مؤسسة قطر
Qatar Foundation
لإطلاق قدرات الإنسان.
Unlocking human potential.

دولة قطر
وزارة التخطيط التنموي والإحصاء
Ministry of Development Planning and Statistics

Findings of **Research & Development** Survey in the State of Qatar 2015

www.mdps.gov.qa
www.qf.org.qa

وزارة التخطيط التنموي والإحصاء
Ministry of Development Planning and Statistics

مؤسسة قطر
Qatar Foundation
لإطلاق قدرات الإنسان.
Unlocking human potential.

Findings of Research & Development Survey of Qatar 2015

www.mdps.gov.qa
www.qf.org.qa

H.H. Sheikh Tamim Bin Hamad Al-Thani
Emir of the State of Qatar

In case of quotation, please refer to this publication as follows:

Ministry of Development Planning and Statistics, 2017, Qatar's R&D Survey Results 2015

Doha - Qatar

Correspondence to be forwarded to:

Ministry of Development Planning and Statistics

P.O. Box: 1855, Doha - Qatar

Tel: +974 4495 8888

Fax: +974 4495 9999

For statistical data, please send your request to: mdr@mdps.gov.qa

Legal Deposit No: 2017 - 468

ISBN: 978 - 9927 - 125 - 40 - 9

Follow us on:

www.mdps.gov.qa

www.qf.org.qa

www.qalm.gov.qa

MDPSQatar

@MDPSQatar

mdps_qr

MDPSQatar

Contents

List of Tables

List of Figures

Introduction

The Ministry of Development Planning and Statistics (MDPS) is pleased to introduce the findings of the R&D Survey of Qatar 2015 the researchers, interested professionals and decision-makers. This comes within the framework of the MoU signed between the MDPS and Qatar Foundation Research and Development (QF R&D) on 22 March 2016. This MoU aims to establish a national R&D statistical system through the implementation of a statistical field survey to gauge R&D inputs in Qatar. The survey is intended to meet the needs of researchers, planners, policymakers, and all entities and agencies involved in R&D in Qatar.

R&D is fundamental to the first and second iterations of the Qatar National Development Strategy, which seeks to transform Qatar's economy into one that is based on knowledge, and therefore more sustainable and less vulnerable to global market volatility. Qatar's commitment to developing this field is reflected in the allocation of 2.8% of its revenues to underpin R&D projects (Under the Emiri Decree No. 24 of 2008). Due to the importance of this field, Qatar has prepared a National Strategy for R & D Sector with the objective of enabling the nation to become "a major power in scientific and technological discoveries, and in the translation of knowledge into creative applications that have significant social, economic and environmental impact, and therefore to contribute to the transformation of Qatar's economy into a knowledge-based economy, to support the Qatar National Development Strategy and Sustainable Development Agenda 2030". Furthermore, the substantial contribution of experimental research and development in Qatar mirrors the vitality of the nation's innovation efforts, due to its importance in realizing the nation's goals, and to the technological adaptation and understanding that it enables.

In implementing this survey, the methodologies and standards of the Organization for Economic Co-operation and Development (OECD) have been adopted. These are international methodologies for the measurement of R&D. The survey intends to identify the extent of R&D personnel in Qatar, their characteristics, and expenditure by type, funding sources, and areas of research and development.

I would like to extend my gratitude to all institutions, research centers, universities, ministries, government agencies and the private sector for cooperating with us and providing us with the data necessary to complete this survey. At the Ministry of Development Planning and Statistics, we welcome remarks and feedback with regard to the survey findings, and we hope that these findings will provide insight and bring benefits to Qatar's R&D community, stakeholders, and policymakers.

Dr. Saleh bin Mohamed Al-Nabit
Minister of Development Planning and Statistics

Acknowledgments

The Ministry of Development Planning and Statistics would like to thank everyone who contributed to the implementation of the Research and Development Survey 2015.

In particular, we wish to thank the members of the Steering Committee:

From MDPS	From QF R&D
Mr Mohamed Said Al-Mohannadi	Dr. Hamad Al-Ibrahim
Mr Nasser Saleh Al-Mahdi	Mrs Nada Al-Olaqi
Dr. Ahmed Hussein	Dr. Imad Khadduri

We would like also to thank the technical team:

Mr Mohamed Said Al-Mohannadi, Survey General Supervisor

Mrs Wafaa Al-Sulaiti, Survey Director

Mr Kacem Saad Al-Amri, Survey Assistant Director

Ms Doaa Al-Shaib, Project Programmer

Ms Nora Al-Hazza, Follow-up Officer

Field Researchers:

Mr Hani Othman Mahmud

Mr Abd-al-Rahim Kisa Basha

Communication and Follow-up Researchers:

Mrs Ahd Al-Fateh

Mrs Sumia Al-Aqid

Mrs Rehab Al-Rih Yusuf

We also extend our thanks to Survey Advisor, Professor Michael Kahn of the Centre for Research on Evaluation, Science and Technology, Stellenbosch University.

Executive Summary

In 2008, the State of Qatar adopted Qatar National Vision 2030, the objective of which is to provide a framework for the transformation of Qatar's economy into a knowledge-based economy that is capable of ensuring sustainable human, social, economic, and environmental development, and is less vulnerable to volatility in global markets. R&D has been a fundamental component of the first Qatar National Development Strategy (20112016-), and the second iteration of this strategy (20172022-). The R&D Survey of Qatar 2015 was implemented through collaboration between the MDPS and QF R&D, which is the custodian of the Qatar National Research Strategy. The R&D Survey of Qatar 2015 is the second of its kind, after the previous edition collated in 2012. Research agencies falling within three sectors - business, government sector, and higher education – participated in this survey, which compares the State of Qatar's research and development environment with those of selected countries; R&D expenditure, its types, and funding sources; and personnel engaged in experimental R&D personnel.

The survey identify that the capital expenditure is included software separately in 2015in 2015. In addition, the survey categorized Qatar's R&D personnel in terms of their education, occupation, and distribution by nationality and gender. The survey tackled the FTEs, and compared them to Qatar's research and development environment in 2012. The survey includes the research outputs of participating agencies.

The key findings of the survey include:

1. An increase in R&D personnel from 3,038 in 2012 to 4,720 in 2015; a rise of 55.4%. The percentage of researchers among total R&D personnel rose to 60%, up from 57% in 2012.
2. The proportion of Qataris among Qatar's total R&D personnel increased to 19.6% in 2015, as against 13% in 2012
3. National resources cover R & D funding in the State of Qatar by 98.14% and foreign funding is declined in 2015.
4. The number of agencies participating in the R&D Survey of Qatar 2015 increased from the previous survey in 2012, leading to more comprehensive data being provided and an increase in quality.
5. Higher education agencies which participated in this survey produced 1,980 research products, including articles (88.5%), and policy briefs, books, and customer reports (11.5%).
6. GERD decreased from QR3,254,836,183 in 2012 to QR3,054,536,835 in 2015, a decrease of 6.2%.
7. The size of GERD in Qatar amounted to 0.51% of GDP, placing Qatar sixth among the nine countries compared through the survey in this context, and second among GCC countries. Chinese Taipei came top of the list with 3%.
8. Qatar's domestic expenditure on research and development is reflected in its good position within the Global Competitiveness Index and Global Innovation Index.
9. The expenditure on land, buildings and other constructions increased by 135.3% and R&D personnel cost increased by 12.4% in 2015 compared to 2012.
10. Expenditure on land, building and other construction rose by 135.3%, and R&D personnel increased by 12.4% in 2015 compared to 2012.
11. In 2015, Qatar's Government is came first in terms of providing R&D funding resources at 37%, followed by research entities (32.6%) and other national sources (28.54%), including the domestic business sector, whose participation stood at 0.63%.
12. According to the field of research, R&D expenditure on humanities increased by 86.1%, engineering and technology by 38.2% and humanities by 36.5% in 2015 compared to 2012.
13. According to the classification of economic and social objectives, in 2015, R&D expenditure on 'transport, communications, and other infrastructure' doubled by 477.4%' expenditure on 'social and political systems, structures and processes' increased by 104.5%' expenditure on energy increased by 83.5%' and expenditure on 'culture, education, religion, and media' increased by 35.2%, compared to 2012.
14. Qataris represented the highest increase of researchers by nationality at sectoral level, with this increase being 23.8% in the government sector, and the highest increase of supporting staff by nationality - 53.5% in the higher education sector - in 2015, compared to 2012.
15. The percentage of PhD-holders rose by 13.3% in 2015 compared to 2012. The rise was more evident among non-Qataris, with regard to personnel and full-time equivalent by sector, occupation, and specialization.

R&D retains an important position in Qatar's development policies. Qatar has allocated 2.8% of its revenues to support R&D-related projects. This percentage may increase in order for Qatar to achieve its desired standing among countries around the world that are oriented toward fostering knowledge-based economies and investing in human capital, due to natural resources dwindling. Qatar's reliance on its own natural resources to finance its R&D activities is considered a significant challenge, in light of the volatility that the energy and oil market has witnessed for several years.

Survey Methodology

Definition of research and development:

- Research is the creative, authentic and methodological work that aims to increase the stock of knowledge, including knowledge of man, culture and society.
- Experimental development is represented in the application of the research findings or scientific knowledge with the aim of producing products or applications, or new methods, or to improve them significantly.

This survey follows the Frascati Manual guidelines to conduct surveys on the inputs of research and experimental development (OECD, 2002).

- **Basic research**

  This is experimental or theoretical work aimed primarily at gaining new knowledge of the underlying foundation of phenomena and observable facts without any particular application or use in view.
- **Applied research**

  This relates to research that is also an innovative work undertaken to gain new knowledge directed primarily to a certain application. However, such research primarily seeks to be valid for a single product, process, method, or system, or to a certain number of it.
- **Experimental development**

  This is a systematic work, drawing on existing knowledge to produce new materials, products or devices, and to install new processes, systems and services, or to substantially improve them.
- **Survey goals**

  The survey aims to identify the inputs and indicators of research and experimental development for the fiscal year 2015 in Qatar, regarding the size of general human resources and their characteristics, and the size of R&D expenditure by type, funding sources, and research and development fields, and to gain a true perspective on Qatar's research efforts.
- **Implementation period**

  The implementation period to conduct the field R&D Survey took place from October - December 2016. During this period, a training workshop was held for coordinators from research agencies coordinators to identify the survey goals and understand the data collection mechanism, through an electronic form placed on the MDPS website.
- **R&D Survey Scope**

  The R&D Survey determines the inputs of human and financial resources related to the conduct of research and development. R&D surveys which seek assistance from external agencies for a given period during the survey are not counted. Therefore, an agency which implements the survey should conduct a report on such an activity. R&D surveys which are implemented abroad are not counted in the standard R&D surveys. Each OECD team, and groups of experts in science and technology indicators, conducted these issues during deliberations that took place within special meetings designed to produce the seventh edition of "Frascati Guide", which was published in 2015. 85 research agencies in Qatar, falling within three sectors (business, government, and higher education), participated in the R&D Survey. Private non-profit organizations were excluded due to their lesser role in R&D at present.

  The next step is to develop sampling frames for units of measurement for each sector. The surveys may result in the conduct of measurement units, and a survey specifically dedicated to units of measurements, or a combination of both.

  R&D personnel, researchers, technicians and other staff are classified into categories after the appropriate identification of each category. Doctoral students and PhD holders are identified as researchers.

  R&D expenditure is then calculated from bottom to top, being considered as the total cost of work and other current expenditure and capital expenditure. It was agreed that R&D capital expenditure would be classified as being within the year in which such expenditure was incurred.

  Total R&D expenditure can then be classified according to the type of research and development, field of science, and the socio-economic objective of research and development. Expenditure can also be recorded on topics of particular interest, and R&D expenditure must match financial resources. As for the accounting systems of R&D entities, they are usually not designed to collect data according to the above categories, so their estimation may be required and the data is essentially quantitative, but there is considerable self-evaluation and classification.

  In this context, survey researchers visited research and development agencies to explain the form and the method of completing it, and to emphasize the importance, accuracy and confidentiality of the required data and that it will be used only for research purposes only.

  The survey of experimental R&D inputs is committed to the guidelines of the Frascati Manual (OECD, 2002) and covers the fiscal year 2015.

The R&D inputs survey measures three major sectors:

1. Business sector:

- Companies, organizations, and institutions which are primarily active in marketing the production of goods and services (excluding higher education institutions).

- Public and private enterprises and non-profit organizations producing other goods and services, excluding higher education institutions.

The surveyed segment is classified based on its dominant activity and the use of the International Standard Industrial Classification of All Economic Activities ISIC (Rev. 4).

It is important to indicate that the non-profit private sector falls under the category of the business sector.

The R&D Survey covers areas of natural sciences, engineering, agricultural, health, medical sciences, and social and human sciences.

2. Government sector:

- Department Business Research Institute (DBRIs).
- Public research institutes

3. Higher Education Sector:

- Universities and technology institutes and other organizations which ensure higher education, regardless of their funding source or legal status.
- Research institutes, testing centers, and clinics that are directly supervised by, managed by, or managed in cooperation with, the higher education institutions (OECD 2002).

R&D Inputs

- **R&D personnel**

The R&D personnel data measures the extent of the human resources participating in R&D activities in Qatar, namely "all the personnel that are directly working in R&D, and those who provide direct services as R&D managers, administrators and staff" (OECD 2002).

R&D personnel are measured in terms of their number and full-time equivalent, and are classified by occupation and qualification.

Researchers:

These are professionals engaged in the conception and creation of new knowledge, products, processes, methods and systems, as well as the management of projects for such purposes.

