UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

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Science, Technology & Innovation Policy Review

Oman

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UNCTAD/DTL/STICT/2014/1
United Nations Publication

Preface

The Science, Technology and Innovation Policy Reviews prepared by UNCTAD aim to contribute to the development of national capacities in this field in order that national science, technology and innovation plans and programmes make an effective contribution to development strategies and improve the competitiveness of the productive sectors in a global economy in which knowledge is an increasingly important factor. This review is intended to be a tool for learning and reflection. It is an analytical instrument, not a rating mechanism, which examines a set of proposals from an external and neutral perspective.

This publication has three fundamental goals. Its first goal is to offer the Sultanate of Oman an up-to-date assessment of the framework conditions and interactions required for a functional national innovation system. The second goal is to draw attention to policy requirements for strengthening the national innovation system based on three important pillars: human capacities, intellectual property and economic diversification. The third goal is to provide a number of recommendations for strengthening policies and measures in order to improve technological capacity and encourage innovation.

The review of the science, technology and innovation policies of the Sultanate of Oman was conducted in response to a request by the Government of Oman and received the support of the Research Council of Oman. During visits to the Sultanate of Oman, the team held nearly 100 interviews and meetings with representatives of government agencies, research institutes, universities, trade unions, chambers of commerce, businesses and non-governmental organizations. An initial draft of this document was presented and discussed at a national workshop held in Muscat on 10 December 2013, with the participation of more than 100 experts and national science, technology and innovation stakeholders. The comments and suggestions made there have been taken into account in the preparation of this review.

This review would not have been possible without the cooperation of The Research Council of Oman and, in particular, H.E. Dr. Hilal bin Ali Al Hinai, H.H. Dr. Fahad bin Al Julanda Al Said and Dr. Abdullah bin Mohamed Al Mahruki (the national focal person). A special appreciation is owed to the National STIP Group and the Governance of the Grand Committee chaired by H.H. Sayyid Shihab bin Tariq Al Said. Gratitude is also extended to all participants in the national workshop and to the persons and entities, too numerous to be listed, that generously contributed their comments and ideas.

The assessments, opinions and conclusions expressed in this document are entirely those of the UNCTAD secretariat.

Acknowledgements

The review was prepared under the direction of Anne Miroux, Director of the UNCTAD Division on Technology and Logistics, and under the direct supervision of Angel González Sanz, Chief of the Policy Review Section of the Science, Technology and ICT Branch. The document was produced by UNCTAD economist Dimo Calovski with inputs from expert consultant Jean-Eric Aubert.

The document greatly benefited from inputs from the International Labour Organization which has been a partner in preparing parts of this report by providing substantive contributions, especially in the drafting of the section on human resources labour and employment. Professor Zafiris Tzanantos, ILO consultant and labour market expert, and Mary Kawar, ILO Regional Office for Arab States, provided comments on the draft text.

The manuscript was copy edited externally by Praveen Bhalla and typeset by Dimo Calovski. Sophie Combette designed the cover.

Contents

Abbreviations

FDI	foreign direct investment
GCC	Gulf Cooperation Council
GDP	gross domestic product
GII	Global Innovation Index
IIC	Industrial Innovation Centre
ITA	Information Technology Authority
ICT	information and communications technology
ILO	International Labour Organization
IP	intellectual property,
IPR	intellectual property right
MOCI	Ministry of Commerce and Industry
NCSI	National Centre for Statistics and Information (Sultanate of Oman)
NISAP	National Innovation Strategy Action Plan
OCCI	Oman Chamber of Commerce and Industry
OMR	Omani rial
PACI	Sultanate of Oman Public Authority for Crafts Industry
PAIPED	Public Authority for Investment Promotion & Export Development
PDO	Petroleum Development Oman
PEIE	Public Establishment for Industrial Estates
R&D	research and development
SME	small and medium-sized enterprise
SQU	Sultan Qaboos University
STI	science, technology and innovation
STIP	science, technology and innovation policy
TIMSS	Trends in International Mathematics and Science
TRC	The Research Council
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
WEF	World Economic Forum
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Executive Summary

1. Introduction

Oman, located on the south-eastern corner of the Arabian Peninsula, has a long and rich history and a tradition of exploration abroad. With 3.9 million inhabitants and a per capita income of $21,390, Oman has experienced robust economic growth and remarkable political stability since His Majesty Sultan Qaboos bin Said ascended the throne in 1970. Such economic growth has been made possible largely by earnings from the oil and gas sector, which dominates the economy and represents 51.6 per cent of the country's GDP. However, this development path is at risk: in the short-term, the economy is not generating enough jobs for Omani nationals, while in the long-term, oil reserves will decrease and their exploitation costs will grow against a backdrop of oil price volatility. Moreover, economic development based largely on exploitation of oil reserves is questionable from a long-term environmental perspective. Oman ranks among the top 20 countries globally in terms of its per capita carbon emissions, and growing and extensive urbanization is resulting in correspondingly high energy consumption, along with traffic congestion problems.

