

Qatar

Leaving a Legacy for Future Generations

Progress, Challenges and
Responses for
Sustainable Development



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Sustainable Development

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Foreword

At the United Nations Rio+20 Conference held in Rio De Janeiro, Brazil, in June 2012, the State of Qatar reaffirmed its commitment to sustainable development and to ensuring the promotion of an economically, socially and environmentally sustainable future, for present and future generations.

Participants at the Rio+20 Conference, a 20-year follow-up to the 1992 Earth Summit which led to Agenda 21 and the landmark Conventions on climate change and biodiversity, committed to further mainstream sustainable development at all levels, integrating their economic, social and environmental aspects. They also recognized that to achieve sustainable development fundamental changes are required in patterns of consumption and production.

Qatar is hosting the eighteenth Conference of the Parties (COP 18) under the United Nations Framework Convention on Climate Change (UNFCCC), to be held in Doha between 26 November to 7 December 2012. The Convention provides that parties should protect the climate system for the benefit of present and future generations in accordance with their common but differentiated responsibilities. That Qatar is hosting COP 18 is a clear indication of the national commitment to sustainable development in general, and to a reduction in greenhouse gasses in particular.

Qatar National Vision 2030 (QNV) and Qatar National Development Strategy 2011-2016 (NDS) embed the principles of sustainable development. Qatar Leaving a Legacy for Future Generations: Progress, Challenges and Responses for Sustainable Development charts progress towards the achievement of QNV/NDS. It adopts a framework containing nine sustainable development themes with twenty related sub-themes linked to the QNV/NDS. It focuses on trends in relevant performance indicators and summarises how Qatar is responding to the challenges.

Qatar is developing at an unprecedented speed. Its rapid economic growth, spatial development, natural resource use and exceptionally high population growth have resulted in environmental stress. Qatar's future development path will be compatible with the requirements of sustainable development. This is being done through ensuring, *inter alia*, effective environmental policies and regulations, the application of best available technology, the development of strong environmental institutions, and advocacy campaigns for behavioural change.

Qatar's long-term development outcomes emphasise the need to strike a careful balance between the interests of the current generation and the interests of future generations. The country's huge economic gains provide a solid foundation for this, and through the NDS, returns from the current use of non-renewable resources will be further channelled into both physical and human capital formation. Given the wisdom and foresight of Qatar's leaders and people, there will be increasing harmony between economic growth, social development and environmental management.

I would like to thank all stakeholders who contributed to the preparation of this publication, and especially the report team from the Department of Social Development for their professionalism in putting it together. I would also like to thank the UNDP Abu Dhabi office for its support. I hope that this publication will encourage positive thinking and actions that will help achieve our vision of a sustainable future for all.

Saleh Al-Nabit
Secretary General
General Secretariat for Development Planning

November 2012

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Introduction

The 2012 United Nations Conference on Sustainable Development, Rio+20, has once again sharpened the focus of world leaders on sustainable development as the only viable way forward for our future and that of our children. National development must simultaneously balance social development, economic growth and environmental protection, taking account of their interlinkages.

This report, *Qatar Leaving a Legacy for Future Generations: Progress, Challenges and Response for Sustainable Development*, is part of the efforts of the General Secretariat for Development Planning (GSDP) to monitor progress towards the achievement of the *Qatar National Vision 2030 (QNV)* and the *Qatar National Development Strategy 2011-2016 (NDS)*. Cognizant of Qatar's commitment to sustainable development, it summarises the country's progress towards this overarching goal, with a particular emphasis on the environment. It also points to some of the key challenges and how the nation is responding to them.

Principles of sustainable development and intergenerational equity rooted in QNV/NDS

QNV, launched in November 2008 by His Highness the Heir Apparent, Sheikh Tamim Bin Hamad Al-Thani, defines Qatar's long-term development outcomes. The Vision, built on four inter-related development pillars of human development, social development, economic development and environmental development, mainstreams sustainable development and envisages that national development will be carried out with responsibility and respect, balancing and integrating the economic, social with environmental aspects.

Qatar's NDS is a programme of action that aligns the growth of national prosperity to the realities of environmental constraints. It contains priority national development programmes, projects and initiatives, with related outcomes and targets, that will advance the country towards the goals and objective of QNV.

Qatar's abundant hydrocarbon resources provide a means to invest in world-class infrastructure; build efficient delivery mechanisms for public services, especially health and education; create a highly skilled and productive labour force; and support the development of entrepreneurship and innovation capabilities. These resources also provide a means to invest in new technologies and frontier scientific research and development. It is thus anticipated that these investments will form a strong foundation for Qatar's long term sustainable development vision.

Qatar's development is being carried out with responsibility and respect, balancing the needs of economic growth and social development with the conditions for environmental protection, ensuring the country is on a pathway for sustainable development.

International agenda on sustainable development

Sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs", as defined in the 1987 Brundtland Commission Report, *Our Common Future*.¹

People are at the heart of sustainable development - a concept that attempts to reconcile the real and potential conflicts between economy growth, social development and environmental protection as well as between the present and the future. Sustainable development embodies the collective aspirations of the world's peoples for peace, freedom, improved living conditions and a healthy environment.

The idea of sustainable development was given additional impetus at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, the Earth Summit which resulted in a detailed Agenda 21 of desired actions, international conventions on climate change and biodiversity, and a statement of principles on forests. In 2002 the commitment to

sustainable development was reaffirmed by the international community at the World Summit on Sustainable Development in the Johannesburg Plan of Implementation.

In the outcome document of the recently concluded Rio+20 conference, *The Future We Want*, world leaders agreed on measures to strengthen global environmental management, further protect oceans, improve food security and promote a green economy (Box 1). They also set in motion an intergovernmental process to establish a set of aspirational sustainable development goals by 2015 for pursuing focused and coherent action on sustainable development. It is likely that these sustainable development goals will build on and supersede the Millennium Development Goals.

At the Rio+20 Conference His Excellency Mr Abdullah Bin Hamad Al Attiyah, Chairman of the Administrative Control and Transparency Authority, President-elect of the eighteenth Conference of the Parties (COP 18), on behalf of the State of Qatar, reaffirmed Qatar's commitment to sustainable development and noted "Our efforts in the field of adaptation to climate change are not limited to our local environment, but are extended to solidarity and joint action as a global responsibility in the fight against hunger and the eradication of poverty. In the course of implementation of this aim, and as a framework to facilitate coping with climate change in dry areas, the State of Qatar is currently working with other countries that suffer from drought risk to create a Global Dry Land Alliance".

At COP 18, to be held under the United Nations Framework Convention on Climate Change (UNFCCC), the world's attention will again focus on critical aspects of sustainable development, and in particular to lower carbon emissions.

Box 1 *The Future We Want* – Rio+20 Outcome

In June 2012, the Heads of State and Government and high-level representatives, with full participation of civil society, renewed their commitment to sustainable development and to ensuring the promotion of an economically, socially and environmentally sustainable future.

Countries agreed to renew political commitment to

- Further mainstream sustainable development at all levels, integrating economic, social and environmental aspects and recognizing their inter linkages.
- Accelerate the achievement of internationally agreed development goals, including the Millennium Development Goals by 2015.
- Recognize that people are at the centre of sustainable development and strive for a world that is just, equitable and inclusive.
- Reaffirm the importance of freedom, peace and security, respect for all human rights, including the right to development and an adequate standard of living.
- Reaffirm the importance of the Universal Declaration of Human Rights and fundamental freedoms for all.
- Acknowledge that democracy, good governance and the rule of law, at the national and international levels, as well as an enabling environment, are essential for sustainable development.

Agreements linked to the green economy in the context of sustainable development

- Change unsustainable and promote sustainable patterns of consumption and production and protect and manage the natural resource base of economic and social development.

- Promote sustained, inclusive and equitable economic growth by creating greater opportunities for all, reduce inequalities, raise basic standards of living, foster equitable social development and inclusion, and promote integrated and sustainable management of natural resources and ecosystems.

Institutional framework for sustainable development

- Need for institutions at all levels that are effective, transparent, accountable and democratic.
- Strengthen international cooperation to address challenges related to sustainable development, while enhancing gender equality, the empowerment of women and equal opportunities for all, and the protection, survival and development of children to their full potential, including through education.

Framework for action and follow-up

- Assess progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development and addressing new and emerging challenges and to address the themes of the United Nations Conference on Sustainable Development, namely, a green economy.
- Provide opportunities for people to influence their lives and future, participate in decision-making and voice their concerns as sustainable development can only be achieved with a broad alliance of people, governments, civil society and the private sector, all working together to secure the future we want for present and future generations.
- Establish an inclusive and transparent intergovernmental process on sustainable development goals that is open to all stakeholders, with a view to developing global sustainable development goals to be agreed by the General Assembly.

Source of data: Rio+20 Outcome of the Conference, June 2012

Framework for assessing progress in sustainable development

The framework used here for assessing progress in sustainable development takes into account both national priorities and international recommendations. The framework uses a set of sustainable development themes, and sub-themes, linked to the outcomes of the QNV/NDS, and to the sustainable development agenda of United Nations conferences.

National themes emphasized in the QNV/NDS were first included. These were then supplemented with a few additional themes and sub-themes from international frameworks, especially that of the United Nations Commission on Sustainable Development (CSD).

The resultant framework led to the selection of 9 themes and 20 sub-themes, covering economic, social and environmental development, as well as global partnerships. Performance indicators were determined based on relevance, availability and international comparability.