Technicians:

Technicians and equivalent staff are those participating in research and experimental development to implement scientific and technical tasks that require the application of operational concepts and methods, and that are usually under the supervision of researchers.

Supporting staff:

They are skilled and unskilled workers, secretarial and clerical staff, participating in R&D projects, or directly-associated staff in higher education institutions. PhD students and post-PhD colleagues are considered a sub-category of researchers.

Expenditure on R&D

The expenditure refers to the actual expenditure carried out by those responsible for R&D, not to the sums included in the budget. Therefore, only 'internal' expenditure should be featured in the survey. In addition, there should be a commitment to reporting other expenses when external sources are fully used in R&D activities.

- **Expenditure includes what follows:**

1- Current expenditure includes:

- R&D personnel costs
- Other current costs
- Indirectly-paid current costs

2- Capital expenditure

This represents sums spent by the institution in the survey year which should not be registered as an asset depreciation factor. This approach differs from the accounting procedures which distribute capital expenditure cost over a number of years. For example, the value of buildings often depreciates over twenty years.

Categories of capital expenditure are as follows:

- Land and buildings
- Devices and equipment
- Software

- **Expenditure by scientific field**

This is a measurement tool for verifying expenditure on R&D by different areas of science. The major scientific fields are: natural science, engineering, technology, medical and health sciences, agriculture, social sciences and humanities.

- **Expenditure by socio-economic objectives**

This is the functional analysis of the preliminary socio-economic objectives within the scope of R&D, for which these activities from Frascati Manual 2002 were achieved.

Abbreviations

MDPS	Ministry of Development Planning and Statistics
BERD	Business Expenditure on R&D
DBRI	Department Business Research Institute
FOS	Field of Science
FTE	Full-time equivalent
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure on R&D
GOVERD	Government Expenditure on R&D
HC	Headcount
HERD	Higher Education Expenditure on R&D
ISCED	International Standard Classification of Education
ISIC	International Standard Industrial Classification of All Economic Activities
NPO	Nonprofit Organization
OECD	Organization of Economic Cooperation and Development
PPP	Purchasing Power Parity
PRI	Public Research Institute
R&D	Research and Development
S&T	Science and Technology
SEO	Socio-economic Objectives
SSH	Social Sciences and Humanities
STA	Scientific and Technological Activities
STET	Scientific and Technological Education and Training
STI	Science, Technology and Innovation
STS	Scientific and Technological Services
UIS	UNESCO Institute for Statistics

Chapter One

Comparing the R&D Environment in the State of Qatar with Selected Countries

This chapter presents Qatar's efforts in supporting R&D projects in different fields of human, social, economic and environmental development in 2015, and compares the performance of Qatar with a selected group of countries, including developed countries and four GCC countries.

With regard to R&D, Qatar is making great efforts in the higher education, health and industry sectors, most notably Qatar University, Qatar Foundation for Education, Culture, Science and Community Development, and its affiliates, such as Qatar Science & Technology Park and Qatar National Research Fund.

As for per capita GDP, population size, and industry type, it is possible to compare Qatar with Luxembourg, Kuwait, the UAE, Norway, Oman, and Singapore. If population size is excluded, a comparison with Saudi Arabia and Chinese Taipei may also be useful. Table (1) includes the relevant science and technology indices.

Qatar National Research Strategy 2012

The Qatar National Research Strategy reflects extensive input from Qatar's research leadership, researchers and other stakeholders.

Mission

The national research program will be based on inclusiveness and intellectual merit to:

- Develop the capabilities of Qatar's people and institutions
- Build and maintain a competitive and diversified economy
- Improve the health and social well-being of Qatar's population
- Support Qatar's distinctive culture and the security of its people
- Preserve and improve the natural and built environment

Vision

Qatar will be a leading center for research and development excellence and innovation, and for conservation and development of natural and built environment

Source: Qatar National Research Strategy 2012

Comparison Indices of Science and Technology 2015

GDP (million)

Country	*Classification of countries according to per capita GDP	Oil and gas	GERD	GCI	Innovation development in GCI	GII	Innovation outputs in GII	PCT/million	Publications
Chinese Taipei	n.a	No	3	14	13	n.a.	n.a.	n.a.	1251.9
Singapore	7	No	2.2	2	11	7	20	171.6	2856.7
Norway	13	Yes	1.71	11	16	20	25	146.8	3268.5
Luxemburg	9	No	1.5	19	18	9	2	784	2634
UAE	10	Yes	0.7	12	21	47	99	17.8	90.9
Qatar	1	Yes	0.51	16	15	50	62	7.2	886.4
Kuwait	4	Yes	0.3	40	95	77	70	1.1	341.1
Oman	42	Yes	0.25	46	58	69	68	0	302
Saudi Arabia	18	Yes	0.25	24	32	43	44	14.6	551.5

Source: OECD science and technology indicators for 2016, http://uis.unesco.org, Global Competitiveness Report 2015, Global Innovation Index 2015, Annual Review of WIPO 2015, and Web of Science Core Collection.

Gross national income per capita 2015, Atlas method and PPP, http://databank.worldbank.org/data/download/GNIPC.pdf

The countries with the highest diversified economies, such as Chinese Taipei, Luxembourg, Norway, and Singapore, are among the highest countries for GERD, according to their GDPs.

GERD is high in Qatar which is ranked second in the Arab world, after the UAE, with an expenditure percentage of 0.51% of GDP. This expenditure reflects Qatar's economic structure, which has large industries based on joint resources and investments with large global companies. These parent companies, participating in investments with the Qatari authorities, conduct R&D at their headquarters in their countries of origin. The strong role that joint investment projects play can also be seen in Kuwait, Oman, Saudi Arabia, Luxembourg, and Singapore.

The R&D Survey 2015 findings show a consistency with the positive ranking of Qatar in the GCI. According to the GII, Qatar is at an advanced position at Arab level, before Kuwait and the UAE, and after Saudi Arabia. This is reflected in the increase of patent applications in recent years, in addition to Qatar's advantage over neighboring countries in terms of scientific production outputs compared to number of population. Table (15) clarifies the total number of reviewed articles.

Chapter Two

R&D Expenditure and Sources of Funding

The chapter deals with the expenditure of different sectors which conduct R&D activities in the State of Qatar, and types of expenditure (current, capital, or personnel). The chapter also shows the different expenditure funding sources, and the socio-economic objectives of the survey. It also presents the comparison of this expenditure with the findings of the previous survey in 2012.

2.1 GERD by Sector and Type of Research

The higher education sector in Qatar received 69.8% of GERD in 2015, whereas the government sector share was 13%, and then business sector share 17.2%. The higher education share rose by 66.6% of GERD, while the government sector decreased by around 60%, and expenditure on the business sector decreased by approximately 33% compared to 2012.

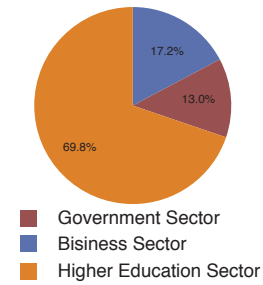
The GERD results indicate that expenditure on basic research reached 30.2% of GERD, and expenditure on applied research was 57.3%, compared to 12.6% on experimental development in 2015. Expenditure on basic research increased by 11.1%, and applied research by 14.3%, in 2015 compared to 2012, whereas expenditure on experimental development decreased by 44.8% during the same period.

As for the business sector, expenditure on basic research amounted to 11%, applied research 57.9%, and experimental development 31.1% in 2015. Expenditure on basic research, and experimental development research, in this sector was 37.9% and 25.6% respectively. Applied research expenditure rose by 42.9% in 2015 compared to 2012.

Government sector expenditure on basic research constituted 28.5%, applied research 53.1%, and experimental development 18.4% in 2015. Expenditure increased on both basic research and experimental development, by 23.9% and 81.9% respectively, whereas expenditure on applied research decreased by 20.6% in 2015 compared to 2012.

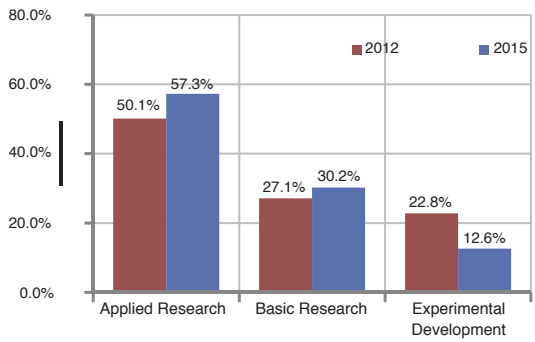
In higher education, expenditure amounted to 35.2% on basic research, 57.9% on applied research, and 6.9% on experimental development in 2015. Expenditure on basic research and experimental development research decreased by 2.7% and 66.6% respectively. Expenditure on applied research increased by 34.3% in 2015 compared to 2012.

Percentage of GERD by Sector 2015



Expenditure on basic research increased by 11.1%, and applied research by 14.3%, in 2015 compared to 2012

Percentage of GERD by Type of Research 2012 and 2015



2.2 GERD by Type of Expenditure

The results of GERD by type of expenditure shows that personnel costs (including postgraduate studies for the higher education sector) represented over two-fifths of expenditure (41.5%) in 2015. The total capital expenditure amounted to more than one-third of expenditure (33.2%), and the percentage of other current expenditure was around a quarter of the total sum (25.4%). Compared to 2012, personnel costs increased by 12.4% in 2015, and capital expenditure rose by 49.3%, whereas other current expenditure decreased by 37.9% during the same period.

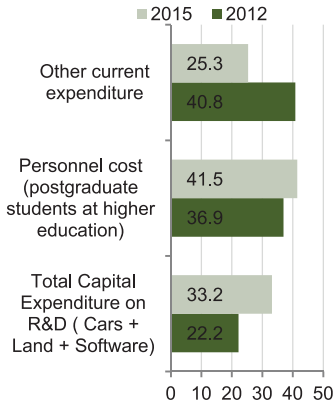
Analyzing expenditure types by sector, we find:

Other current expenditure in the business sector reached 27.2%, personnel 46.7%, and total capital expenditure 26.1% in 2015. Compared to 2012, the percentage of expenditure on both personnel and total capital increased by 38% and 71% respectively. Other current expenditure decreased by 46.7% during the same period.

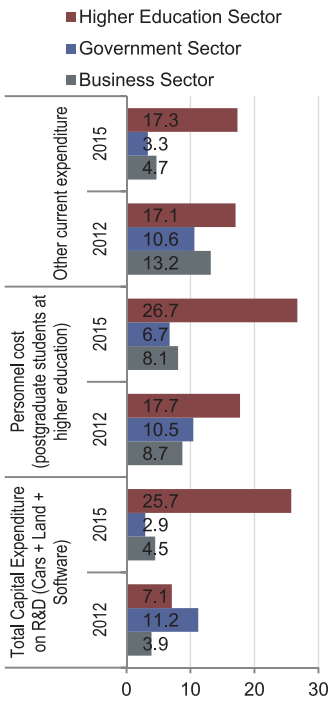
In the government sector, the share of expenditure on other current expenditure reached 25.7% and labor force costs reached 51.8%, while capital expenditure reached 22.5% for the same year. Labor force costs increased by 60%, and expenditure on land, buildings and establishments increased by 18.1%, in 2015 compared to 2012. Alternatively, expenditure on cars, factories and equipment decreased by 68.6%, and on other current expenditure by 22%, during the same period.

In the higher education sector, other current expenditure amounted to 24.8%, personnel costs represented 38.3%, and total capital expenditure amounted to 36.9%. Analyzing the components of capital expenditure, the survey found that land, buildings and other establishments accounted for 31.9%, cars and other factories 4.3%, and software less than 1%. Expenditure on land, buildings and establishments increased by 156.9%, while there were decreases in personnel costs (9.7%), expenditure on cars, factories and devices (4.3%), and other current expenditure (39%) in 2015 compared to 2012.

GERD by Type of Expenditure 2012 and 2015



GERD by Sector and Type of Expenditure 2012 and 2015



2.3 R&D Funding Sources by Sector and Type of Source

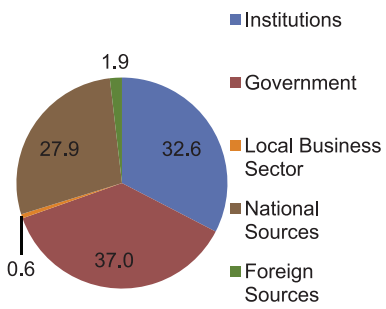
R&D funding sources include institutions (research agencies), government, local business sector, and other national sources, in addition to foreign sources. The results of the R&D Survey 2015 show that institutions represented 32.6% of R&D funding. Government funding represented 37% (including 33.7% as loans supported for research and experimental development, and 3.3% as contracts to directly conduct research and development). Other national funding sources represented 27.9%, and the domestic sector represented a low percentage (less than 1%), compared to about 1.9% for foreign funding.

In the business sector, 37.3% of the funds are financed by institutions, 38.6% by the state of Qatar, 1.7% by the domestic business sector and 15.4% by other national sources and about 7% by foreign sources.

In the government sector, institutions contribute 43.3% of their expenditure on research and development, with the government contributing 24.8%. Other national sources represent 29.1%, and foreign funding represents 2.4%. The local business sector represents just 0.4%.

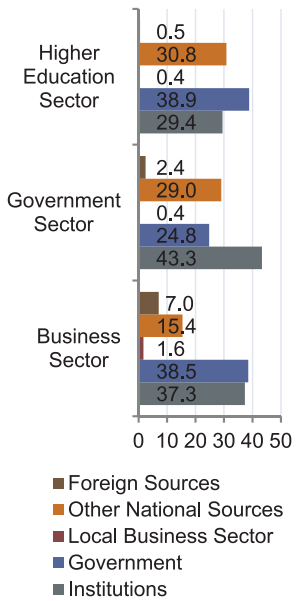
In the higher education sector, institutions represent 29.4% of R&D funding sources, with the government funding 38.9%, and other national sources (non-profit organizations) 30.8%. The local business sector and foreign sources represent only 1% of funding.

