reproduction of recorded media	18,359	9,539	19,700	180,800	10,671	8,172
Coke and refined petroleum products	572,469	389,206	553,136	483,467	271,804	217,306
Chemicals and chemical products, pharmaceuticals	160,967	109,932	227,003	148,428	104,346	57,051
Rubber and plastics products	13,334	13,214	16,200	27,069	17,053	14,231
Other non-metallic mineral products	22,733	21,838	29,260	34,259	28,015	23,063
Basic metals	33,958	16,155	215,686	150,204	177,302	132,803
Fabricated metal products, except machinery and equipment	4,469	4,244	5,469	4,229	9,804	7,071
Computer, electronic and optical products	17,231	10,125	11,511	13,136	55,067	46,729
Electrical equipment	13,881	10,877	14,625	17,808	20,820	17,559
Machinery and equipment n.e.c., repair and installation	22,042	33,574	42,048	18,004	49,030	32,586
Motor vehicles, trailers and semi-trailers	1,703	1,636	5,210	11,177	2,434	7,437
Other transport equipment	0	1,075	3,256	3,046	0	0
Furniture, other manufacturing	3,630	2,239	2,534	3,831	2,195	3,140
Total	62,907	45,651	83,615	71,773	48,635	41,946

Note: Capital at constant 2007 Omani Rial.
Source: Ministry of Commerce and Industry (2005-2012).

Table C-24: Manufacturing exports, by technology level, and shares in total and manufactured exports, 1990–2013

	Total exports	Manu- factured exports	Resource- based exports	Low techn- ology exports	Medium techn- ology exports	High techn- ology exports	Share of manu- factured exports in total exports	Share in total manufactured exports			
								Resource- based exports	Low technology exports	Medium technology exports	High technology exports
1990	5,504	460	185	49	186	40	8.4%	40.1%	10.7%	40.5%	8.7%
1991	4,874	650	239	59	303	49	13.3%	36.8%	9.1%	46.6%	7.5%
1992	5,451	770	151	76	518	24	14.1%	19.6%	9.9%	67.3%	3.2%
1993	5,300	974	219	90	615	51	18.4%	22.4%	9.2%	63.1%	5.2%
1994	5,418	1,080	226	115	687	53	19.9%	20.9%	10.6%	63.6%	4.9%
1995	5,917	1,039	250	157	591	41	17.6%	24.0%	15.1%	56.9%	4.0%
1996	7,222	1,183	253	167	712	51	16.4%	21.4%	14.1%	60.1%	4.3%
1997	7,631	1,656	436	200	927	93	21.7%	26.3%	12.1%	56.0%	5.6%
1998	5,519	1,685	433	212	926	115	30.5%	25.7%	12.6%	55.0%	6.8%
1999	7,231	1,603	447	196	827	133	22.2%	27.9%	12.3%	51.6%	8.3%
2000	10,852	1,837	574	224	903	137	16.9%	31.2%	12.2%	49.1%	7.4%
2001	11,037	1,921	681	225	925	89	17.4%	35.4%	11.7%	48.2%	4.7%
2002	11,127	2,244	669	256	1,203	117	20.2%	29.8%	11.4%	53.6%	5.2%
2003	12,196	557	244	79	180	55	4.6%	43.7%	14.2%	32.3%	9.8%
2004	11,981	925	492	240	191	1	7.7%	53.2%	26.0%	20.7%	0.1%
2005	17,173	1,291	637	266	388	1	7.5%	49.3%	20.6%	30.0%	0.0%
2006	19,591	1,879	937	304	636	1	9.6%	49.9%	16.2%	33.9%	0.1%
2007	22,082	4,109	2,661	280	1,160	9	18.6%	64.7%	6.8%	28.2%	0.2%
2008	33,777	6,109	4,008	335	1,757	9	18.1%	65.6%	5.5%	28.8%	0.1%
2009	22,880	3,666	1,562	367	1,716	21	16.0%	42.6%	10.0%	46.8%	0.6%
2010	31,603	5,141	2,601	344	2,163	33	16.3%	50.6%	6.7%	42.1%	0.6%
2011	41,246	6,627	2,909	435	3,253	31	16.1%	43.9%	6.6%	49.1%	0.5%
2012	45,672	9,260	5,567	534	3,108	51	20.3%	60.1%	5.8%	33.6%	0.6%
2013	46,287	8,383	4,452	557	3,334	40	18.1%	53.1%	6.6%	39.8%	0.5%

Note: Monetary values at million Omani Rial.
Source: Directorate General of Customs, Oman

Table C-25: Share of natural resource rents in GDP, selected MENA countries, 2005-2013
(Percent)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
Egypt	23.7	24.1	21.2	26.5	12.1	12.0	13.9	12.1	10.9
Jordan	0.5	0.4	0.8	8.5	1.7	1.8	2.9	2.7	1.9
Kuwait	60.7	59.3	56.1	62.6	43.7	52.8	60.2	59.2	59.1
Morocco	0.7	1.0	1.7	8.9	2.1	3.0	4.7	4.9	3.7
Oman	55.6	53.6	49.5	50.5	35.7	39.3	44.1	39.5	38.0
Qatar	61.8	53.0	49.1	55.1	37.9	41.5	43.4	36.7	34.6
Saudi Arabia	58.2	58.0	55.1	64.8	41.9	46.9	51.6	48.7	46.2
Tunisia	5.9	6.1	7.6	13.1	5.9	6.8	7.7	6.9	6.2

Source: World Development Indicators (World Bank 2016b).