Box 2 Themes and sub-themes selected for analysis of sustainable development	
Theme	Subtheme
Economics	
Sustained Economic Prosperity	Expanding the productive base Enhancing economic stability and efficiency Building a diversified economy
Social	
Sound Social Development	Advancing human development Nurturing a healthy population Building knowledge and skills Fostering a capable and motivated workforce Encouraging sports Encouraging family cohesion Ensuring public safety and security
Environment	
Cleaner water and sustainable use	Promoting sustainable water consumption
Cleaner air and effective climate change responses	Reducing greenhouse gases Reducing air pollution
Nature and natural heritage sustainably managed	Valuing biodiversity Maintaining fisheries Preserving coastal areas
Reduced waste, more recycling and more efficient use	Improving waste management
Sustainable urbanization and living environment	Managing urbanization
Governance for effective environmental management	Improving governance and increasing awareness
Partnerships	
Strengthened international cooperation	Building global partnerships for development

Framework for assessing environmental impact

The so-called IPAT equation provides a useful analytical framework to facilitate thinking and assessing ways of reducing environmental impact and the quest for sustainable development (Box 3).

Rapid population and economic growth can be powerful drivers of environmental deterioration. This impact can be ameliorated by the adoption of sustainable technologies with low environmental impact. Qatar is adopting green technologies to

improve environmental outcomes and researching new ones at the Qatar Science and Technology Park.

The QNV/NDS established a framework of aspirations calling for programmes and projects that ensure sustainable prosperity for future generations. These programmes and projects explicitly align plans for growth of national prosperity to the realities of environmental constraints.

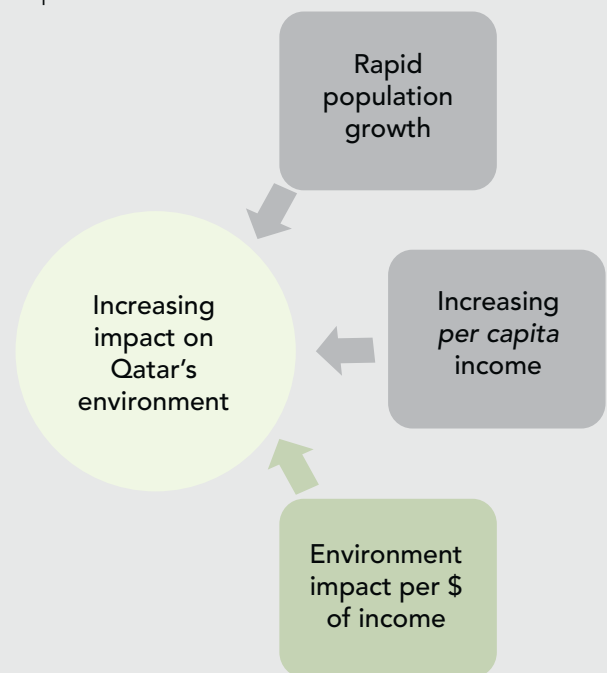
Box 3 Multiple factors contribute to environmental degradation, the IPAT equation

“The scale of human economic activity—rising eight times since 1950, and possibly another six times by 2050—is causing environmental destruction on a scale that was impossible at any earlier stage of human history. Economic activity is based heavily on the utilization of natural resources... yet with the incredible increase of populations and incomes per person, virtually every major ecosystem in the world is now under threat from human activities.” (Sachs, 2008) The depletion of fish and corals, scarcity of freshwater, destruction of habitats, massive extinction of plants and animals will render many parts of the world less hospitable, less resilient, and less productive for human beings.

The IPAT framework is a useful tool for Qatar to assess human impact on its environment.

The IPAT Equation ($I = P \times A \times T$)

- Shows a decomposition of total human impact on the environment (I) into three components: population (P), affluence (A) and technology (T).
- Environmental impact (I) may be expressed in terms of resource depletion or waste accumulation; population (P) refers to the size of the human population; affluence (A) refers to the level of consumption by that population; and technology (T) refers to the processes used to obtain resources and transform them into useful goods and wastes.



SUSTAINED ECONOMIC PROSPERITY

To embed sustainability in Qatar's economy, progress is needed in three mutually reinforcing directions. First, in enlarging the value of the productive base, which is necessary to sustain prosperity in a growing population and to expand potential for future generations. Second, in guarding against economic instability and promoting increased efficiency. Third, working in partnership with the private sector to diversify the economy and encourage a culture of innovation and discovery.





Sub-themes

Expanding the productive base

Enhancing economic stability
and efficiency

Building a diversified economy

EXPANDING THE PRODUCTIVE BASE

Building industry capabilities and economic potential

Figure 1.1 Qatar promoting a sustainable economy

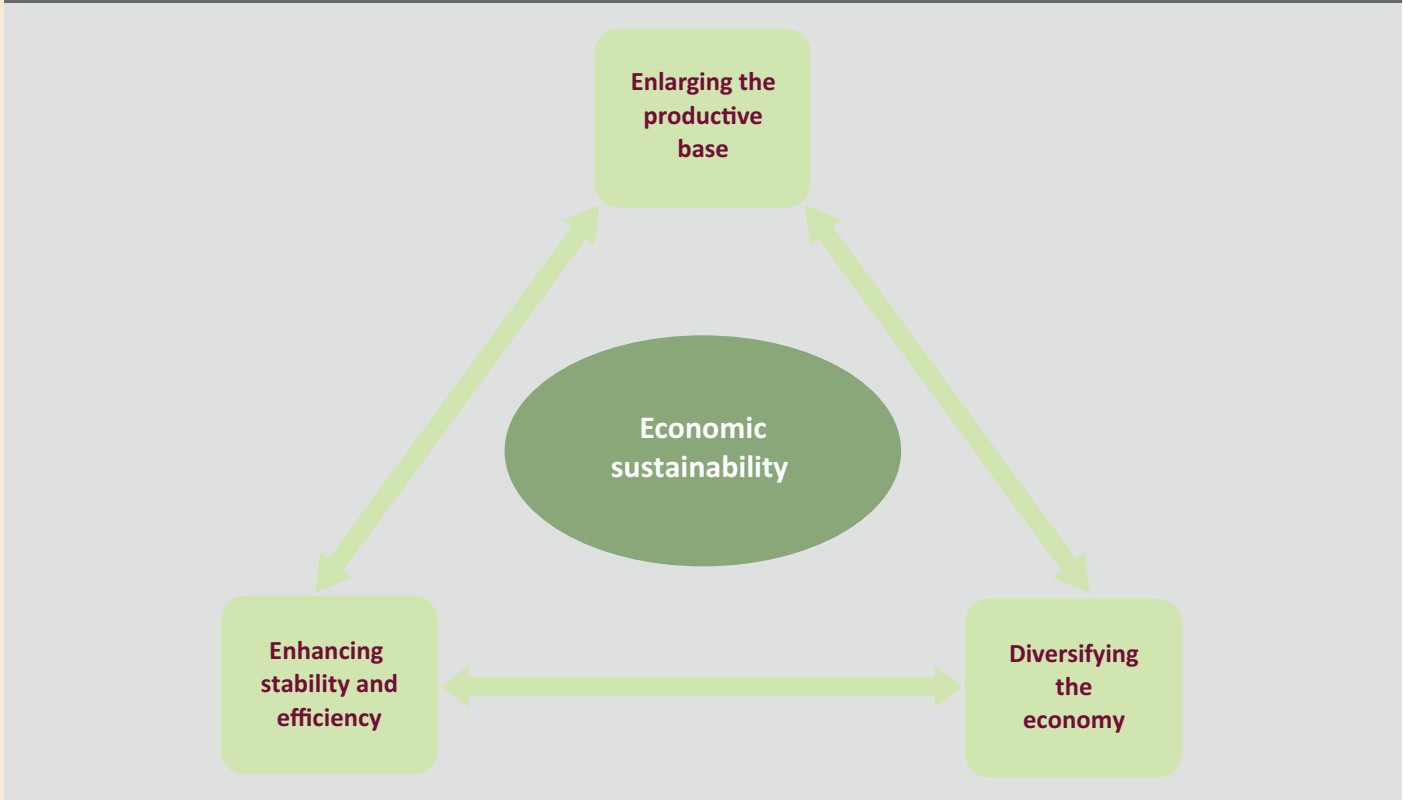
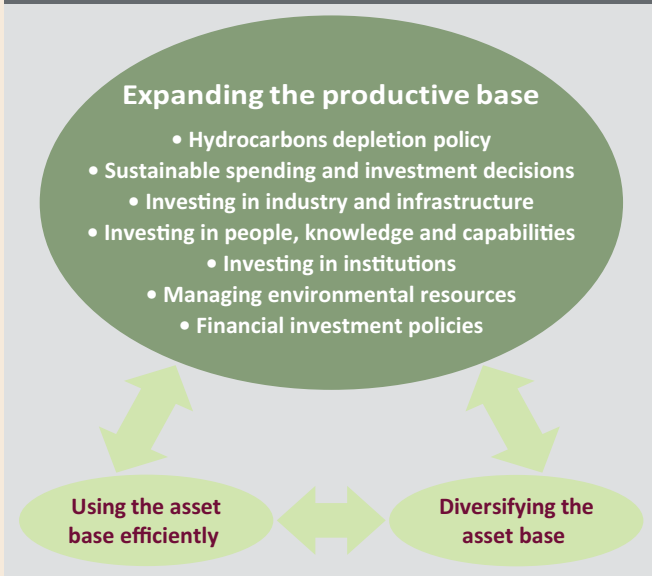
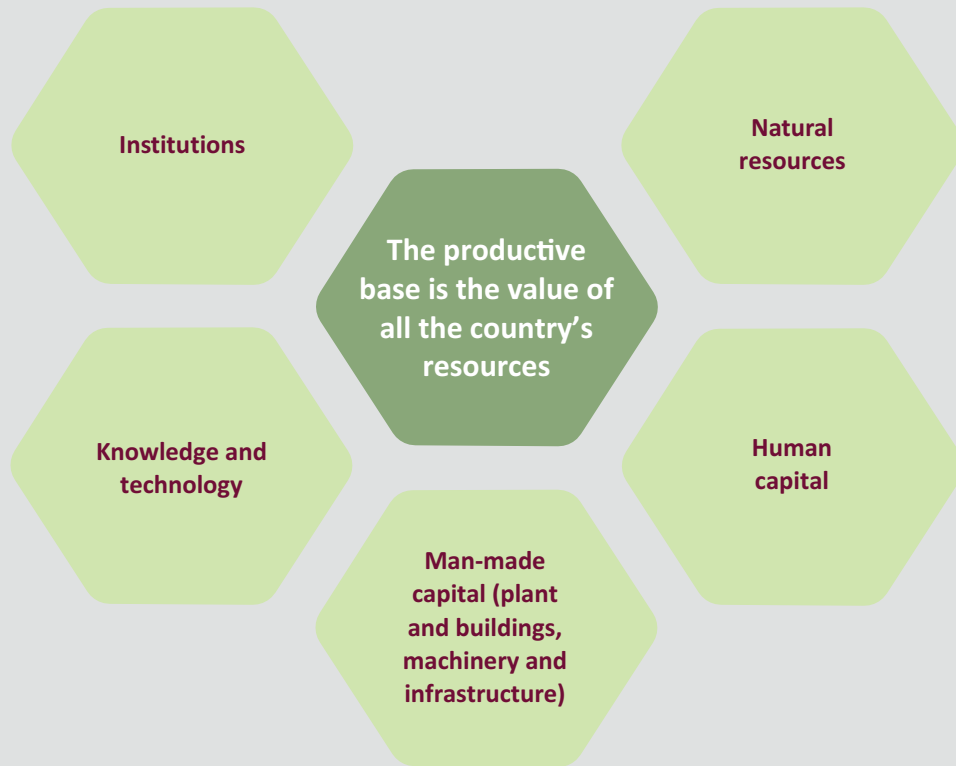