R&D Funding Sources by Type of Source 2015



Institutions represent 32.6% of R&D funding sources, and government 37% and other national sources 28.59% in 2015

R&D Funding Sources by Sector and Type of Source 2015

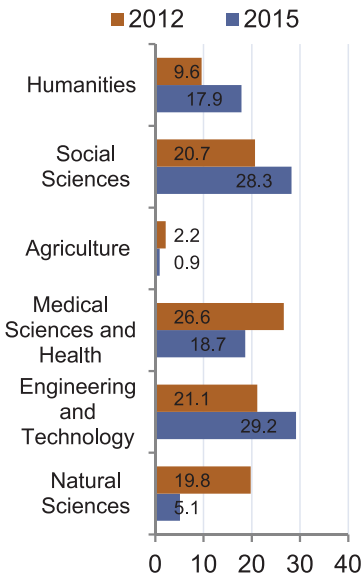


2.4 GERD by Field of Research

The findings indicate that engineering and technology had the highest share of expenditure on research and development at 29.2% in 2015, followed by social sciences (28.3%), medical sciences and health (18.7%), humanities (17.9%), natural science (5.1%), and agriculture (about 1%).

Expenditure on humanities rose considerably by 86.1%, engineering and technology by 38.2%, and social sciences by 36.5% in 2015, compared to 2012. By contrast, expenditure on natural sciences decreased by 74.2%, on agriculture by 57.7%, and on medical sciences and health slumped by 29.8%.

Expenditure on R&D by Field of Research 2012 and 2015



Expenditure on humanities rose considerably by 86.1%, engineering and technology by 38.2%, and social sciences by 36.5% in 2015, compared to 2012.

At the business sector level, expenditure on engineering and technology was highest at 63.3%, followed by social sciences (16.7%), medical sciences and health (12.5%), and natural sciences (7.5%). Expenditure on science and technology rose by 54.5%, and expenditure on medical sciences and health increased by 37.5% in 2015, compared to 2012. Expenditure on natural sciences decreased by 75.3%, and on social sciences by 10.6%, during the same period.

In the government sector: the highest expenditure was on medical sciences and health at 46.8%, followed by social sciences at 20.4%. Expenditure on engineering and technology represented 17.1%, and expenditure on natural sciences and humanities represented 8.6%, each with half of this total. Expenditure on engineering and technology increased by 133.1%, expenditure on agricultural sciences increased by 10.4%, and expenditure on medical sciences and health rose by less than 1% in 2015 compared to 2012. Expenditure on the other sciences decreased during the same period.

In the higher education sector, expenditure on social sciences was highest at 32.6%, followed by humanities with 24.8%, and engineering and technology with 23%. The medical sciences and health represented 15% of expenditure, and natural sciences 4.7%. Expenditure on social sciences saw the highest increase at 57.9%, followed by engineering and technology with a 17.8% rise. In addition, expenditure on humanities increased by 11% in 2015 compared to 2012.

2.5 GERD by Socio-Economic Goals

These findings indicate that the highest expenditure percentage was in health, at 20.6% of total expenditure in 2015, followed by 'education, religion and media' at 17.3%, then expenditure on 'general knowledge development' at 12.5%. The 'political and social systems, structures and processes' bracket was ranked fourth at 11.7%, followed by expenditure on energy at 8.8%. Expenditure on environment reached 8.4%, and expenditure on transport, communication and other infrastructure registered 8.1%, whereas expenditure on education reached 7.7%. At the foot of the list, industrial production and technology accounted 3.2%, followed by agriculture and land exploration and use, at 1.1% and 0.6% respectively.

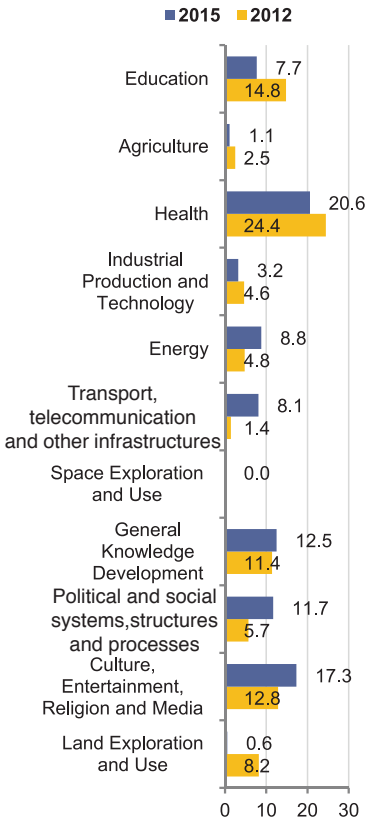
Expenditure on 'transport communication and other infrastructure' increased almost fivefold, by 477.4%, while 'political and social systems, structures and processes' rose by 104.5%, energy by 83.5%, 'culture, education and religion' by 35.2%, and knowledge development at 9.8% in 2015, compared to 2012. Expenditure on other goals decreased during the same period.

In the business sector, energy received the highest share (22.7%) of total sector expenditure in 2015, followed by expenditure on environment (19.6%), health (17%), 'transport, communication and other infrastructure' (16%), and 'political and social systems, structures and processes' (10.3%), The share of expenditure on education, and industrial production and technology, was 6.3% and 6% respectively; expenditure on land exploration and use represented only 1.2%; and expenditure in other areas was less than 1%.

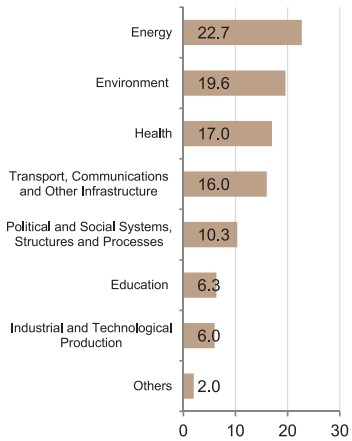
Expenditure on 'transport, communication and other infrastructure' increased more than threefold (344.4%) in 2015, followed by political and social systems, and processes' (119.8%), and energy (56.7%). In addition, the expenditure on health rose by 33.9% compared to 2012, whereas expenditure on other types decreased during the same period.

In the government sector, the most significant expenditure was on health, which accounted for 45.7% of this sector's total expenditure in 2015, followed by 'political and social systems, structures and processes' (11.1%), environment (10%), agriculture, energy, and agricultural production and technology (6.7% each), and 'culture, education, religion and media' (3.3%). Expenditure on other categories ranges from 2% to 3%.

GERD by Socio-Economic Objectives Classification 2012 and 2015



GERD by Socio-Economic Objectives Classification (Business Sector) 2015



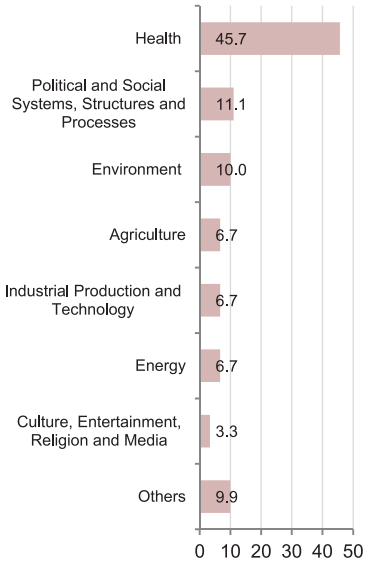
Expenditure on industrial production and technology decreased by 5.6%, while expenditure on 'culture, education, religion and media' increased by 266.6%, energy by 115.1%, environment by 96.1%, and 'political and social systems, structures and processes' by 84.4%. Expenditure on health also increased, by 18.9%, in 2015 compared to 2012. Expenditure on other types decreased during the same period.

In the higher education sector, expenditure was relative to the sector specialization. 'Culture, education, religion and media' saw the highest expenditure share in this sector in 2015, at 24.2%, followed general knowledge development (17.3%), health (16.9%), 'political and social systems, structures and processes' (12.1%), education (9%), 'transport, communications and other infrastructure' (7.1%), energy (5.8%), and environment (5.4%). Expenditure on other categories was around 2%.

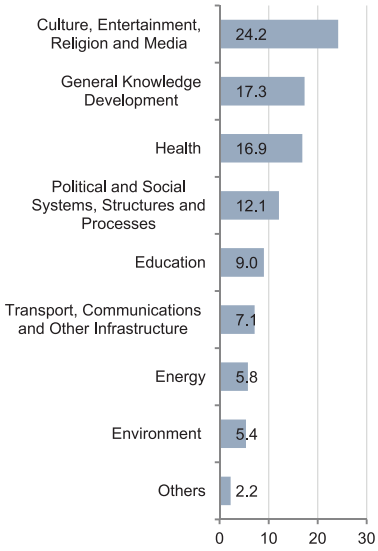
Expenditure on 'political and social systems, structures and processes' increased significantly, by 101.5%, and general knowledge development rose by 23.7% in 2015 compared to 2012. It is worth noting that a new expenditure category of 'transport, communication and other infrastructure', was included in the sector of higher education, accounting for 7.1%, in 2015, while it had no share of expenditure in 2012.

On the other hand, expenditure on all other categories decreased in 2015 compared to 2012.

R&D Expenditure by Socio-Economic Objectives Classification (Government Sector) 2015



R&D Expenditure by Socio-Economic Objectives Classification (Higher Education Sector) 2015



Chapter Three

R&D Personnel

The chapter addresses R&D personnel by sectors, in terms of their functions, scientific qualifications, nationalities, and gender, as stated by the full-time equivalent according to the field of science, in addition to the comparison between the sectors and workforce development.

3.1 Personnel and FTE by Sector, Occupation and Field of Science

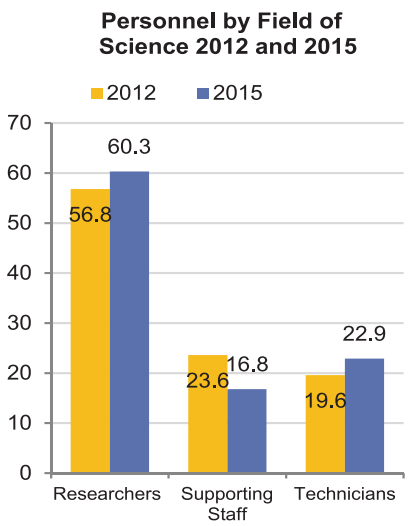
The results indicate that the personnel and full-time equivalent by occupation, gender, and nationality are distributed in varying proportions. Researchers represented 60.3%, supporting staff 16.8%, and technicians 22.9% in 2015. The number of researchers, and technicians rose by 6.2% and 16.9% respectively, whereas the number of supporting staff decreased by 28.9% in 2015 compared to 2012. As for the full-time equivalent, the number of technicians increased considerably by 69.6%, researchers by 12.5%, and supporting staff by 27.6% in 2015, compared to 2012.

Business sector: Researchers constituted 59.8% in 2015, supporting staff 22.5%, and technicians 17.8%, the number of technicians increased in this sector by 57.3%, and researchers by 8.3%, whereas the number of supporting staff decreased by 32.9% in 2015 compared to 2012.

Government sector: Researchers accounted for 70.3%, supporting staff 11.3%, and technicians 18.5%. The number of technicians increased by 9.7%, and researchers by 1.6%, whereas the number of supporting staff decreased by 19.5% in 2015 compared to 2012.

Higher education sector: Researchers accounted for 57.5%, supporting staff 17.4%, and technicians 25.1%. The number of technicians increased by 2.9%, and researchers by 12.5%, whereas the number supporting staff decreased by 28.9% in 2015 compared to 2012.

Field of science (specialization): The main fields of science are medical sciences and health at 26.9%, followed by engineering and technology (23.5%), social sciences (13.8%), and natural sciences (9.3%), as well as 12.7% for those with unspecified specializations.



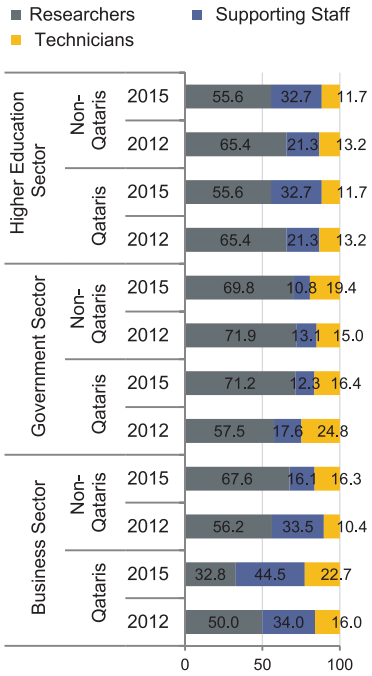
3.2 Personnel by Sector, Occupation and Area of Science (Specialization)

Business sector: Qatari supporting staff constituted 44.5%, researchers 32.8%, and technicians 22.7%. Compared to 2012, the number of Qatari technicians rose by 41.3% , and supporting staff 31.1%, whereas the number of researchers decreased by 34.4% in 2015. In addition, the number of non-Qatari technicians and researchers increased by 57.7% and 20.3% respectively. The number of supporting staff decreased by 51.9% in 2015 compared to 2012.