A further complication is that the growth of the economy has relied, to a large extent, and particularly during the last decade, on a considerable amount of cheap labour from abroad, which, today, constitutes about one third of the population. On the other hand, there is considerable unemployment among the local population, especially Oman's youth. These issues are not entirely specific to Oman; they are also prevalent in other countries that depend on oil revenues for growth and have a large proportion of imported labour. However, they will need to be addressed as a matter of priority in view of Oman's specificities and the unique nature of its economy and society.

His Majesty Sultan Qaboos and his Government are determined to influence the development trajectory of the country. The 8th Five Year plan (2011–2015) has a series of key objectives, including diversification of the economy, upgrading of human resources, support for small and medium-sized enterprises (SMEs) and promotion of foreign investment. There is clearly a need to accelerate the structural transformation of the economy, particularly with a view to job creation. A key strategic response by the Government has been the introduction of an active policy of Omanization of the labour force. However, while this may produce some short-term positive results, a more enduring and sustainable solution to Oman's development challenge is to achieve transformative and diversified growth underpinned by a strong national science, technology and innovation system and strategy.

While the establishment of an efficient national innovation system can lead to a more diversified, more productive and more sustainable economy, with higher quality and more attractive jobs, there are limits to the employment opportunities that an innovation-based diversification process can generate. Global economic competition, the nature of technological change and demographic trends will influence the dynamics of transformation. These in turn will feed back and change broad perceptions and expectations of conditions of employment, social services, and the nature and quality of education, leisure and retirement.

2. Oman's innovation system and global innovation indicators

Acknowledging the key role of innovation as a driver of economic development, it will be necessary for policymakers to be able to measure and assess outcomes. For this, they will require innovation indicators beyond the traditional metrics of inputs, such as the level of funding of research and development (R&D). Indicators are necessary to support policymaking as a continuous process. An example of a synthetic indicator is the Global Innovation Index (GII), developed by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), which combines some 80 indicators detailing the components of the innovation ecology both from the input and output sides. It uses objective and subjective data. Objective data are quantitative, such as school enrolments and Internet use; subjective data are derived from surveys of opinions of business and government leaders and executives. It also looks at GII in relation to per capita gross domestic product (GDP).

Oman is ranked 80th on the GII (2013).[1] To a large extent, this is due to sub-optimal efficiency in the use of an environment and assets that are advantageous from an innovation perspective. While GII rankings should not be understood as an absolute indicator, note should be taken of year-on-year relative changes which should encourage a more proactive policy involvement. The modest performance of the national innovation system in Oman suggests the need for accelerating its policy reform processes in the near future. Regional comparisons indicate that Oman needs to develop an effective and efficient innovation system, including improving its innovation infrastructure and climate, to augment its innovative outputs.

The GII confirms that Oman has sufficient institutional strengths and that its main challenge is that its economy is not sufficiently diversified.

3. Framework conditions and the national innovation system

Framework conditions constitute the overall environment in which a national innovation system functions. Variations in innovation performance between economies are largely due to differences in how the government, firms, universities, research centres, public agencies and other participants in innovation, interact within the existing framework conditions.

Governance

His Majesty Sultan Qaboos bin Said is firmly at the helm of Oman and benefits from a very strong aura of prestige. He determines the strategic course of the country, taking key decisions expressed in the form of royal decrees following consultations with concerned bodies. He occasionally intervenes in questions directly related to innovation and the business environment, as described later in the government policies and programmes section of this review. He is assisted by a Cabinet of Ministers, which is responsible for developing and implementing national policies on economic, political, social, executive and administrative matters, including presenting proposals for legislation.

A number of agencies, with varying degrees of autonomy, are in charge of specific economic, social and technical issues. The Research Council (TRC), which is in charge of R&D strategy and policy and covers innovation policy issues, plays a particularly important role in the development of the country's innovation system. The relative effectiveness of the political and institutional environment and high level of political stability have resulted in considerable trust of the citizens in public institutions, in the political class and in the independence of the judicial system. Conditions of social dialogue are good, with an active tripartite process referred to as Social Dialogue Oman, which includes the Chamber of Commerce, the trade unions and the Ministry of Manpower. The Government has a strong capacity to develop, enact and enforce legislation. This is complemented by a long-term and strategic planning approach, embodied in Vision 2020, which was adopted in 1996, and Vision 2040, which is currently under development. Five-year plans are systematically implemented and develop the Vision in operational terms to cover various economic sectors and social issues.

In order not to squander the positive strengths of Vision 2020 and upcoming Vision 2040 strategies, a particular challenge for policymakers is to improve horizontal and non-hierarchical consultations and communication flows. At present, these are sometimes bound by a hierarchical organizational structure and communication cultures of some domestic institutions. Enabling greater and faster horizontal communication would reduce the burden at the highest level of policymaking to act as information gatekeepers on details that are not meaningful in terms of seniority and competence. Improving inter-institutional communication is a fundamental requirement for developing an innovation system and institutional leadership, and policymakers should explore and eliminate any disincentives that prevent bureaucracies from developing broader linkages.

Macroeconomic context, business environment and infrastructure

The macroeconomic situation in Oman is likely to be the most problematic factor in developing its innovation system. Growth has been maintained at a satisfactory level of over 4 per cent a year thanks to a