Figure 1.2 With its growing population, Qatar’s productive base must continue to expand



- Progress is needed in three mutually reinforcing directions to ensure the sustainability in Qatar’s economy (figure 1.1)
 - enlarging the value of the productive base, which is necessary to sustain prosperity in an economy with a growing population and to expand the potential for future generations.
 - Promoting and guarding against economic instability and increased efficiency.
 - working in partnership with the private sector to diversify the economy and foster a culture of discovery and innovation.
- As the value of Qatar’s productive base grows there are more opportunities for all (figure 1.2).
- Expanding Qatar’s productive base involves multiple challenges, including increasing skills and technology (figure 1.3).

Figure 1.3 Expanding the productive base is an essential element of Qatar’s approach to sustainability



Qatar’s need to expand the productive base to achieve sustainability places limits on what the country can consume while preserving wealth for future generations. As Qatar’s hydrocarbon income diminishes, alternative sustainable sources of income must be created to support public consumption and cover the country’s import bill.

This requires high rates of saving and a steady flow of dividends on investment for the foreseeable

future. Far-sighted hydrocarbon depletion policies, sound fiscal management and wise investment will support sustainability.

Qatar’s planned investments in physical and social infrastructure are an essential part of a broader strategy to ensure continuing expansion of its productive base, and to attract further investments from the private sector.

Qatar meeting the challenges

The government will continue to ensure that structures governing hydrocarbon-linked investments, upstream and downstream, provide sufficient flexibility to deal with project specifics and changing cost or market conditions.

Where hydrocarbon rents are shared with private investors, the government will seek to ensure that these rents are compensated by other benefits that flow to the country, such as the acquisition of technology, infrastructure and knowledge and skills.

Qatar is leveraging its cheap domestic feedstock and energy to contribute to long-term economic diversification and the expansion of the productive base.

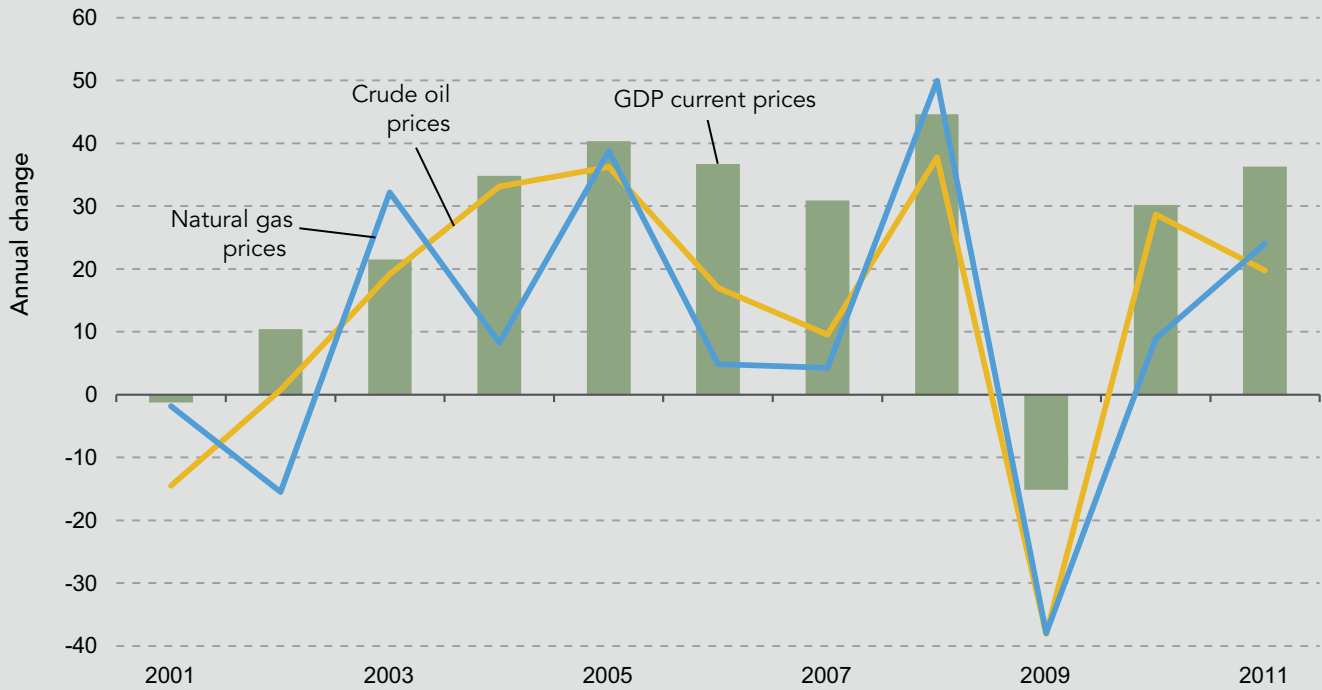
Associated investments should provide an acceptable return on the resources committed by the state.

Decisions on financial investments for the country will address specific needs: foreign currency reserves to support management of the currency and to meet payment obligations; liquid assets to support stabilization goals; longer term investments to diversify income and provide funds for the future; and strategic investments to accelerate the acquisition of knowledge, technology and skills that can expand and diversify the country’s productive base.

ENHANCING ECONOMIC STABILITY AND EFFICIENCY

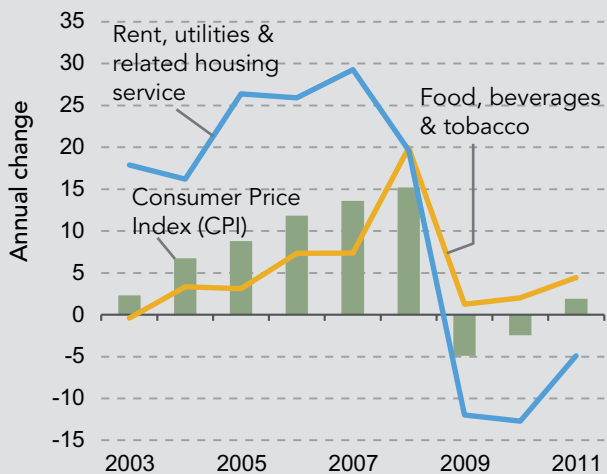
Strengthening institutions, regulations and capabilities

Figure 1.4 Qatar's GDP growth rate mirrors global trends in hydrocarbon prices
Percentage



Source of data: QSA (2012d); and WB (2012a).

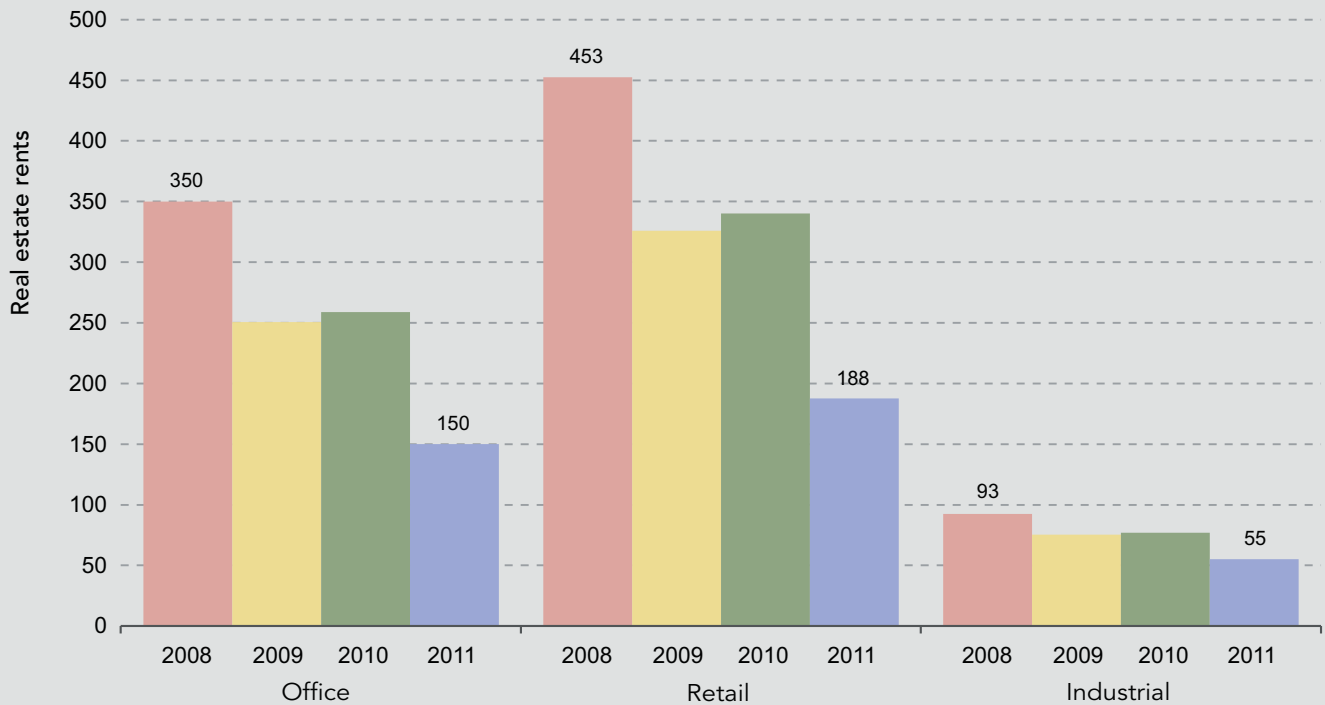
Figure 1.5 Inflation declined and moderated after 2009 global financial crisis
Percentage



Source of data: QSA (2012c).