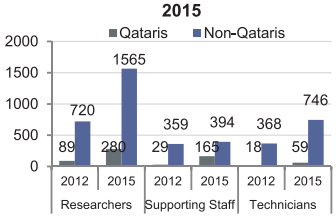
Government sector: In 2015, Qatari researchers accounted for 71.2% of the total, and supporting staff and technicians 12.3% and 16.4% respectively, The number of researchers increased by 23.8%, and the number of Qatari technical supporting staff and researchers decreased by 30.1% and 33.8% respectively in 2015 compared to 2012. The number of non-Qatari technicians increased by 29.6%, and the number of non-Qatari researchers and supporting staff decreased in 2015 compared to 2012.

Higher education sector: Qatari researchers, supporting staff and technicians constituted 55.6%, 32.7%, and 11.7% respectively. The number of Qatari supporting staff increased by 53.3%, whereas the number of Qatari researchers and technicians decreased by 15.1% and 11.6% respectively in 2015 compared to 2012. The number of non-Qatari researchers and technicians rose by 16.3% and 8.4% respectively during the same period.

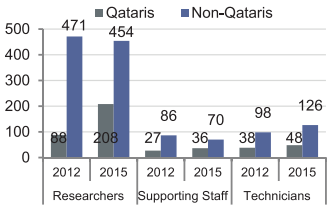
Personnel by Sector, Nationality and Occupation 2012 and 2015



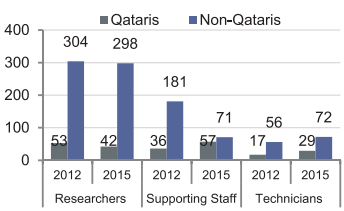
Headcount in Higher Education Sector by Nationality 2012 and 2015



Personnel in Government Sector by Nationality 2012 and 2015



Personnel in Business Sector by Nationality 2012 and 2015



3.3 Personnel by Occupation, Gender, Nationality and Education

Educational qualification: PhD-holders represented over one-third (38.6%), Master's degree-holders constituted more than a quarter (26.5%), postgraduates constituted 2.9%, and BA holders or less 32%.

Gender and Nationality: Gender differences were significant among males at the PHD level with about 31 percentage points in the favor of males. However, this difference were significant for females at the bachelor and under level with 22 percentage points in the favor of females.

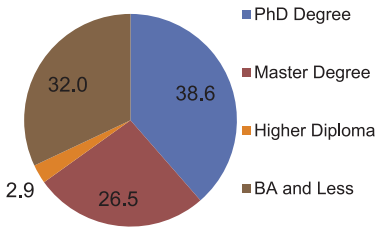
As for Qataris, PhD and Master's degree-holders constituted 21.1% of all certificate-holders. General diploma-holders accounted for 5.8%, and BA-holders 51.9%, of certificate-holders, with differences being identified regarding Qataris There were significant differences, where PHD male holders increased about 15 percentage points compared to PHD female holders, while bachelor's and below female holders increased by 13 percentage points compared to bachelor's and below male holders.

As for non-Qataris, PhD-holders constituted 42.8%, Master's degree-holders 27.8%, General diploma-holders 2.2%, and BA-holders 27.2% of the overall number of certificate holders. There were significant differences, where PHD male holders increased by 32 percentage points compared to PHD female holders, while Master Degree female holders increased 10 percentage points compared to Master Degree male holders.

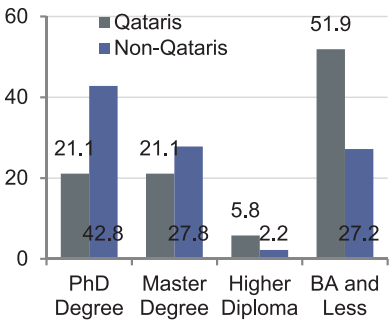
There were significant differences, most notably the percentage of 32% for PhD male holders at the expense of females, and a percentage of 10% for the Master Degree holders for females, and a difference of 20% for BA Degree holders for non-Qatari females against non-Qatari males.

The number of PhD-holders rose by 13.3% in 2015, compared to 2012.

Percentage Distribution of Personnel by Educational Qualification 2015



Percentage Distribution of Personnel by Qualification and Nationality 2015



3.4 FTE by Sector, Occupation and Field of Science

The findings for FTE by occupation and nationality indicate that positions are distributed in varying proportions. Researchers accounted for 49.7%, supporting staff 17.1%, and technicians 33.2% in 2015.

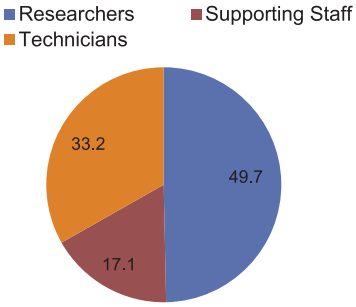
In terms of nationality, Qatari researchers, supporting staff, and technicians constituted 49%, 29%, and 21.9% respectively, as against 52.4%, 9.8% and 37.7% respectively for non-Qataris. However, the percentage of Qatari supporting staff increased by 19.2% compared to their non-Qatari counterparts.

Business sector: Qatari researchers, supporting staff and technicians represented 27.2%, 47.6% and 25.2% respectively, compared to 68.6%, 14.4% and 17% for non-Qataris. The percentage of Qatari supporting staff and technicians is high compared to non-Qataris in this sector.

Government sector: Qatari researchers, supporting staff and technicians constituted 68.7%, 11%, and 20.3% respectively, compared to 61.3%, 11.9% and 26.8% for non-Qataris. The percentage of Qatari researchers increased compared to non-Qataris in this sector.

Higher education sector: Qatari researchers, supporting staff and technicians accounted for 43.9%, 34.3%, and 21.8% respectively, compared to 43.2%, 14.8% and 41.9% for non-Qataris. The percentage of Qatari supporting staff increased compared to non-Qataris.

Percentage Distribution of Personnel and FTE by Occupation 2015



Qataris represented the highest share of researchers (68.7%) in the government sector, and the highest share of supporting staff (47.6%) in the business sector, whereas non-Qataris had a high share in terms of technicians in higher education in 2015 (41.9%).

3.5 FTE by Sector, Education, and Nationality

The findings for FTE by nationality and educational qualification show that positions are distributed in varying proportions. PhD-holders constituted 34.2%, Master's degree-holders 25.1%, Higher Diploma- holders 3.4%, and BA degree-holders or less 37.3% in 2015.

In terms of nationality, Qatari PhD, Master's degree, Higher Diploma, and BA degree or less-holders constituted 16%, 16.9%, 7.7%, and 59.4% respectively, whereas for non-Qataris the figures were 38.5%, 27.1%, 2.4%, and 32%. In terms of PhD and Master's degree-holders, these percentages are significantly higher for non-Qataris compared to Qataris.

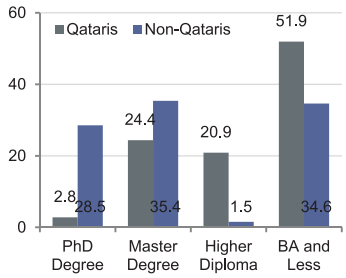
Business sector: PhD, Master's degree, Higher Diploma, and BA degree or less-holders constituted 2.8%, 24.4%, 20.9%, and 51.9% for Qataris, compared to 28.5%, 35.4%, 1.5%, and 34.6% for non-Qataris.

Government sector: PhD, Master's degree, Higher Diploma, and BA degree or less-holders constituted 7.7%, 14.4%, 0.1%, and 77.8% for Qataris, compared to 31.9%, 23.8%, 2%, and 42.3% for non-Qataris.

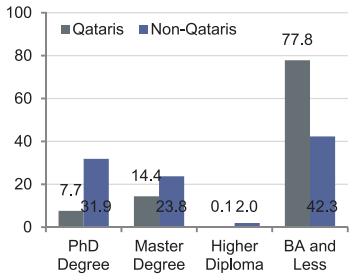
Higher education: PhD, Master's degree, Higher Diploma, and BA degree or less-holders constituted 27.9%, 15.4%, 7.7%, and 49% for Qataris, compared to 42.1%, 26.1%, 2.6%, and 29.1% for non-Qataris.

In terms of educational qualifications, the figures for PhD and Master's degree-holders among non-Qataris are significantly higher than those for Qataris, regardless of sector.

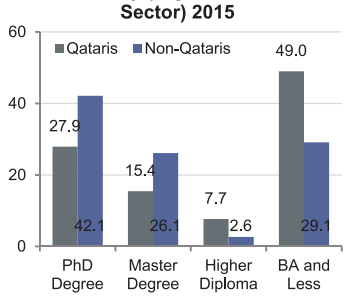
Percentage Distribution of Personnel and FTE by Educational Qualification and Nationality (Business Sector) 2015



Percentage Distribution of Personnel and FTE by Educational Qualification and Nationality (Government Sector) 2015



Percentage Distribution of Personnel and FTE by Educational Qualification and Nationality (Higher Education Sector) 2015



References

In Arabic language:

1. Ministry of Development Planning and Statistics, Qatar's R&D Survey 2012, Doha, 2014.
2. Qatar Foundation for Education, Science and Community Development, Qatar National Research Strategy 2012.
3. UNESCO Institute for Statistics, R&D Manual for the countries which started measuring Research and Experimental Development, Montreal 2014.

In English language:

4. Cornell University, INSEAD, and WIPO (2015): The Global Innovation Index 2015: Effective Innovation Policies for Development, Fontainebleau, Ithaca, and Geneva.
5. World Bank (2017), World Development Indicators database, Gross national income per capita 2015, Atlas method and PPP, WDC. http://databank.worldbank.org/data/download/GNIPC.pdf
6. OECD Main Science and technology Indicators (2016); http://uis.unesco.org.
7. World Economic Forum (2015), Global Competitiveness Report 2015, Geneva.
8. Policies for Development, Fontainebleau, Ithaca, and Geneva.
9. WIPO (2015), Patent Cooperation Treaty Yearly Review: The international Patent System, Geneva.
10. Statistics New Zealand (2016). Research and development in New Zealand: 2014. Retrieved from www.stats.govt.nz.

Appendices

National Survey of Research and Experimental Development (R&D) Input 2015

Higher Education Sector

Part 1: General Information

1. Name of Institution:	
2. Name of reporting unit (e.g. faculty)	
3. Financial Year	2015
4. Annual budget (Qatari Riyal)	
5. Total number of all employees	
6. Did the reporting unit perform any IN-HOUSE R&D during the fiscal year 2015?	6.1 Yes ☐ Continue with Question 6.2 No ☐ If the organization/unit does not do any In-House and/or any extramural R&D, tick this box and return the questionnaire as a NIL response.

Person Completing The Questionnaire:

Name:			Job / Position:		
Tel:		Fax:		Mobile:	
E-mail:			Website:		
Signature:			Date:		

THE FOLLOWING DEFINITIONS ARE IMPORTANT IN THE COMPLETION OF THIS QUESTIONNAIRE:

Definition of R&D:

This survey follows the Frascati Manual guidelines for conducting surveys on the inputs to R&D (OECD, 2002).

It defines research and experimental development (R&D) as:

- **Research** is creative work and original investigation undertaken on a systematic basis to gain new knowledge, including knowledge of humanity, culture and society.
- Experimental development is the application of research findings or their scientific knowledge for the creation of new or significantly improved products, applications or processes.

The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned.

Scope of survey:

- The survey requests data on R&D performed IN-HOUSE by your organization in the national territory.
- Part five includes some questions on “extramural R&D”.

R&D in higher education institutions:

Any activity classified as R&D is characterised by originality; it should have investigation as a primary objective and should have the potential to produce results that are sufficiently general for humanity›s stock of knowledge (theoretical and/or practical) to be recognisably increased.

R&D includes - but is not limited to:

Activities of personnel who are obviously engaged in R&D.

In addition, research activity includes:

- The provision of professional, technical, administrative or clerical support and/or assistance to personnel directly engaged in R&D.
- The management of personnel who are either directly engaged in R&D or are providing professional, technical or clerical support or assistance to those R&D activities of students undertaking postgraduate research courses.
- Software development where the aim of the project is the systematic resolution of a scientific uncertainty.
- Research work in the natural sciences, engineering, medical sciences, agricultural sciences, social sciences and the humanities.
- R&D carried out as a participant in any unincorporated joint venture.

R&D excludes:

The following specific activities are excluded, except where they are used primarily for the support of or as part of R&D activities performed in this reporting unit:

- Preparation for teaching.
- Academic development activities.
- Scientific and technical information services.
- Engineering and technical services.
- General purpose or routine data collection.
- Standardisation and routine testing.
- Feasibility studies (except into R&D projects).
- Specialised routine medical care, for example routine pathology services.
- The commercial, legal and administrative aspects of patenting, copyrighting or licensing activities.
- Routine computer programming, systems work or software maintenance where there are no technological uncertainties to be resolved.

The classification of borderline institutions:

Research institutes (such as specialised health care clinics or “attached” research institutions) that are not directly concerned with third-level teaching but host activities, R&D or otherwise, that are all the same closely associated with the higher education sector should be carefully considered:

- Entities initiated by a higher education institution (HEI) but subsequently became a not-for-profit or business entity should be classified as such and surveyed by not-for profit or business sectors even if there are close links with an HEI.
- Staff and R&D expenditure should be reported where it was incurred.
- Staff members on the payroll of the HEI (e.g. department heads) should be reported by the HEI concerned.
- Staff that appears on the payroll of the “borderline” institution should be reported by the institution concerned and not the HEI.
- The same applies to equipment and running costs.
- It would be appreciated if we were informed of all such institutions to ensure that they are surveyed by the appropriate sectors and to minimise double counting.

Government/academic hospitals:

Higher education institutions (HEIs) are requested to report on all academic and technical staff performing R&D with joint appointments between government/academic hospitals and the HEI. This includes headcount, FTEs, labour costs, equipment and running costs.

It is understood that some of these costs may not be reflected in the HEI’s Management Information System data or financial statements but we request that a best estimate be included where necessary.

PART 2: IN-HOUSE R&D PERSONNEL

Report for all R&D personnel, both permanent and on contract (6 months or longer).

Researchers

Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the planning and management of the projects concerned.

Technicians directly supporting R&D

Persons doing technical tasks in support of R&D, normally under the direction and supervision of a Researcher.

Other personnel directly supporting R&D

Other personnel include skilled and unskilled crafts persons, secretarial and clerical staff participating in R&D projects or directly associated with R&D Projects.

Do not include the count of personnel indirectly supporting R&D.

Typical examples are transportation, storage, cleaning, repair, maintenance and security activities, as well as administration and clerical activities undertaken not exclusively for R&D (such as the activities of central finance and personnel departments).

Allowance for these should be made in other current R&D expenditure

HEADCOUNT OF R&D PERSONNEL

'HEADCOUNT' (HC):

HC data cover the total number of persons who are mainly or partially employed in R&D.
This includes all staff employed whether permanent, contract, full-time or part-time.

7. HEADCOUNT OF R&D PERSONNEL

CALCULATING HEADCOUNT (HC) DATA

HC data cover the total number of persons who are mainly or partially employed in R&D. This includes staff employed both full-time and part-time on R&D activities.

7.1 Headcount of all R&D personnel by gender, nationality and Highest qualification

(1) RESEARCHERS

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL RESEARCHERS (1)						

(2) TECHNICIANS

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL TECHNICIANS (2)						

(3) OTHER SUPPORT STAFF

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL OTHER SUPPORT STAFF (3)						

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
TOTAL R&D PERSONNEL (1+2+3)						

7.2 Headcount of all R&D personnel by gender, nationality and fields of science

(1) RESEARCHERS

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL RESEARCHERS (same as 7.1)						

(2) TECHNICIANS

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL TECHNICIANS (same as 7.1)						

(3) OTHER SUPPORT STAFF

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL OTHER SUPPORT STAFF (same as 7.1)						

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
TOTAL R&D PERSONNEL (1+2+3)						

8. RESEARCH FULL-TIME EQUIVALENTS (FTEs) AND COST TO HIGHER EDUCATION INSTITUTIONS

Provide an estimate of person-years of effort on R&D (or Full-time equivalents), according to the categories below.

Using the male and female headcounts of all R&D personnel reported for in Question 4, provide the research full-time equivalents (time devoted to R&D). Then, calculate the total labour costs of R&D using the average annual full cost-to-company for full-time staff (including annual wages, salaries and all associated costs or fringe benefits, such as bonus payments, contributions to pension and medical aid funds, payroll tax, unemployment insurance fund and all other statutory payments) per category below.

CALCULATING FULL-TIME EQUIVALENT (FTE) PERSONS

FTE data measure the volume of human resources in R&D. One FTE may be thought of as one person-year. That is 1 FTE is equal to 1 person working full-time on R&D for a period of 1 year or more persons working part-time or for a shorter period corresponding to one person-year.

For the purpose of this survey, an employee can work a maximum of 1 FTE in a year.

The following is a theoretical approach to calculating FTE:

FTE: (Dedication to the employment: Full-time/Part-time) x (Portion of the year active on R&D) x (Time or portion spent on R&D)

See the following examples:

- A full-time employee spending 100% of time on R&D during a year: (1 x 1 x 1) = 1 FTE
- A full-time employee spending 30% of time on R&D during a year: (1 x 1 x 0.3) = 0.3 FTE
- A full-time R&D worker who is spending 100% of time on R&D and is employed at an R&D institution for only six months: (1 x 0.5 x 1) = 0.5 FTE
- A full-time employee spending 40% of time on R&D during half of the year (person is only active for 6 months per year): (1 x 0.5 x 0.4) = 0.2 FTE
- A part-time employee (working 40% of a full time year) engaged only in R&D (spending 100% of time on R&D) during a year: (0.4 x 1 x 1) = 0.4 FTE
- A part-time employee (working 40% of a full-time year) spending 60% of time on R&D during half of the year (person is only active for 6 months per year): (0.4 x 0.5 x 0.6) = 0.12 FTE
- 20 full-time employees spending 40% of time on R&D during a year: 20 x (1 x 1 x 0.4) = 8 FTE

NOTE: please calculate FTEs for all R&D personnel.

8.1 FTE by gender, nationality and personnel Category

(1) RESEARCHERS

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL RESEARCHERS (1)										

(2) TECHNICIANS

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL TECHNICIANS (2)										

(3) OTHER SUPPORT STAFF

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL OTHER SUPPORT STAFF (3)										

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
TOTAL R&D PERSONNEL (1+2+3)										

8.2 FTE by gender, nationality and field of Science

(1) RESEARCHERS

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL RESEARCHERS (same as 7.1)										

(2) TECHNICIANS

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL TECHNICIANS (same as 7.1)										

(3) OTHER SUPPORT STAFF

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL OTHER SUPPORT STAFF (same as 7.1)										

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
TOTAL R&D PERSONNEL (1+2+3)										

8.3 Headcount of Postgraduate Students by Gender, Nationality And Type of Certificate

Type of Certificate	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris	
Doctoral students					
Postdoctoral Fellows					
TOTAL					

8.4 FTE of Postgraduate Students by Gender and Nationality And Type of Certificate

Using the headcounts of all R&D post-doctoral fellows and postgraduate students provide the Full Time Equivalents (FTE) on R&D.

Type of Certificate	Male		Female		Total (FTE)
	Qataris	Non-Qataris	Qataris	Non-Qataris	
Doctoral students					
Postdoctoral Fellows					
TOTAL					

PART 3: IN-HOUSE R&D EXPENDITURE

THE DEFINITION AND CALCULATION OF IN-HOUSE R&D EXPENDITURE

OTHER CURRENT EXPENDITURE

Including – but not limited to:	Excluding:
• Direct project costs, project consumables and running costs linked to research, such as materials, fuels and other inputs, including telephone and printing. • Subsistence and travel expenses. • Repair and maintenance expenses. • Payments to outside organizations for use of specialised testing facilities, analytical work, engineering or other specialised services in support of R&D projects carried out by this reporting unit. • Commission/consultant expenses for research projects carried out by this reporting unit. • The relevant % of indirect and institutional costs and utility costs, such as rent, space charge, leasing and hiring expenses, furniture, water, electricity and any other overhead costs. • The relevant % of labour costs of persons providing indirect services such as the head office, human resources, finances, security and maintenance personnel as well as staff of central libraries and IT departments..	• Contract R&D expenses where the research project is carried out elsewhere by others on behalf of this reporting unit. • Payments for purchases of technical know-how (goodwill). • Licence fees. • Depreciation provisions

• Where current expenses such as direct project costs and consumables are used solely for R&D, allocate the full cost of the items.
• If these current expenses are used for more than one activity, include only an estimate of the portion used for R&D.
• Only where such an estimate of the portion used for R&D is not available, such as indirect and utility costs and labour costs of staff providing indirect services, it is advised that respondents apply the percentage time that researchers in the reporting unit spent on R&D to the total of these current expenditures.
• So if a faculty's income and expenditure statement shows that the current expenditure for indirect and utility costs and labour costs of staff providing indirect services for the year was say USD 1,700,000 and that researchers on average spent 22% of their time to R&D, then this component of R&D current expenditure may be estimated as 0.22 x USD 1,700,000 = USD 374,000.

CAPITAL EXPENDITURE

The full cost of capital expenses must be reported in the year of purchase (do not depreciate).	
Including - but not limited to: • Expenditure on fixed assets used in the R&D projects of this reporting unit. • Acquisition of software, including license fees, expected to be used for more than one year. • Purchase of databases expected to be used for more than one year. • Major repairs, improvements and modifications on land and buildings.	Excluding: • Other repairs and maintenance expenses. • Depreciation provisions. • Proceeds from the sale of R&D assets.

• Where a capital item is used solely for R&D, allocate the full cost of the item.
• If the capital item is used for more than one activity, include only an estimate of the portion used for R&D. For example, a new piece of equipment that will be used for R&D (included), testing (excluded) and quality control (excluded). For instance, if the intended use of this new equipment for R&D purposes is 40% of the total usage (i.e. the other 60% for other activities), only 40% of the total equipment cost should be considered as relevant R&D expenditure.
• Only where such an estimate of the portion used for R&D is not available, apply the percentage time that researchers in the reporting unit spent on R&D to the cost of the item.

9. IN-HOUSE R&D EXPENDITURE

9.1 LABOUR COSTS OF R&D

Personnel categories	Full Time Equivalent (FTE) (From Q 7.1) (A)	Average annual labour cost per person Local Currency Qatari Riyal (B)	Calculated labour cost of R&D Local Currency Qatari Riyal (A x B)
Total researchers (1)			
Total technicians (2)			
Total other support staff (3)			
Total Doctoral Students (4)			
TOTAL LABOUR COST (1+2+3)			

		Qatari Riyal
Total cost of R&D personnel (carried over from Question 9.1)	9.1	

9.2 OTHER CURRENT EXPENDITURE ON R&D

(See the definition of current expenditure and how to calculate current expenditure devoted to R&D on the previous page)

Other current expenditure	9.2	

9.3 CAPITAL EXPENDITURE ON R&D

(See the definition of capital expenditure and how to calculate capital expenditure on R&D on the previous page)

Vehicles, plant, machinery and equipment	9.3.1	
Land, buildings and other structures	9.3.2	
Software	9.3.3	
Total	9.3	

TOTAL R&D EXPENDITURE (9.1 + 9.2 + 9.3)	9.4	

10. SOURCES OF FUNDS FOR IN-HOUSE R&D

Provide a breakdown of total R&D expenditure by the sources of funds.

10.1 Institution

	Qatari Riyal						
Own funds							

10.2 Government (include Departments/Ministries and grant making Institutes)

Grants, especially general purpose including studentships							
Contracts to perform directed R&D							

10.3 Local Businesses

Contracts to perform R&D							

10.4 Other national sources

Not for Profit Organizations (including Foundations)							
Individual Donations							
Other Higher Education institutions							

10.5 Foreign sources

Parent Institution							
Philanthropic organizations and Foundations							
All other foreign sources							

TOTAL R&D EXPENDITURE							

PART 4: CATEGORIES OF IN-HOUSE R&D EXPENDITURE

11. IN-HOUSE R&D EXPENDITURE BY TYPE OF R&D

11.1 Basic research

	(Percentage)		
• Work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts without a specific application in view • Analyses of properties, structures and relationships with a view to formulating and testing hypotheses, theories or laws. • The results of basic research are usually published in peer-reviewed scientific journals.			

11.2 Applied research

	(Percentage)		
• Original investigation to acquire new knowledge with a specific application in view. • Activities that determine the possible uses for the findings of basic research. • The results of applied research are intended primarily to be valid for a single or limited number of products, operations, methods or systems. • Applied research develops ideas into operational form. • Information or knowledge derived from applied research may be published in peer-reviewed journals or subjected to other forms of intellectual property protection.			

11.3 Experimental development

	(Percentage)		
• Systematic work using existing knowledge for creating new or improved materials, products, processes or services, or improving substantially those already produced or installed.			

TOTAL	**1**	**0**	**0**

12 DETAILED FIELDS OF SCIENCE (FOS)

Classify R&D according to two-digit field of science (FoS) with associated percentage expenditure (see Appendix A)

• The FoS codes are based on recognised academic disciplines and emerging areas of study.

FoS codes			Percentage		FoS codes			Percentage		
FoS					FoS					
FoS					FoS					
FoS					FoS					
FoS					FoS					
FoS					FoS					
					Total			1	0	0

13 SOCIO-ECONOMIC OBJECTIVES (SEO)

Classify R&D according to socio-economic objective (SEO) with associated percentage expenditure (see Appendix B)

• The SEO classification provides an indication of the main beneficiary of your R&D activities.

SEO codes			Percentage		SEO codes			Percentage		
SEO					SEO					
SEO					SEO					
SEO					SEO					
SEO					SEO					
SEO					SEO					
					Total			1	0	0

PART 5: PUBLICATION OUTPUTS OF IN-HOUSE R&D EXPENDITURE

14 PUBLICATION OUTPUTS.

- Indicate the number of publications by publication type that Researchers at your organization authored during the reporting period.
- Only count publications that include at least one author that lists the address of the organization e.g. University - Qatar.

14.1 Peer reviewed articles (Web of Science; Scopus)	
14.2 Books	
14.3 Client reports	
14.4 Policy briefs; other	

THANK YOU FOR YOUR TIME AND EFFORT

National Survey of Research and Experimental Development (R&D) Input 2015

Government Sector

Part 1: General Information

1. Name of Institution:	
2. Name of reporting unit (e.g. faculty)	
3. Financial Year	2015
4. Annual budget (Qatari Riyal)	
5. Total number of all employees	
6. Did the reporting unit perform any IN-HOUSE R&D during the fiscal year 2015?	6.1 Yes ☐ Continue with Question 6.2 No ☐ If the organization/unit does not do any In-House and/or any extramural R&D, tick this box and return the questionnaire as a NIL response.

Person Completing The Questionnaire:

Name:				Job / Position:	
Tel:		Fax:		Mobile:	
E-mail:				Website:	
Signature:				Date:	

THE FOLLOWING DEFINITIONS ARE IMPORTANT IN THE COMPLETION OF THE SURVEY QUESTIONNAIRE:

Definition of R&D:

This survey follows the Frascati Manual guidelines for conducting surveys on the inputs to R&D (OECD, 2002).