- Energy price shifts affect Qatar's fiscal revenue directly such that low oil and gas prices tend to lower nominal GDP, and vice versa (figure 1.4).
- Inflation accelerated sharply from 2005, reaching a high of about 15% in 2008 as a result of the rapid increase in credit and supply bottlenecks, after which prices declined following the global recession (figure 1.5).
- Real estate rental prices for 2011 suggest that excess supply seen in recent years has continued across major market segments of the real estate market (figure 1.6).

Figure 1.6 Doha real estate rentals have fallen as supply exceeds demand
QR per metre² per month



Source of data: BMI (2012).

Economic stability is needed if investors are going to make long-term commitments to expand the national productive base. Hydrocarbon dependency exposes Qatar to the ups-and-downs in global energy markets, creating uncertainty for planning. Selling on long-term purchase and sales agreements, whose prices are set according to a moving average benchmark, is one strategy adopted to minimize volatility.

With an abundance of hydrocarbon resources but a scarcity of other natural resources, such as water, efficiency is fundamental for creating value, preserving and expanding the productive base and for encouraging diversification.

Qatar meeting the challenges

Qatar is undertaking several initiatives to improve market efficiency. One of these involves aggressive efforts by Kahramaa (the national water authority) to stem losses of desalinated water in its distribution network. Desalination, which accounts for about half of Qatar's water usage, depends on costly and energy-intensive cogeneration process which uses large swathes of coastal land and requires seawater that does not exceed given levels of salinity.

Qatar National Food Security Programme is undertaking initiatives to achieve sustainable improvements in agricultural productivity. The country's

agricultural yield tend to be lower than those of other Gulf states, partly because of farming methods that are outdated or unsuited to local conditions.

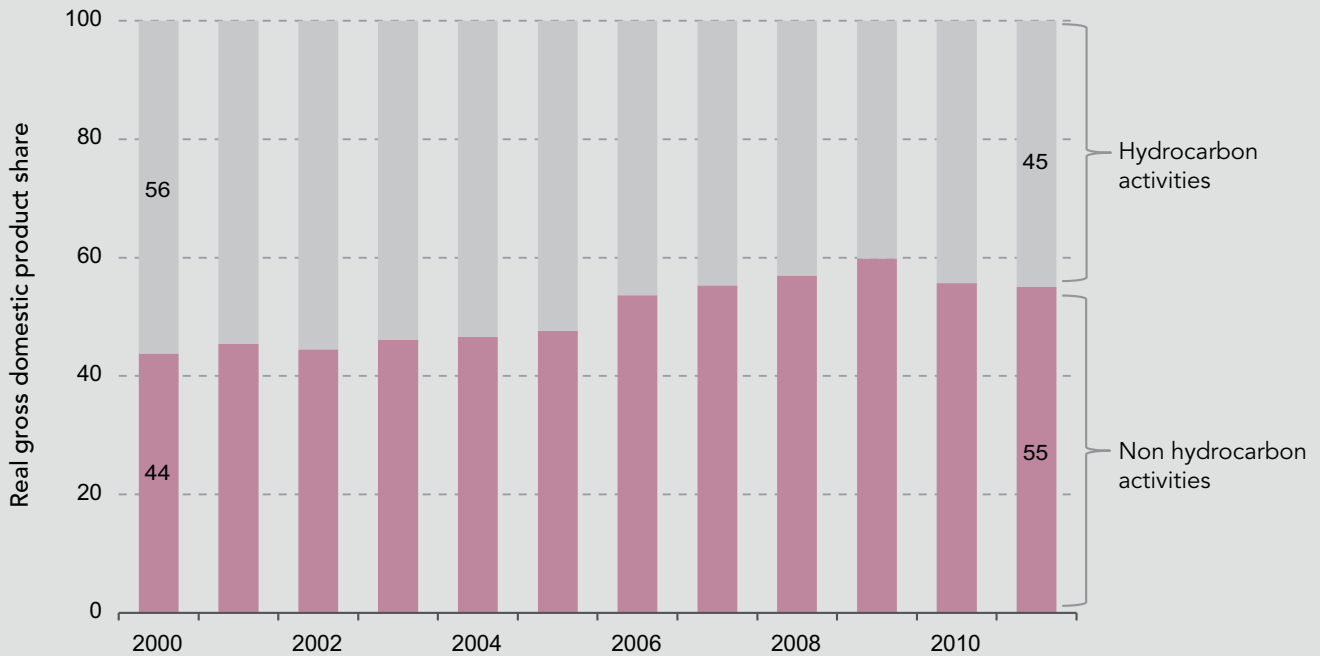
The government is putting in place new regulations to improve efficiency, including better business regulation, improved infrastructure regulation and stronger land regulation – the latter includes approval and implementation of a National Master Plan for integrated land use and transport planning.

BUILDING A DIVERSIFIED ECONOMY

Promoting discovery and diversification

Figure 1.7 Qatar's non-hydrocarbon activities now account for more than half of GDP

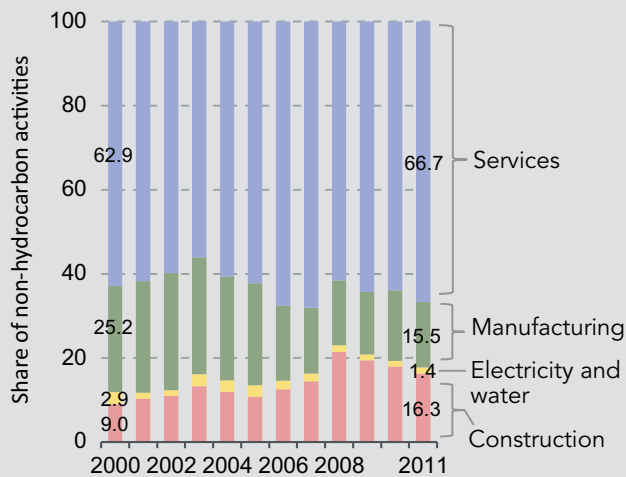
Percentage



Note: Figures for 2010 and 2011 are preliminary estimates.
Source of data: QSA (2012d).

Figure 1.8 Services account for the bulk of non-hydrocarbon activities

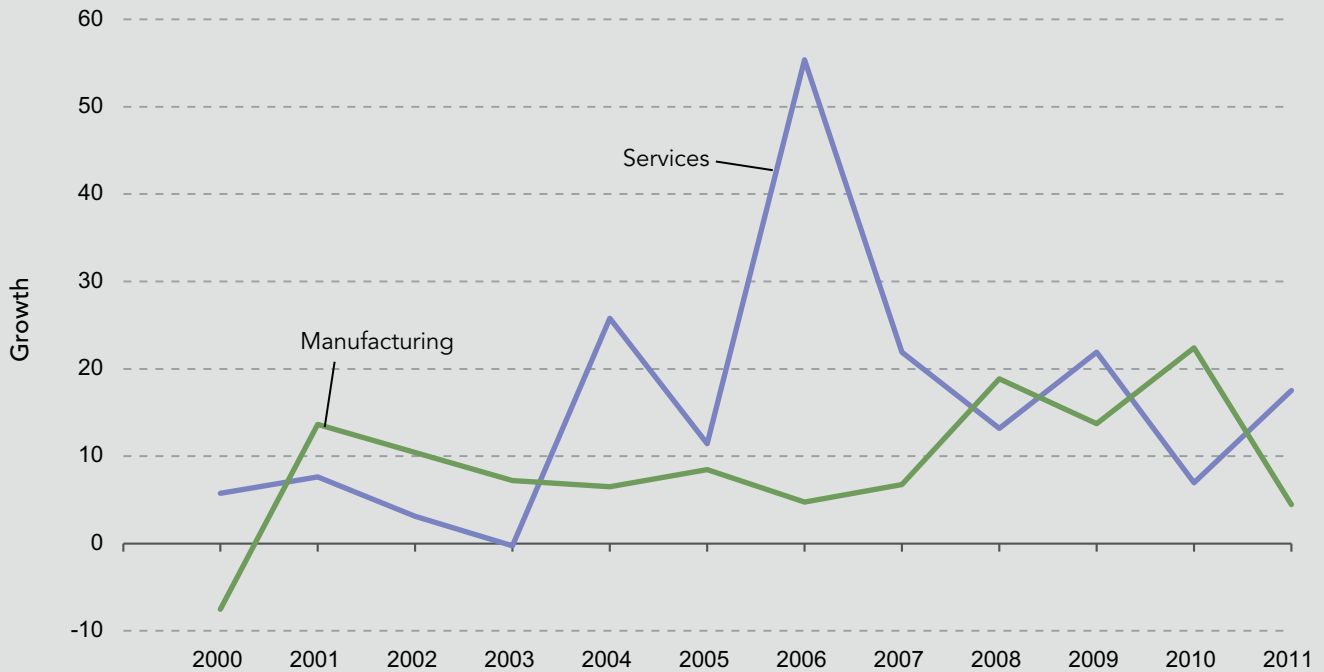
Percentage



Source of data: QSA (2012d).