It defines research and experimental development (R&D) as:

- **Research** is creative work and original investigation undertaken on a systematic basis to gain new knowledge, including knowledge of humanity, culture and society.
- Experimental development is the application of research findings or their scientific knowledge for the creation of new or significantly improved products, applications or processes.

The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned.

Scope of survey:

- The survey requests data on R&D performed IN-HOUSE by your organization on the national territory.
- Part five includes some questions on “extramural R&D.”

R&D in government research Institutions:

Any activity classified as R&D is characterised by originality; it should have investigation as a primary objective and should have the potential to produce results that are sufficiently general for humanity›s stock of knowledge (theoretical and/or practical) to be recognisably increased.

R&D includes - but is not limited to:

Activities of personnel who are obviously engaged in R&D.

In addition, research activity includes:

- The provision of professional, technical, administrative or clerical support and/or assistance to personnel directly engaged in R&D.
- The management of personnel who are either directly engaged in R&D or are providing professional, technical or clerical support or assistance to those R&D activities of students undertaking postgraduate research courses.
- Software development where the aim of the project is the systematic resolution of a scientific uncertainty.
- Research work in the natural sciences, engineering, medical sciences, agricultural sciences, social sciences and the humanities.
- R&D carried out as a participant in any unincorporated joint venture.
- R&D projects performed on contract for other legal entities, such as businesses.
- “Feedback R&D” directed at solving problems occurring beyond the original R&D phase - for example, technical problems arising during initial production runs.

R&D excludes:

The following specific activities are excluded, except where they are used primarily for the support of or as part of R&D activities performed in this reporting unit:

- Preparation for teaching.
- Academic development activities.
- Scientific and technical information services.
- Engineering and technical services.
- General purpose or routine data collection.
- Standardisation and routine testing.
- Feasibility studies (except into R&D projects).
- Specialised routine medical care, for example routine pathology services.
- The commercial, legal and administrative aspects of patenting, copyrighting or licensing activities.
- Routine computer programming, systems work or software maintenance where there are no technological uncertainties to be resolved.

Examples:

- Investigating electrical conduction in crystals is basic research; application of crystallography to the properties of alloys is applied research.
- New chip designs involve development.
- Investigating the limiting factors in chip element placement lies at the border between basic and applied research, and increasingly involves nanotechnology.
- Much service R&D involves software development where the completion of the project is dependent on a scientific or technological advance and the aim of the project is the systematic resolution of a scientific or technological uncertainty.

Borderline cases:

- Institutions (public research institutions and other government departments engaged in R&D) whose principal activity is R&D often have secondary, non-R&D activities (e.g. scientific and technical information, testing, quality control, analysis, background papers and studies for policymakers). Insofar as a secondary activity is undertaken primarily in the interests of R&D, it should be included in R&D activities; if the secondary activity is designed essentially to meet needs other than R&D, it should be excluded.
- S&T service institutions whose main purpose is an R&D-related scientific service/activity often undertake some research in connection with this activity. Such research should be isolated and included when measuring R&D.

PART 2: IN-HOUSE R&D PERSONNEL

Report for all R&D personnel, both permanent and on contract (6 months or longer).

Researchers

Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the planning and management of the projects concerned.

Technicians directly supporting R&D

Persons doing technical tasks in support of R&D, normally under the direction and supervision of a Researcher.

Other personnel directly supporting R&D

Other personnel include skilled and unskilled crafts persons, secretarial and clerical staff participating in R&D projects or directly associated with R&D Projects.

Do not include the count of personnel indirectly supporting R&D.

Typical examples are transportation, storage, cleaning, repair, maintenance and security activities, as well as administration and clerical activities undertaken not exclusively for R&D (such as the activities of central finance and personnel departments).

Allowance for these should be made in other current R&D expenditure

HEADCOUNT OF R&D PERSONNEL

'HEADCOUNT' (HC):

HC data cover the total number of persons who are mainly or partially employed in R&D.
This includes all staff employed whether permanent, contract, full-time or part-time.

7. HEADCOUNT OF R&D PERSONNEL

CALCULATING HEADCOUNT (HC) DATA

HC data cover the total number of persons who are mainly or partially employed in R&D. This includes staff employed both full-time and part-time on R&D activities.

7.1 Headcount of all R&D personnel by gender, nationality and Highest qualification

(1) RESEARCHERS

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL RESEARCHERS (1)						

(2) TECHNICIANS

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL TECHNICIANS (2)						

(3) OTHER SUPPORT STAFF

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL OTHER SUPPORT STAFF (3)						

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
TOTAL R&D PERSONNEL (1+2+3)						

7.2 Headcount of all R&D personnel by gender, nationality and fields of science

(1) RESEARCHERS

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL RESEARCHERS (same as 7.1)						

(2) TECHNICIANS

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL TECHNICIANS (same as 7.1)						

(3) OTHER SUPPORT STAFF

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL OTHER SUPPORT STAFF (same as 7.1)						

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
TOTAL R&D PERSONNEL (1+2+3)						

8. RESEARCH FULL-TIME EQUIVALENTS (FTEs) AND COST TO HIGHER EDUCATION INSTITUTIONS

Provide an estimate of person-years of effort on R&D (or Full-time equivalents), according to the categories below.

Using the male and female headcounts of all R&D personnel reported for in Question 4, provide the research full-time equivalents (time devoted to R&D). Then, calculate the total labour costs of R&D using the average annual full cost-to-company for full-time staff (including annual wages, salaries and all associated costs or fringe benefits, such as bonus payments, contributions to pension and medical aid funds, payroll tax, unemployment insurance fund and all other statutory payments) per category below.

CALCULATING FULL-TIME EQUIVALENT (FTE) PERSONS

FTE data measure the volume of human resources in R&D. One FTE may be thought of as one person-year. That is 1 FTE is equal to 1 person working full-time on R&D for a period of 1 year or more persons working part-time or for a shorter period corresponding to one person-year.

For the purpose of this survey, an employee can work a maximum of 1 FTE in a year.

The following is a theoretical approach to calculating FTE:

FTE: (Dedication to the employment: Full-time/Part-time) x (Portion of the year active on R&D) x (Time or portion spent on R&D)

See the following examples:

- A full-time employee spending 100% of time on R&D during a year: (1 x 1 x 1) = 1 FTE
- A full-time employee spending 30% of time on R&D during a year: (1 x 1 x 0.3) = 0.3 FTE
- A full-time R&D worker who is spending 100% of time on R&D and is employed at an R&D institution for only six months: (1 x 0.5 x 1) = 0.5 FTE
- A full-time employee spending 40% of time on R&D during half of the year (person is only active for 6 months per year): (1 x 0.5 x 0.4) = 0.2 FTE
- A part-time employee (working 40% of a full time year) engaged only in R&D (spending 100% of time on R&D) during a year: (0.4 x 1 x 1) = 0.4 FTE
- A part-time employee (working 40% of a full-time year) spending 60% of time on R&D during half of the year (person is only active for 6 months per year): (0.4 x 0.5 x 0.6) = 0.12 FTE
- 20 full-time employees spending 40% of time on R&D during a year: 20 x (1 x 1 x 0.4) = 8 FTE

NOTE: please calculate FTEs for all R&D personnel.

8.1 FTE by gender, nationality and personnel Category

(1) RESEARCHERS

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL RESEARCHERS (1)										

(2) TECHNICIANS

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL TECHNICIANS (2)										

(3) OTHER SUPPORT STAFF

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL OTHER SUPPORT STAFF (3)										

Personnel category	Headcounts (From Q 7.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
TOTAL R&D PERSONNEL (1+2+3)										

8.2 FTE by gender, nationality and field of Science

(1) RESEARCHERS

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL RESEARCHERS (same as 7.1)										

(2) TECHNICIANS

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL TECHNICIANS (same as 7.1)										

(3) OTHER SUPPORT STAFF

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL OTHER SUPPORT STAFF (same as 7.1)										

Field of science	Headcounts (From Q 7.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
TOTAL R&D PERSONNEL (1+2+3)										

PART 3: IN-HOUSE R&D EXPENDITURE

THE DEFINITION AND CALCULATION OF IN-HOUSE R&D EXPENDITURE

OTHER CURRENT EXPENDITURE

Including - but not limited to:	Excluding:
• Direct project costs, project consumables and running costs linked to research, such as materials, fuels and other inputs, including telephone and printing. • Subsistence and travel expenses. • Repair and maintenance expenses. • Payments to outside organizations for use of specialised testing facilities, analytical work, engineering or other specialised services in support of R&D projects carried out by this reporting unit. • Commission/consultant expenses for research projects carried out by this reporting unit. • The relevant % of indirect and institutional costs and utility costs, such as rent, space charge, leasing and hiring expenses, furniture, water, electricity and any other overhead costs. • The relevant % of labour costs of persons providing indirect services such as the head office, human resources, finances, security and maintenance personnel as well as staff of central libraries and IT departments.	• Contract R&D expenses where the research project is carried out elsewhere by others on behalf of this reporting unit. • Payments for purchases of technical know-how (goodwill). • Licence fees. • Depreciation provisions

- Where current expenses such as direct project costs and consumables are used solely for R&D, allocate the full cost of the items.
- If these current expenses are used for more than one activity, include only an estimate of the portion used for R&D.
- Only where such an estimate of the portion used for R&D is not available, such as indirect and utility costs and labour costs of staff providing indirect services, it is advised that respondents apply the percentage time that researchers in the reporting unit spent on R&D to the total of these current expenditures.
- So if a faculty's income and expenditure statement shows that the current expenditure for indirect and utility costs and labour costs of staff providing indirect services for the year was say USD 1,700,000 and that researchers on average spent 22% of their time to R&D, then this component of R&D current expenditure may be estimated as 0.22 x USD 1,700,000 = USD 374,000.

CAPITAL EXPENDITURE

The full cost of capital expenses must be reported in the year of purchase (do not depreciate).

Including - but not limited to:	Excluding:
• Expenditure on fixed assets used in the R&D projects of this reporting unit. • Acquisition of software, including license fees, expected to be used for more than one year. • Purchase of databases expected to be used for more than one year. • Major repairs, improvements and modifications on land and buildings.	• Other repairs and maintenance expenses. • Depreciation provisions. • Proceeds from the sale of R&D assets.

- Where a capital item is used solely for R&D, allocate the full cost of the item.
- If the capital item is used for more than one activity, include only an estimate of the portion used for R&D. For example, a new piece of equipment that will be used for R&D (included), testing (excluded) and quality control (excluded). For instance, if the intended use of this new equipment for R&D purposes is 40% of the total usage (i.e. the other 60% for other activities), only 40% of the total equipment cost should be considered as relevant R&D expenditure.
- Only where such an estimate of the portion used for R&D is not available, apply the percentage time that researchers in the reporting unit spent on R&D to the cost of the item.

9. IN-HOUSE R&D EXPENDITURE

9.1 LABOUR COSTS OF R&D

Personnel categories	Full Time Equivalent (FTE) (From Q 7.1) (A)	Average annual labour cost per person Local Currency Qatari Riyal (B)	Calculated labour cost of R&D Local Currency Qatari Riyal (A x B)
Total researchers (1)			
Total technicians (2)			
Total other support staff (3)			
TOTAL LABOUR COST (1+2+3)			

		Qatari Riyal
Total cost of R&D personnel (carried over from Question 9.1)	9.1	

9.2 OTHER CURRENT EXPENDITURE ON R&D

(See the definition of current expenditure and how to calculate current expenditure devoted to R&D on the previous page)

Other current expenditure	9.2	

9.3 CAPITAL EXPENDITURE ON R&D

(See the definition of capital expenditure and how to calculate capital expenditure on R&D on the previous page)

Vehicles, plant, machinery and equipment	9.3.1	
Land, buildings and other structures	9.3.2	
Software	9.3.3	
Total	9.3	

TOTAL R&D EXPENDITURE (9.1 + 9.2 + 9.3)	9.4	

10. SOURCES OF FUNDS FOR IN-HOUSE R&D

Provide a breakdown of total R&D expenditure by the sources of funds.

10.1 Institution

	Qatari Riyal						
Own funds							

10.2 Government (include Departments/Ministries and grant making Institutes)

Grants, especially general purpose including studentships							
Contracts to perform directed R&D							

10.3 Local Businesses

Contracts to perform R&D							

10.4 Other national sources

Not for Profit Organizations (including Foundations)							
Individual Donations							
Other Higher Education institutions							

10.5 Foreign sources

Parent Institution							
Philanthropic organizations and Foundations							
All other foreign sources							

TOTAL R&D EXPENDITURE							

PART 4: CATEGORIES OF IN-HOUSE R&D EXPENDITURE

11. IN-HOUSE R&D EXPENDITURE BY TYPE OF R&D

11.1 Basic research

	(Percentage)		
• Work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts without a specific application in view • Analyses of properties, structures and relationships with a view to formulating and testing hypotheses, theories or laws. • The results of basic research are usually published in peer-reviewed scientific journals.			

11.2 Applied research

	(Percentage)		
• Original investigation to acquire new knowledge with a specific application in view. • Activities that determine the possible uses for the findings of basic research. • The results of applied research are intended primarily to be valid for a single or limited number of products, operations, methods or systems. • Applied research develops ideas into operational form. • Information or knowledge derived from applied research may be published in peer-reviewed journals or subjected to other forms of intellectual property protection.			

11.3 Experimental development

	(Percentage)		
• Systematic work using existing knowledge for creating new or improved materials, products, processes or services, or improving substantially those already produced or installed.			

TOTAL	**1**	**0**	**0**

12 DETAILED FIELDS OF SCIENCE (FOS)

Classify R&D according to two-digit field of science (FoS) with associated percentage expenditure (see Appendix A)

• The FoS codes are based on recognised academic disciplines and emerging areas of study.