- While Qatar is increasingly branching out into new areas of economic activity, hydrocarbons still account for almost half and remain the backbone of the national economy (figure 1.7).
- Within the non-hydrocarbon sector, the share of services has grown from 63% in 2000 to 67% in 2011: the corresponding figures for construction are from 9% to 16% (figure 1.8).
- Annual growth in output over the 11 year period to 2011 has been particularly marked for both the services and manufacturing sectors (figure 1.9), although the share of manufacturing in non-hydrocarbon activities has shrunk from 25.2% to 15.5% (figure 1.8).

Figure 1.9 Manufacturing and services activities output have grown significantly over the past decade
Percentage



Source of data: QSA (2012d).

A more diversified economy is inherently more stable, more capable of creating jobs and opportunities for the next generation and less vulnerable to volatility in hydrocarbon prices. For Qatar, progressive diversification is also essential since the country will need renewable sources of wealth creation to generate income after its hydrocarbon reserves are eventually depleted.

Hydrocarbons alone cannot sustain wealth creation and an apparent entitlement to public sector employment for nationals has reached limits. Qatar is thus committed to diversifying to a knowledge-based economy with stronger private sector engagement.

Qatar meeting the challenges

Qatar is taking steps to create an enabling environment for diversification by encouraging investment and providing opportunities for the private sector. The government has liberalized laws and regulations affecting banking, customs and commerce, as well as those governing foreign direct investment and majority foreign ownership.

Entrepreneurship and innovation are being encouraged within the education and training system as well as at a growing number of research centres. Enterprise Qatar is now operational and offering a range of business services to prospective entrepreneurs.

The Qatar Development Bank has introduced a range of new services and products, including partial credit

guarantees, export guarantees and insurance products and incubation services for start-up companies. An Information and Communication Technology strategy is being implemented by ictQatar enabling support for the use and deployment of ICT focused businesses.

Qatar Science and Technology Park is engaging with many international private sector partners in frontier research and development initiatives, particularly in relation to green technology. The Qatar National Research Fund is also helping to create an indigenous research culture and a National Research and Development Strategy has been formulated to better align research initiatives with the goals and objectives of the Qatar National Vision 2030.

SOUND SOCIAL DEVELOPMENT

Promoting and sustaining social development requires an orientation of values, objectives and priorities towards the well-being of all, and the strengthening and promotion of supportive institutions and policies. The pursuit, promotion and protection of these values provide the legitimacy of all institutions and promote an environment in which human beings are at the centre of sustainable development.





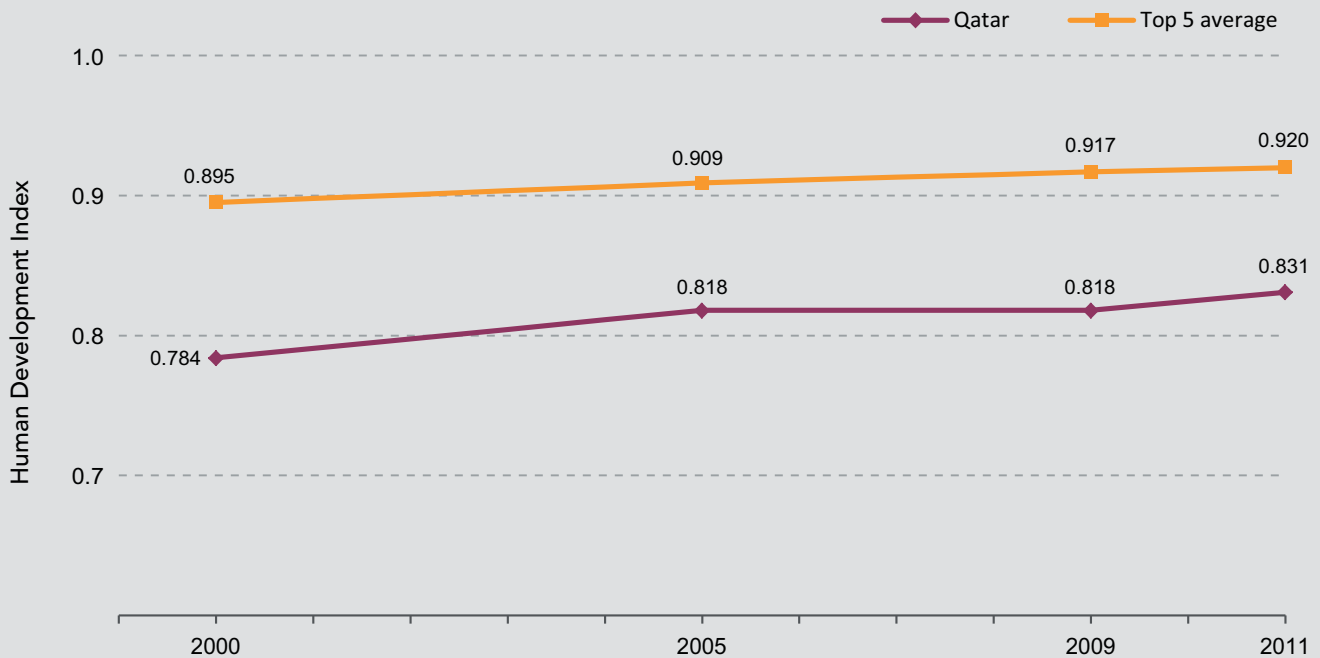
Sub-themes

- Advancing human development
- Nurturing a healthy population
- Building knowledge and skills
- Fostering a capable and motivated workforce
- Encouraging sports
- Reinforcing family cohesion
- Ensuring public safety and security

ADVANCING HUMAN DEVELOPMENT

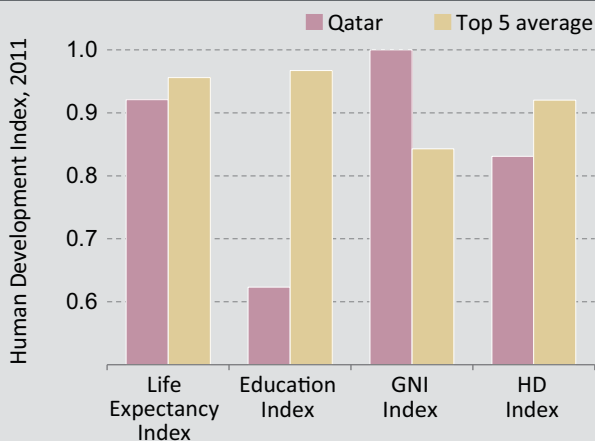
Investing in people

Figure 2.1 Qatar has made remarkable progress in human development and has narrowed the gap with world's top five countries



Note: Top 5 HDI countries in 2011 are Norway, Australia, Netherland, New Zealand, and United States.
Source of data: UNDP (2012).

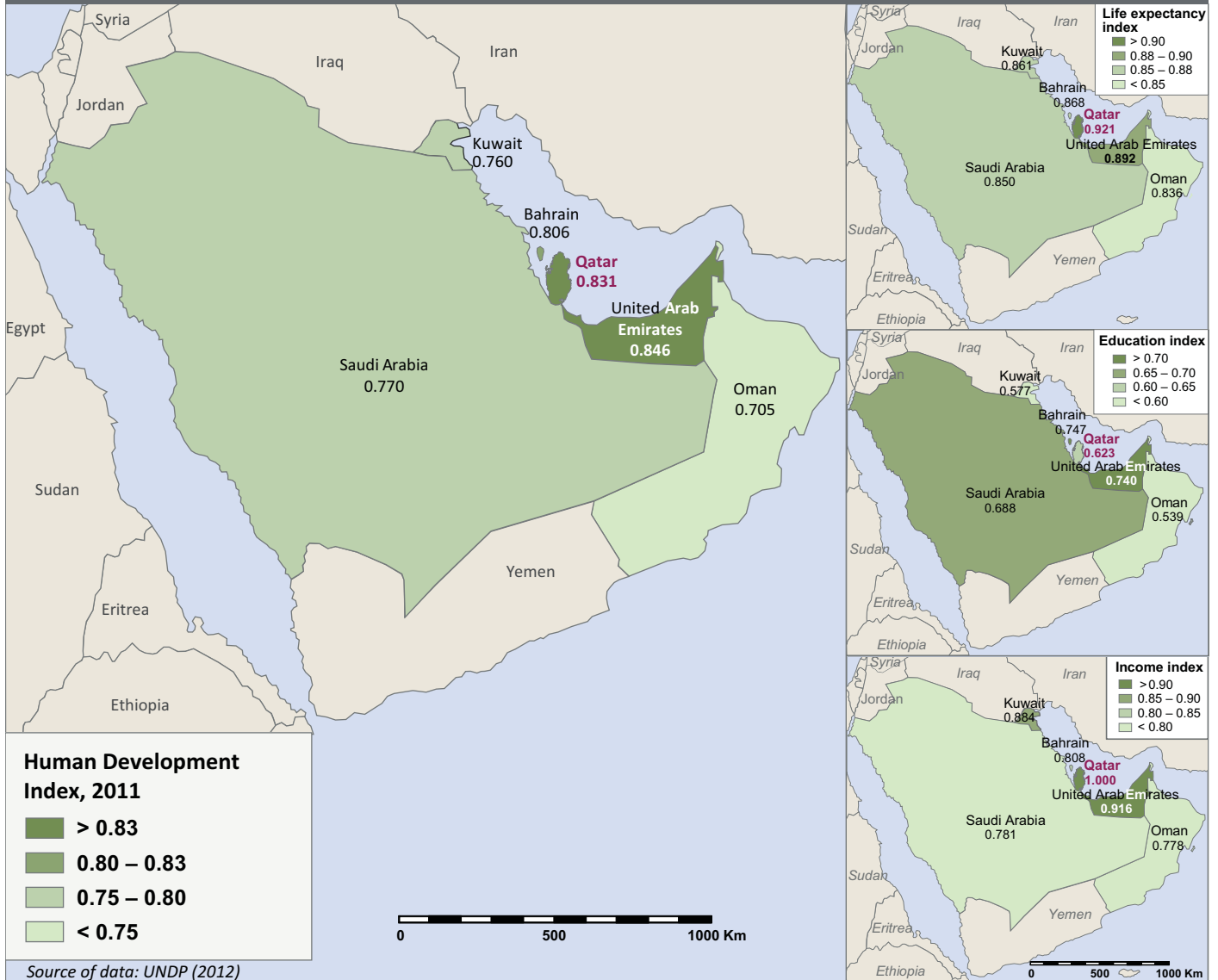
Figure 2.2 Qatar's GNI index exceeds top 5 countries but its education index is far behind



Note: Top 5 HDI countries in 2011 are Norway, Australia, Netherland, New Zealand, and United States
Source of data: UNDP (2012).