FoS codes			Percentage		FoS codes			Percentage		
FoS					FoS					
FoS					FoS					
FoS					FoS					
FoS					FoS					
FoS					FoS					
					Total			1	0	0

13 SOCIO-ECONOMIC OBJECTIVES (SEO)

Classify R&D according to socio-economic objective (SEO) with associated percentage expenditure (see Appendix B)

• The SEO classification provides an indication of the main beneficiary of your R&D activities.

SEO codes			Percentage		SEO codes			Percentage		
SEO					SEO					
SEO					SEO					
SEO					SEO					
SEO					SEO					
SEO					SEO					
					Total			1	0	0

THANK YOU FOR YOUR TIME AND EFFORT

National Survey of Research and Experimental Development (R&D) Input 2015

Business Sector

Part 1: General Information

1. Registered name of company						
2. List the principal activities and/or National Classification/International Standard Industrial Classification (ISIC) code (see Appendix C) from which your company derives its main income..						
Activities	**ISIC**	**Company income obtained (%)**				
3. Parent Company (if applicable) with % ownership						
Parent company	**% ownership**					
4. Approximate foreign/local ownership split (By ultimate ownership if complex holding structures exist.)						
EU	**USA**	**China**	**Other**	**Domestic**	**Total**	
					100%	
5. Financial year (dd/mm/yyyy) for which you are reporting in this survey	From		To			
6. Total number of employees						
7. Gross sales revenue or turnover local currency (1000 QR)						
8. Did the reporting unit perform any IN-HOUSE R&D during the financial year?	8.1 Yes ☐ Continue with Question 8.2 No ☐ If the organization/unit does not do any In-House and/or any extramural R&D, tick this box and return the questionnaire as a NIL response.					

Person Completing The Questionnaire:

Name:		Job / Position:			
Tel:		Fax:		Mobile:	
E-mail:		Website:			
Signature:		Date:			

THE FOLLOWING DEFINITIONS ARE IMPORTANT IN THE COMPLETION OF THE SURVEY QUESTIONNAIRE:

Definition of R&D:

This survey follows the Frascati Manual guidelines for conducting surveys on the inputs to R&D (OECD, 2002).

It defines research and experimental development (R&D) as:

- **Research** is creative work and original investigation undertaken on a systematic basis to gain new knowledge, including knowledge of humanity, culture and society.
- **Experimental development** is the application of research findings or their scientific knowledge for the creation of new or significantly improved products, applications or processes.

The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned.

Scope of survey:

- The survey requests data on R&D performed IN-HOUSE by your organization in the national territory.
- Part five includes some questions on extramural R&D.

R&D in business:

Any activity classified as R&D is characterised by originality; it should have investigation as a primary objective and should have the potential to produce results that are sufficiently general for humanity›s stock of knowledge (theoretical and/or practical) to be recognisably increased.

R&D includes – but is not limited to:

Activities of personnel who are obviously engaged in R&D.

In addition, research activity includes:

- The provision of professional, technical, administrative or clerical support and/or assistance to personnel directly engaged in R&D.
- The management of personnel who are either directly engaged in R&D or are providing professional, technical or clerical support or assistance to those R&D activities of students undertaking postgraduate research courses.
- Software development where the aim of the project is the systematic resolution of a scientific uncertainty.
- Research work in the natural sciences, engineering, medical sciences, agricultural sciences, social sciences and the humanities.
- R&D carried out as a participant in any unincorporated joint venture.
- Prototypes and pilot plants, as long as long as the primary objective is to make further improvements.
- Industrial design and drawing but only if required for R&D.
- R&D projects performed on contract for other legal entities, such as businesses.
- “Feedback R&D” directed at solving problems occurring beyond the original R&D phase - for example, technical problems arising during initial production runs.

R&D excludes:

The following specific activities are excluded except where they are used primarily for the support of or as part of R&D activities performed in this reporting unit:

- Scientific and technical information services.
- Engineering and technical services.
- General purpose or routine data collection.
- Standardisation and routine testing.
- Feasibility studies (except into R&D projects).
- Specialised routine medical care, for example routine pathology • services.
- The commercial, legal and administrative aspects of patenting, • copyrighting or licensing activities.
- Routine computer programming, systems work or software • maintenance where there are no technological uncertainties to be resolved.

Examples:

- Investigating electrical conduction in crystals is basic research; application of crystallography to the properties of alloys is applied research.
- New chip designs involve development.
- Investigating the limiting factors in chip element placement lies at the border between basic and applied research, and increasingly involves nanotechnology.
- Much service R&D involves software development where the completion of the project is dependent on a scientific or technological advance and the aim of the project is the systematic resolution of a scientific or technological uncertainty.

Borderline cases:

- The greatest source of error in measuring R&D is the difficulty of locating the cut-off point between experimental development and the related activities required to realise an innovation.
- Care must be taken to exclude activities that although undoubtedly a part of the innovation process, rarely involve any R&D, e.g. patent filing and licensing, market research, manufacturing start-up, tooling up and redesign for the manufacturing process.
- It is also difficult to define precisely the cut-off point between experimental development and pre-production development, such as producing user demonstration models and testing, and production that is applicable to all industrial situations. If the primary objective is to make further technical improvements on the product or process, then the work falls within the definition of R&D. If, on the other hand, the product, process or approach is substantially set and the primary objective is to develop markets, to do pre-production planning or to get a production or control system working smoothly, the work is no longer R&D.

PART 2: IN-HOUSE R&D PERSONNEL

Report for all R&D personnel, both permanent and on contract (6 months or longer).

Researchers

Researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the planning and management of the projects concerned.

Technicians directly supporting R&D

Persons doing technical tasks in support of R&D, normally under the direction and supervision of a Researcher.

Other personnel directly supporting R&D

Other personnel include skilled and unskilled crafts persons, secretarial and clerical staff participating in R&D projects or directly associated with R&D Projects.

Do not include the count of personnel indirectly supporting R&D.

Typical examples are transportation, storage, cleaning, repair, maintenance and security activities, as well as administration and clerical activities undertaken not exclusively for R&D (such as the activities of central finance and personnel departments).

Allowance for these should be made in other current R&D expenditure

HEADCOUNT OF R&D PERSONNEL

'HEADCOUNT' (HC):

HC data cover the total number of persons who are mainly or partially employed in R&D.
This includes all staff employed whether permanent, contract, full-time or part-time.

9. HEADCOUNT OF R&D PERSONNEL

CALCULATING HEADCOUNT (HC) DATA

HC data cover the total number of persons who are mainly or partially employed in R&D. This includes staff employed both full-time and part-time on R&D activities.

9.1 Headcount of all R&D personnel by gender, nationality and Highest qualification

(1) RESEARCHERS

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL RESEARCHERS (1)						

(2) TECHNICIANS

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL TECHNICIANS (2)						

(3) OTHER SUPPORT STAFF

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Ph.D.						
M.A / M.Sc.						
Higher Diploma						
University						
Pre-University. Diploma						
Secondary						
Below Secondary						
TOTAL OTHER SUPPORT STAFF (3)						

Highest qualification	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
TOTAL R&D PERSONNEL (1+2+3)						

7.2 Headcount of all R&D personnel by gender, nationality and fields of science

(1) RESEARCHERS

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL RESEARCHERS (same as 9.1)						

(2) TECHNICIANS

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL TECHNICIANS (same as 9.1)						

(3) OTHER SUPPORT STAFF

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
Natural sciences						
Engineering and technology						
Medical and health sciences						
Agricultural sciences						
Social sciences						
Humanities						
Not specified elsewhere						
TOTAL OTHER SUPPORT STAFF (same as 9.1)						

Field of science	Male		Female		Total	
	Qataris	Non-Qataris	Qataris	Non-Qataris	Qataris	Non-Qataris
TOTAL R&D PERSONNEL (1+2+3)						

10. RESEARCH FULL-TIME EQUIVALENTS (FTEs) AND COST TO HIGHER EDUCATION INSTITUTIONS

Provide an estimate of person-years of effort on R&D (or Full-time equivalents), according to the categories below.

Using the male and female headcounts of all R&D personnel reported for in Question 4, provide the research full-time equivalents (time devoted to R&D). Then, calculate the total labour costs of R&D using the average annual full cost-to-company for full-time staff (including annual wages, salaries and all associated costs or fringe benefits, such as bonus payments, contributions to pension and medical aid funds, payroll tax, unemployment insurance fund and all other statutory payments) per category below.

CALCULATING FULL-TIME EQUIVALENT (FTE) PERSONS

FTE data measure the volume of human resources in R&D. One FTE may be thought of as one person-year. That is 1 FTE is equal to 1 person working full-time on R&D for a period of 1 year or more persons working part-time or for a shorter period corresponding to one person-year.

For the purpose of this survey, an employee can work a maximum of 1 FTE in a year.

The following is a theoretical approach to calculating FTE:

FTE: (Dedication to the employment: Full-time/Part-time) x (Portion of the year active on R&D) x (Time or portion spent on R&D)

See the following examples:

- A full-time employee spending 100% of time on R&D during a year: (1 x 1 x 1) = 1 FTE
- A full-time employee spending 30% of time on R&D during a year: (1 x 1 x 0.3) = 0.3 FTE
- A full-time R&D worker who is spending 100% of time on R&D and is employed at an R&D institution for only six months: (1 x 0.5 x 1) = 0.5 FTE
- A full-time employee spending 40% of time on R&D during half of the year (person is only active for 6 months per year): (1 x 0.5 x 0.4) = 0.2 FTE
- A part-time employee (working 40% of a full time year) engaged only in R&D (spending 100% of time on R&D) during a year: (0.4 x 1 x 1) = 0.4 FTE
- A part-time employee (working 40% of a full-time year) spending 60% of time on R&D during half of the year (person is only active for 6 months per year): (0.4 x 0.5 x 0.6) = 0.12 FTE
- 20 full-time employees spending 40% of time on R&D during a year: 20 x (1 x 1 x 0.4) = 8 FTE

NOTE: please calculate FTEs for all R&D personnel.

10.1 FTE by gender, nationality and personnel Category

(1) RESEARCHERS

Personnel category	Headcounts (From Q 9.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL RESEARCHERS (1)										

(2) TECHNICIANS

Personnel category	Headcounts (From Q 9.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL TECHNICIANS (2)										

(3) OTHER SUPPORT STAFF

Personnel category	Headcounts (From Q 9.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Ph.D.										
M.A / M.Sc.										
Higher Diploma										
University										
Pre.U. Diploma										
Secondary										
Below Secondary										
TOTAL OTHER SUPPORT STAFF (3)										

Personnel category	Headcounts (From Q 9.1)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
TOTAL R&D PERSONNEL (1+2+3)										

10.2 FTE by gender, nationality and field of Science

(1) RESEARCHERS

Field of science	Headcounts (From Q 9.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL RESEARCHERS (same as 9.2)										

(2) TECHNICIANS

Field of science	Headcounts (From Q 9.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL TECHNICIANS (same as 9.2)										

(3) OTHER SUPPORT STAFF

Field of science	Headcounts (From Q 9.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
Natural sciences										
Engineering and technology										
Medical and health sciences										
Agricultural sciences										
Social sciences										
Humanities										
Not specified elsewhere										
TOTAL OTHER SUPPORT STAFF (same as 9.2)										

Field of science	Headcounts (From Q 9.2)					Full-time equivalent (FTE)				
	Male		Female		Total	Male		Female		Total
	Qataris	Non-Qataris	Qataris	Non-Qataris		Qataris	Non-Qataris	Qataris	Non-Qataris	
TOTAL R&D PERSONNEL (1+2+3)										

PART 3: IN-HOUSE R&D EXPENDITURE

THE DEFINITION AND CALCULATION OF IN-HOUSE R&D EXPENDITURE

OTHER CURRENT EXPENDITURE

Including - but not limited to:	Excluding:
• Direct project costs, project consumables and running costs linked to research, such as materials, fuels and other inputs, including telephone and printing. • Subsistence and travel expenses. • Repair and maintenance expenses. • Payments to outside organizations for use of specialised testing facilities, analytical work, engineering or other specialised services in support of R&D projects carried out by this reporting unit. • Commission/consultant expenses for research projects carried out by this reporting unit. • The relevant % of indirect and institutional costs and utility costs, such as rent, space charge, leasing and hiring expenses, furniture, water, electricity and any other overhead costs. • The relevant % of labour costs of persons providing indirect services such as the head office, human resources, finances, security and maintenance personnel as well as staff of central libraries and IT departments.	• Contract R&D expenses where the research project is carried out elsewhere by others on behalf of this reporting unit. • Payments for purchases of technical know-how (goodwill). • Licence fees. • Depreciation provisions

• Where current expenses such as direct project costs and consumables are used solely for R&D, allocate the full cost of the items.
• If these current expenses are used for more than one activity, include only an estimate of the portion used for R&D.
• Only where such an estimate of the portion used for R&D is not available, such as indirect and utility costs and labour costs of staff providing indirect services, it is advised that respondents apply the percentage time that researchers in the reporting unit spent on R&D to the total of these current expenditures.
• So if a faculty's income and expenditure statement shows that the current expenditure for indirect and utility costs and labour costs of staff providing indirect services for the year was say USD 1,700,000 and that researchers on average spent 22% of their time to R&D, then this component of R&D current expenditure may be estimated as 0.22 x USD 1,700,000 = USD 374,000.

CAPITAL EXPENDITURE

The full cost of capital expenses must be reported in the year of purchase (do not depreciate).

Including - but not limited to:	Excluding:
• Expenditure on fixed assets used in the R&D projects of this reporting unit. • Acquisition of software, including license fees, expected to be used for more than one year. • Purchase of databases expected to be used for more than one year. • Major repairs, improvements and modifications on land and buildings.	• Other repairs and maintenance expenses. • Depreciation provisions. • Proceeds from the sale of R&D assets.