- Qatar's rapid economic growth and transformation has been accompanied by impressive gains in human development, measured in terms of a composite of education, health, and income through the Human Development Index (HDI).
- Between 2000 and 2011, the country's HDI advanced from 51st to 37th in the world, and progressed faster relative to the world's top five countries (figure 2.1).
- In terms of the 3 component dimensions of the HDI, Qatar is ranked first in the world in the Gross National Income (GNI) per capita index. Its achievements in health are also exemplary but Qatar's achievement in the education dimension lags markedly behind the world's top five countries (figure 2.2).
- Qatar's human development is ahead of other Gulf Cooperation Council (GCC) countries, except in the education dimension index (figure 2.3).

Figure 2.3 Qatar's Human Development Index compares favourably with Gulf Cooperation Council countries



Qatar meeting the challenges

Qatar is continuing to prioritize human development and is making massive investments in the social sectors. It aims to achieve the highest global standards in health and education, so that its people can participate fully and effectively in social, economic and political life nationally, regionally and internationally.

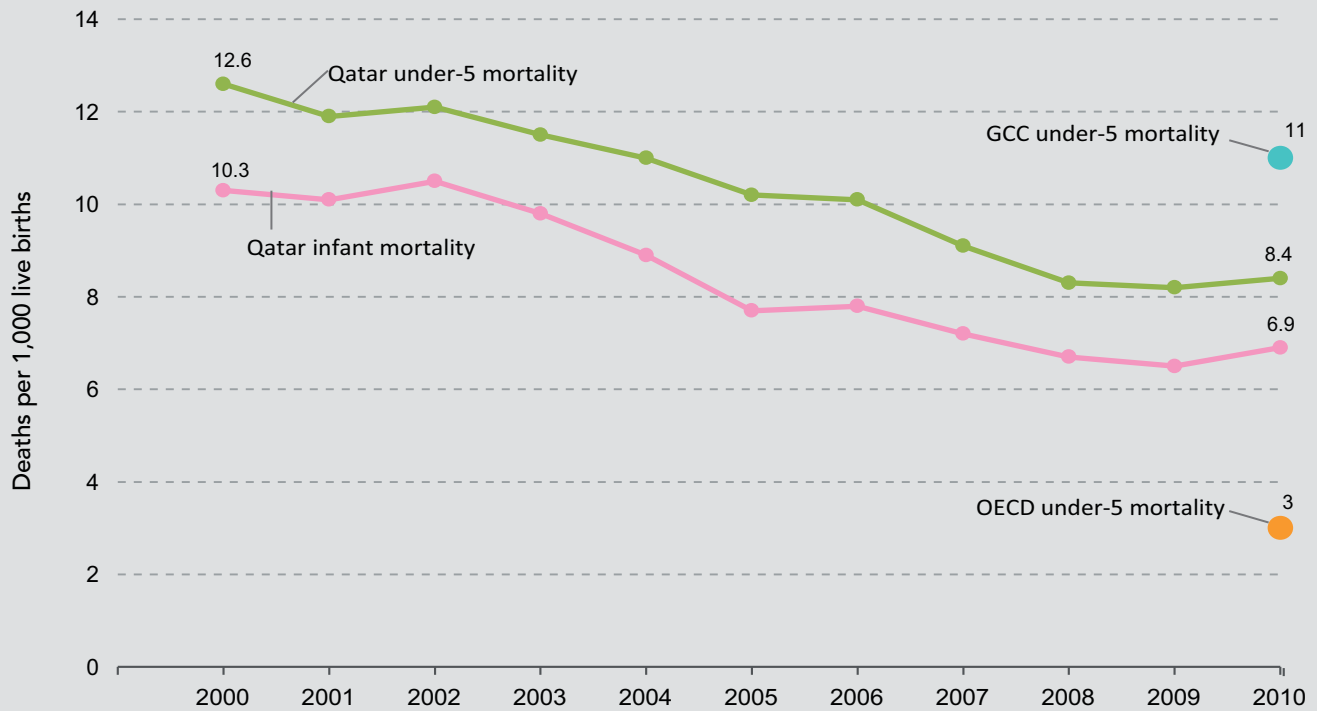
For Qatar to improve its relative HDI standing further, significant gains are required in its education

performance. The National Education Strategy currently being implemented contains multiple initiatives designed to improve education outcomes, including increasing transition rates to higher levels of tertiary education, through both academic and technical-vocational pathways.

NURTURING A HEALTHY POPULATION

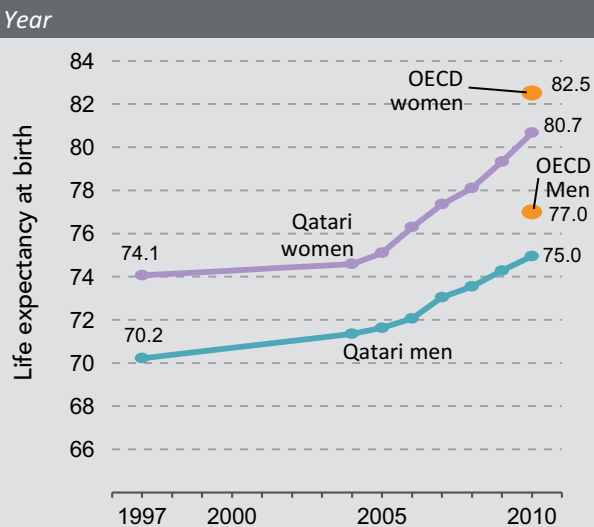
Developing a world-class healthcare system

Figure 2.4 Marked reductions in Qatari infant and under-5 mortality



Note: Three years moving averages.
Source of data: QSA (2012b); and WHO (2011).

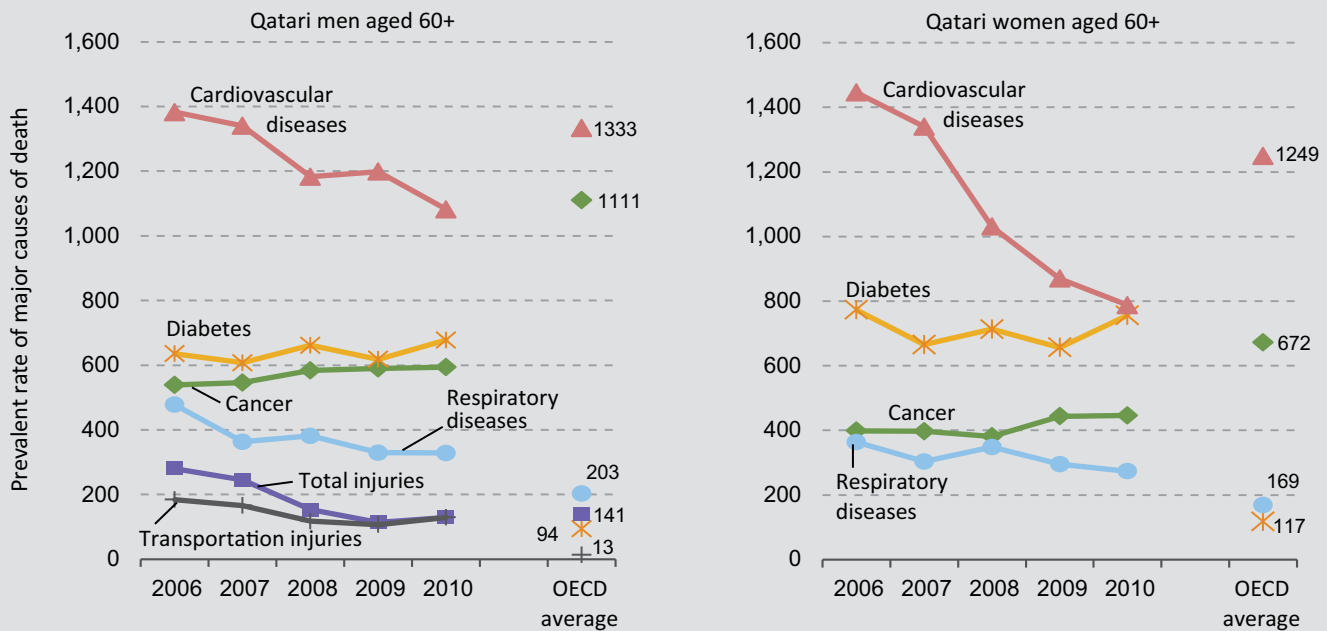
Figure 2.5 Spectacular gain in Qatari life expectancy at birth for men and women



Source of data: GSDP/QSA (2012), OECD (2012b).

- Qatari infant and child mortality have shown significant improvement and rates in 2010 were just two-thirds of those in 2000 (figure 2.4).
- Qatari life expectancy at birth has risen substantially over time with that in 2010 for males reaching 75 years and females 81 years (figure 2.5).
- Exceptionally high rates for diabetes for older Qatari men and women compared to OECD average levels (figure 2.6).
- Qatar's total health expenditure reached a peak in 2003 at 4.3% of GDP and since has fallen to 1.8% by 2010, lower than the GCC average of 2.5% (figure 2.7).