• Where a capital item is used solely for R&D, allocate the full cost of the item.
• If the capital item is used for more than one activity, include only an estimate of the portion used for R&D. For example, a new piece of equipment that will be used for R&D (included), testing (excluded) and quality control (excluded). For instance, if the intended use of this new equipment for R&D purposes is 40% of the total usage (i.e. the other 60% for other activities), only 40% of the total equipment cost should be considered as relevant R&D expenditure.
• Only where such an estimate of the portion used for R&D is not available, apply the percentage time that researchers in the reporting unit spent on R&D to the cost of the item.

11. IN-HOUSE R&D EXPENDITURE

11.1 LABOUR COSTS OF R&D

Personnel categories	Full Time Equivalent (FTE) (From Q 9.1) (A)	Average annual labour cost per person Local Currency Qatari Riyal (B)	Calculated labour cost of R&D Local Currency Qatari Riyal (A x B)
Total researchers (1)			
Total technicians (2)			
Total other support staff (3)			
TOTAL LABOUR COST (1+2+3)			

		Qatari Riyal
Total cost of R&D personnel (carried over from Question 9.1)	11.1	

11.2 OTHER CURRENT EXPENDITURE ON R&D

(See the definition of current expenditure and how to calculate current expenditure devoted to R&D on the previous page)

Other current expenditure	11.2	

11.3 CAPITAL EXPENDITURE ON R&D

(See the definition of capital expenditure and how to calculate capital expenditure on R&D on the previous page)

Vehicles, plant, machinery and equipment	11.3.1	
Land, buildings and other structures	11.3.2	
Software	11.3.3	
Total	11.3	

TOTAL R&D EXPENDITURE (9.1 + 9.2 + 9.3)	11.4	

12. SOURCES OF FUNDS FOR IN-HOUSE R&D

Provide a breakdown of total R&D expenditure by the sources of funds.

12.1 Institution

	Qatari Riyal						
Own funds							

12.2 Government (include Departments/Ministries and grant making Institutes)

Grants, especially general purpose including studentships							
Contracts to perform directed R&D							

12.3 Local Businesses

Contracts to perform R&D							

12.4 Other national sources

Not for Profit Organizations (including Foundations)							
Individual Donations							
Other Higher Education institutions							

12.5 Foreign sources

Parent Institution							
Philanthropic organizations and Foundations							
All other foreign sources							

TOTAL R&D EXPENDITURE							

PART 4: CATEGORIES OF IN-HOUSE R&D EXPENDITURE

13. IN-HOUSE R&D EXPENDITURE BY TYPE OF R&D

13.1 Basic research

	(Percentage)		
• Work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts without a specific application in view • Analyses of properties, structures and relationships with a view to formulating and testing hypotheses, theories or laws. • The results of basic research are usually published in peer-reviewed scientific journals.			

13.2 Applied research

	(Percentage)		
• Original investigation to acquire new knowledge with a specific application in view. • Activities that determine the possible uses for the findings of basic research. • The results of applied research are intended primarily to be valid for a single or limited number of products, operations, methods or systems. • Applied research develops ideas into operational form. • Information or knowledge derived from applied research may be published in peer-reviewed journals or subjected to other forms of intellectual property protection.			

13.3 Experimental development

	(Percentage)		
• Systematic work using existing knowledge for creating new or improved materials, products, processes or services, or improving substantially those already produced or installed.			

TOTAL	**1**	**0**	**0**

14 DETAILED FIELDS OF SCIENCE (FOS)

Classify R&D according to two-digit field of science (FoS) with associated percentage expenditure (see Appendix A)

• The FoS codes are based on recognised academic disciplines and emerging areas of study.

FoS codes			Percentage		FoS codes			Percentage		
FoS					FoS					
FoS					FoS					
FoS					FoS					
FoS					FoS					
FoS					FoS					
					Total			1	0	0

15 SOCIO-ECONOMIC OBJECTIVES (SEO)

Classify R&D according to socio-economic objective (SEO) with associated percentage expenditure (see Appendix B)

• The SEO classification provides an indication of the main beneficiary of your R&D activities.

SEO codes			Percentage		SEO codes			Percentage		
SEO					SEO					
SEO					SEO					
SEO					SEO					
SEO					SEO					
SEO					SEO					
					Total			1	0	0

THANK YOU FOR YOUR TIME AND EFFORT

Appendixes

Appendix A: Two Digit Field of Science Classification

1. Natural sciences

1.1 Mathematics

- Pure mathematics, Applied mathematics; Statistics and probability (Includes research on statistical methodologies, but excludes research on applied statistics which should be classified under the relevant field of application (e.g. Economics, Sociology, etc.)

1.2 Computer and information sciences

- Computer sciences, information science and bioinformatics (hardware development to 2.2, social aspect to 5.8);

1.3 Physical sciences

- Atomic, molecular and chemical physics (physics of atoms and molecules including collisions, interaction with radiation; magnetic resonances; Moessbauer effect); Condensed matter physics (including formerly solid state physics, superconductivity); Particles and fields physics; Nuclear physics; Fluids and plasma physics (including surface physics); Optics (including laser optics and quantum optics), Acoustics; Astronomy (including astrophysics, space science);

1.4 Chemical sciences

- Organic chemistry; Inorganic and nuclear chemistry; Physical chemistry, Polymer science, Electrochemistry (dry cells, batteries, fuel cells, corrosion metals, electrolysis); Colloid chemistry; Analytical chemistry;

1.5 Earth and related Environmental sciences

- Geosciences, multidisciplinary; Mineralogy; Palaeontology; Geochemistry and geophysics; Physical geography; Geology; Volcanology; Environmental sciences (social aspects to 5.7);
- Meteorology and atmospheric sciences; climatic research;
- Oceanography, Hydrology, Water resources;

1.6 Biological sciences (Medical to be 3, and Agricultural to be 4)

- Cell biology, Microbiology; Virology; Biochemistry and molecular biology; Biochemical research methods; Mycology; Biophysics;
- Genetics and heredity (medical genetics to be 3); reproductive biology (medical aspects to be 3); developmental biology;
- Plant sciences, botany;
- Zoology, Ornithology, Entomology, Behavioural sciences biology;
- Marine biology, freshwater biology, limnology; Ecology; Biodiversity conservation;
- Biology (theoretical, mathematical, thermal, cryobiology, biological rhythm), Evolutionary biology; other biological topics;

1.7 Other natural sciences

2. Engineering and technology

2.1 Civil engineering

- Civil engineering; Architecture engineering; Construction engineering, Municipal and structural engineering; Transport engineering;

2.2 Electrical engineering, Electronic engineering, Information engineering

- Electrical and electronic engineering; Robotics and automatic control; Automation and control systems; Communication engineering and systems; telecommunications; Computer hardware and architecture;

2.3 Mechanical engineering

- Mechanical engineering; Applied mechanics; Thermodynamics;
- Aerospace engineering;
- Nuclear related engineering; (nuclear physics to be 1.3);
- Audio engineering, reliability analysis;

2.4 Chemical engineering

- Chemical engineering (plants, products); Chemical process engineering;

2.5 Materials engineering

- Materials engineering; Ceramics; Coating and films; Composites (including laminates, reinforced plastics, cermets, combined natural and synthetic fibre fabrics; filled composites); Paper and wood; textiles; including synthetic dyes, colours, fibres; (nanoscale materials to 2.10; biomaterials to be 2.9);

2.6 Medical engineering

- Medical engineering; Medical laboratory technology (including laboratory samples analysis; diagnostic technologies); (Biomaterials to be 2.9 [physical characteristics of living material as related to medical implants, devices, sensors]);

2.7 Environmental engineering

- Environmental and geological engineering, geotechnics; Petroleum engineering, (fuel, oils),Energy and fuels; Remote sensing; Mining and mineral processing; Marine engineering, sea vessels; Ocean engineering;

2.8 Environmental biotechnology

- Environmental biotechnology; Bioremediation, diagnostic biotechnologies (DNA chips and biosensing devices) in environmental management; environmental biotechnology related ethics;

2.9 Industrial biotechnology

- Industrial biotechnology; Bioprocessing technologies (industrial processes relying on biological agents to drive the process) biocatalysis, fermentation; bioproducts (products that are manufactured using biological material as feedstock) biomaterials, bioplastics, biofuels, bioderived bulk and fine chemicals, bio-derived novel materials;

2.10 Nano-technology

- Nano-materials [production and properties];
- Nano-processes [applications on nano-scale]; (biomaterials to be 2.9);

2.11 Other engineering and technologies

- Food and beverages;
- Other engineering and technologies;

3. Medical and Health sciences

3.1 Basic medicine

- Anatomy and morphology (plant science to be 1.6); Human genetics; Immunology; Neurosciences (including psychophysiology); Pharmacology and pharmacy; Medicinal chemistry; Toxicology; Physiology (including cytology); Pathology;

3.2 Clinical medicine

- Andrology; Obstetrics and gynaecology; Paediatrics; Cardiac and Cardiovascular systems; Peripheral vascular disease; Hematology; Respiratory systems; Critical care medicine and Emergency medicine; Anaesthesiology; Orthopaedics; Surgery; Radiology, nuclear medicine and medical imaging; Transplantation; Dentistry, oral surgery and medicine; Dermatology and venereal diseases; Allergy; Rheumatology; Endocrinology and metabolism (including diabetes, hormones); Gastroenterology and hepatology; Urology and nephrology; Oncology; Ophthalmology; Otorhinolaryngology; Psychiatry; Clinical neurology; Geriatrics and gerontology; General and internal medicine; other clinical medicine subjects; Integrative and complementary medicine (alternative practice systems);

3.3 Health sciences

- Health care sciences and services (including hospital administration, health care financing); Health policy and services;
- Nursing; Nutrition, Dietetics;
- Public and environmental health; Tropical medicine; Parasitology; Infectious diseases; epidemiology;
- Occupational health; Sport and fitness sciences;
- Social biomedical sciences (includes family planning, sexual health, psycho-oncology, political and social effects of biomedical research); Medical ethics; Substance abuse;

3.4 Medical biotechnology

- Health-related biotechnology; Technologies involving the manipulation of cells, tissues, organs or the whole organism (assisted reproduction); Technologies involving identifying the functioning of DNA, proteins and enzymes and how they influence the onset of disease and maintenance of well-being (gene-based diagnostics and therapeutic interventions (pharmacogenomics, gene-based therapeutics); Biomaterials (as related to medical implants, devices, sensors); Medical biotechnology related ethics;

3.5 Other medical sciences

- Forensic science
- Other medical sciences

4. Agricultural sciences

4.1 Agriculture, Forestry, and Fisheries

- Agriculture; Forestry; Fishery; Soil science; Horticulture, viticulture; Agronomy, plant breeding and plant protection; (Agricultural biotechnology to be 4.4)

4.2 Animal and Dairy science

- Animal and dairy science; (Animal biotechnology to be 4.4)
- Husbandry; Pets;

4.3 Veterinary science

4.4 Agricultural biotechnology

- Agricultural biotechnology and food biotechnology; GM technology (crops and livestock),livestock cloning, marker assisted selection, diagnostics (DNA chips and biosensing devices for the early/accurate detection of diseases) biomass feedstock production technologies, biopharming; agricultural biotechnology related ethics;

4.5 Other agricultural sciences

5. Social sciences

5.1 Psychology

- Psychology (including human - machine relations);
- Psychology, special (including therapy for learning, speech, hearing, visual and other physical and mental disabilities);

5.2 Economics and Business

- Economics, Econometrics; Industrial relations;
- Business and Management;

5.3 Educational sciences

- Education, general; including training, pedagogy, didactics;
- Education, special (to gifted persons, those with learning disabilities);

5.4 Sociology

- Sociology; Demography; Anthropology, ethnology,
- Social topics (Women's and gender studies; Social issues; Family studies, Social work);

5.5 Law

- Law, criminology, penology;

5.6 Political science

- Political science; public administration; organisation theory;

5.7 Social and economic geography

- Environmental sciences (social aspects); Cultural and economic geography; Urban studies (Planning and development); Transport planning and social aspects of transport (transport engineering to 2.1);

5.8 Media and communications

- Journalism; Information science (social aspects); Library science; Media and socio-cultural communication;

5.9 Other social sciences

- Social sciences, interdisciplinary;
- Other social sciences;

6. Humanities

6.1 History and Archaeology

- History (history of science and technology to be 6.3, history of specific sciences to be under the respective headings); Archaeology;

6.2 Languages and Literature

- General language studies; Specific languages; General literature studies; Literary theory; Specific literatures; Linguistics;

6.3 Philosophy, Ethics and Religion

- Philosophy, History and philosophy of science and technology;
- Ethics (except ethics related to specific subfields); Theology; Religious studies;

6.4 Arts (arts, history of arts, performing arts, music)

- Arts, Art history; Architectural design; Performing arts studies (Musicology, Theater science, Dramaturgy); Folklore studies;
- Studies on Film, Radio and Television;

6.5 Other humanities

Source: OECD: DSTI/EAS/STP/NESTI(2006)19/FINAL

Appendix B: One Digit Socio-Economic Objective Classification

1. Exploration and Exploitation of the Earth.
2. Environment.
3. Exploration and Exploitation of Space.
4. Transport, telecommunication and other infrastructures.
5. Energy.
6. Industrial production and technology.
7. Health.
8. Agriculture.
9. Education.
10. Culture, recreation, religion and mass media.
11. Political and social systems, structures and processes.
12. General advancement of knowledge.
13. Defence.

Tables of Outputs