Figure 2.6 Exceptionally high death rates due to diabetes (men and women) and transportation injuries among older Qatari men aged 60+
Per 100,000 population

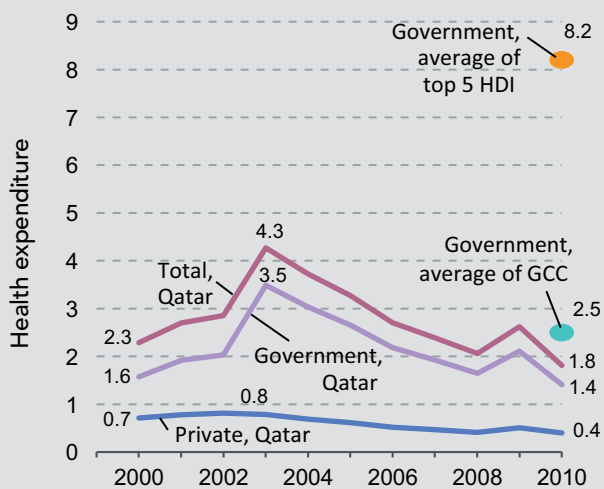


Note: OECD countries for male data are Italy, Japan, Spain, Sweden and Switzerland; while for female, France, Italy, Japan, Spain and Switzerland; data pertain to 2008.
Source of data: SCH (2011); and WHO (2011).

Advancing healthcare and wellness is fundamental for a vibrant, healthy and productive society. Health and wellness contribute vitally to quality of life and a healthy population reduces social costs and enhances economic productivity.

Qatar's healthcare system is evolving towards providing a full continuum of care through a patient-centred approach, addressing both physical and mental health needs. There is growing emphasis on empowering individuals to participate in self-care and wellness through the promotion of healthy lifestyles.

Figure 2.7 Government and private health expenditure as % of GDP below GCC average
% of GDP



Source of data: WB (2012c).

Qatar meeting the challenges

Qatar's National Health Strategy contains far-reaching reforms with fundamental changes taking place across the entire healthcare system.

Qatar's model of care is being shifted from being hospital-based care to the delivery of a full continuum of care through the enhancement of primary healthcare and community-based services. Primary care is becoming the cornerstone of a people-centred health system.

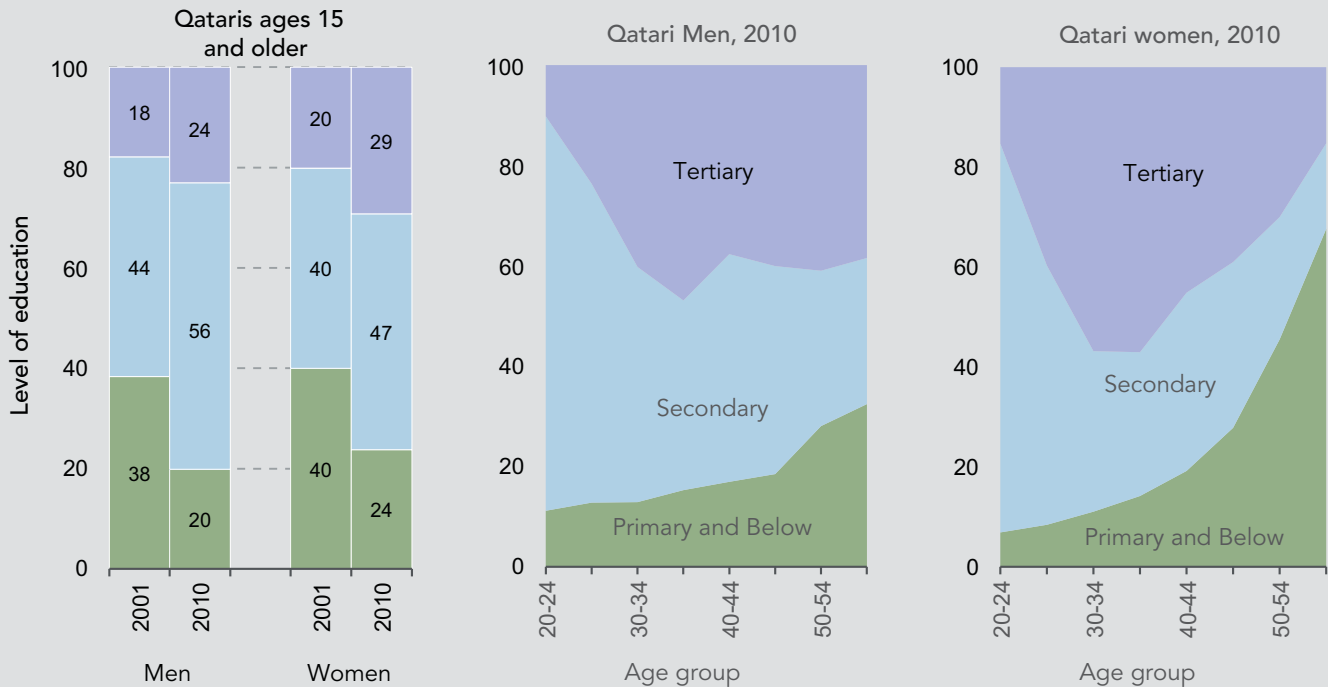
To reduce the high levels of cardiac, cancer and diabetic diseases, the focus of healthcare is increasingly shifting to prevention and early intervention.

Qatar is establishing affordable health services through partnerships in meeting costs. Among the measures underway are budget strengthening, private health insurance, transparent management of capital expenditures, and improved health infrastructure planning.

BUILDING KNOWLEDGE AND SKILLS

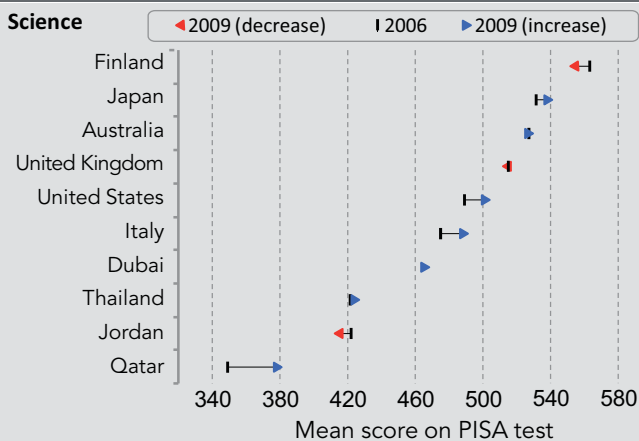
Expanding the capacities of Qataris

Figure 2.8 Educational attainment of Qataris has improved markedly over time
Percentage



Source of data: GSDP (2012).

Figure 2.9 Qatar secondary students' test results in science have improved slightly but remain below international benchmarks

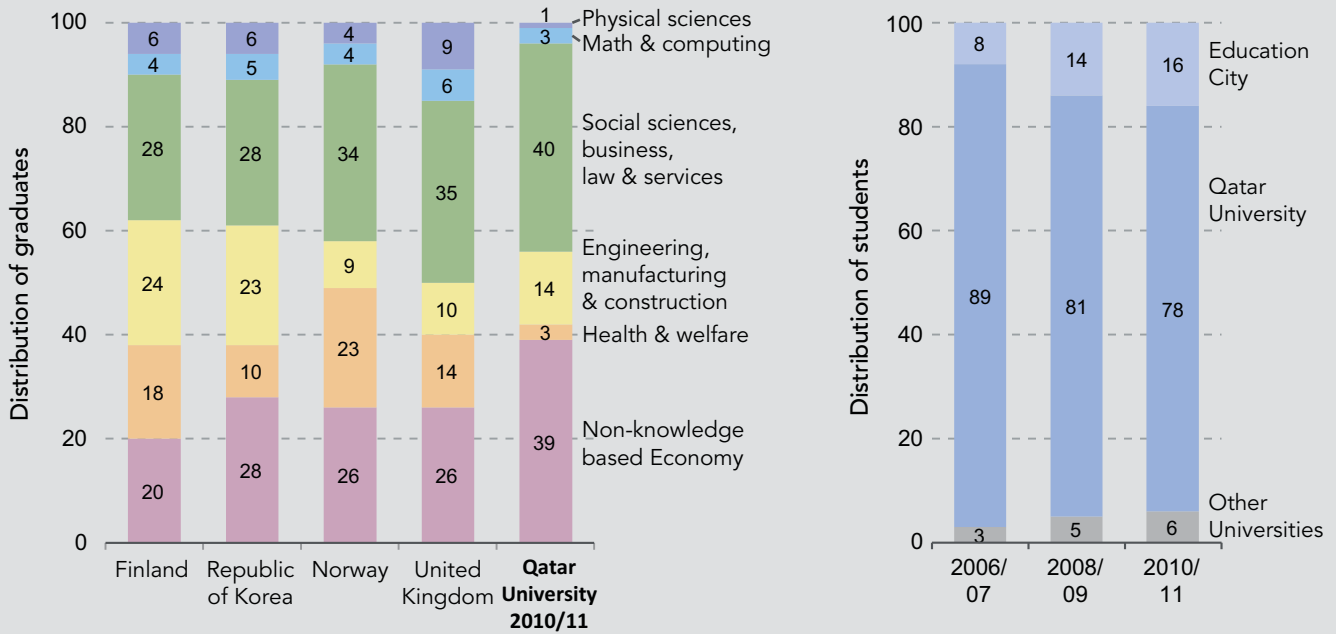


Note: 57 countries participated in 2006, and 65 countries participated in 2009.

Source of data: GSDP (2012).

- Qataris have achieved progressively higher educational attainment over time such that by 2010 56% of men had achieved secondary level and a further 24% had attained tertiary level: similar progress in attainment levels is observed for women (figure 2.8).
- Qatar's schools participate in international tests to assess student performance against international benchmarks, and while still lagging international counterparts, there have been improvements in performance in science among secondary students (figure 2.9).
- More than 60% of Qatar University students graduate with knowledge-based economy specialisation (figure 2.10).
- With an increasing share of tertiary students enrolled at Qatar Foundation's Education City universities, there will be a corresponding rise in those with specialisations that are in high demand (figure 2.10).
- The government has substantially increased its expenditure on education, the amount rising from around 8% in 2000/01 to 13% in 2009/10 (figure 2.11).

Figure 2.10 More than 60% of Qatar University students graduate with a knowledge-based economy specialisation and all of those from Education City universities do so
Percentage



Note: Specialisations that cater to knowledge-based economy industries at a university are: sciences, business and economics, engineering, law, pharmacy and medicine, and higher education.
Source of data: OECD (2012c) and QSA (2012f).

Qatar’s education system aims to encourage analytical thinking, creativity, innovation and entrepreneurship, while promoting social cohesion and respect for national values.

Education and training help prepare citizens to meet their aspirations and to play a part in the country’s

increasingly diversified economy. Education also helps people make better decisions about health, marriage, parenting and social responsibility. A successful education strategy supports innovation in science, medicine and industry.

Figure 2.11 Marked rise overtime in share of government spending on education
Percentage



Source of data: QSA (2011g); and MOEF (2011).

Qatar meeting the challenges

Motivation to learn is a key driver of success in education, training and in the world of work. Strengthening student motivation throughout all educational sectors has emerged as a priority. Awareness of the value of education and the critical consequences of education decisions are being communicated to stakeholders.

Best practices for teaching language, math and science skills are being incorporated in the national curricula with extra support for low achievers.

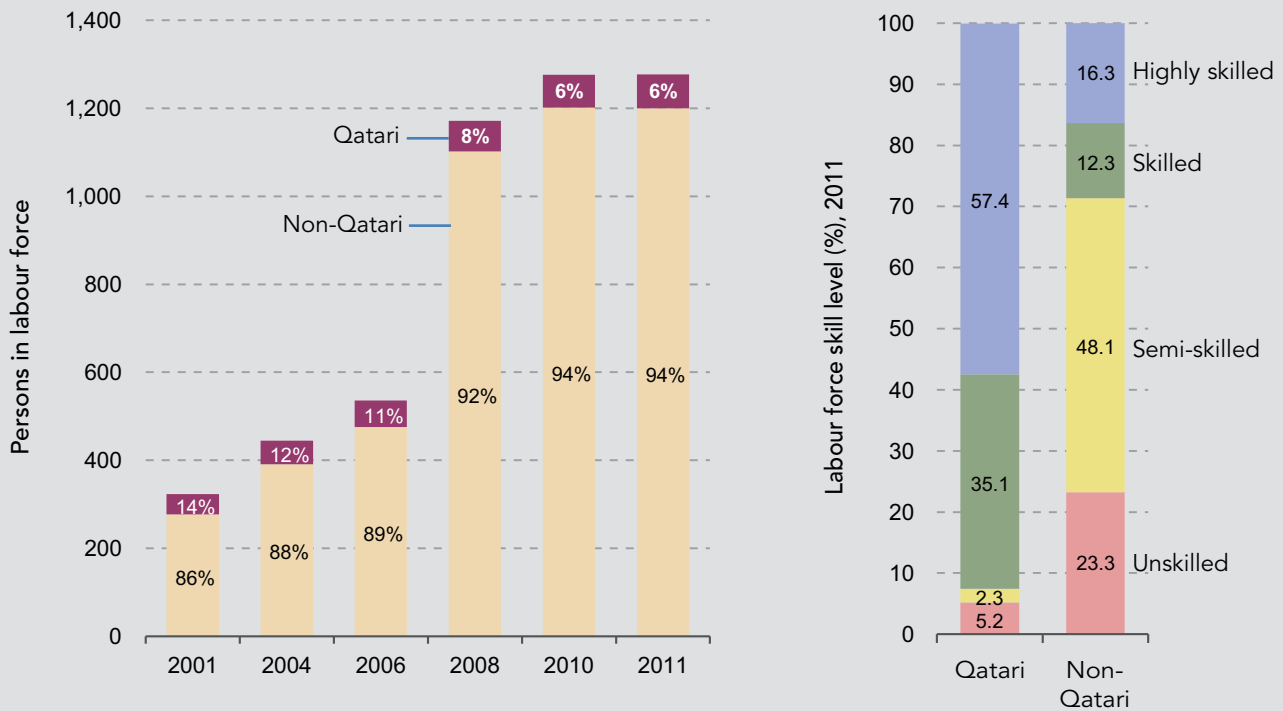
Differences between education output and the needs of the economy are being assessed, and increased enrolments in courses relevant to the needs of a modern economy are being encouraged. Opportunities are also being created for students who cannot directly enter universities by offering alternative pathways through technical education and vocational training.

FOSTERING A CAPABLE AND MOTIVATED WORKFORCE

Meeting demand for a diversified economy

Figure 2.12 Qataris share of the total labour force just 6%: most are in highly skilled positions

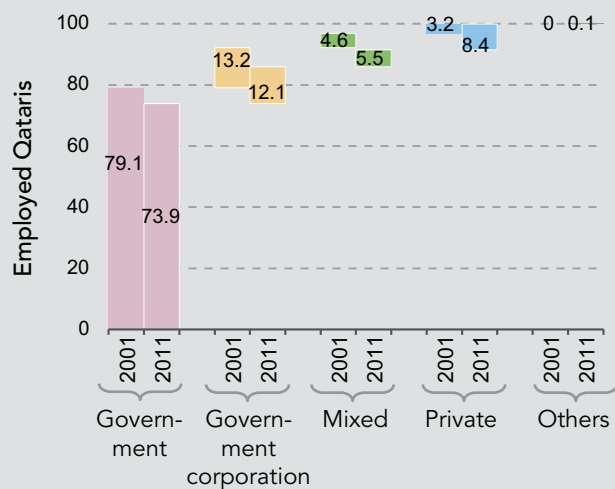
Thousands



Source of data: GSDP (2012).

Figure 2.13 Most Qataris work in the public sector but the share in the private sector has risen over time

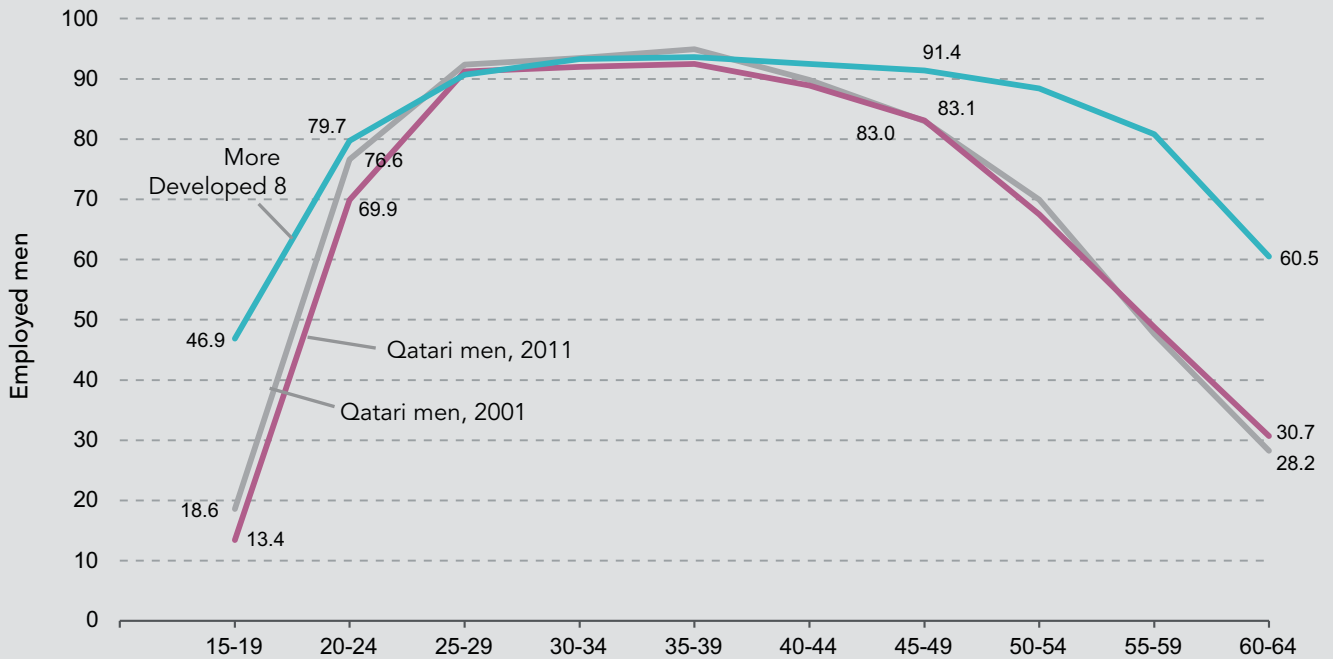
Percentage distribution



Source of data: QSA (2011d).

- Qatar's rapid economic expansion, including major infrastructure projects, has necessitated large inflows of expatriate workers - most are in unskilled or semi-skilled occupations in the private sector. One result is that the share of Qataris in the total labour force is just 6% with most being in highly skilled or skilled occupations (figure 2.12).
- 3 in every 4 Qataris work in the public sector, but their participation in the private sector grew from 3.2% in 2001 to 8.4% in 2011 (figure 2.13).
- Labour force participation rates for Qatari men have remained stable between 2001 and 2011, but their participation is characterized by earlier retirement from the labour force than in most other countries (figure 2.14).
- Labour force participation for Qatari females has risen over time, consistent with their rising educational levels and the ready availability of low-cost domestic help to take care of their households and children while they are at work, but levels are below OECD countries (figure 2.15).

Figure 2.14 Qatari men start to retire from the labour force earlier than men in most other countries
Percentage distribution

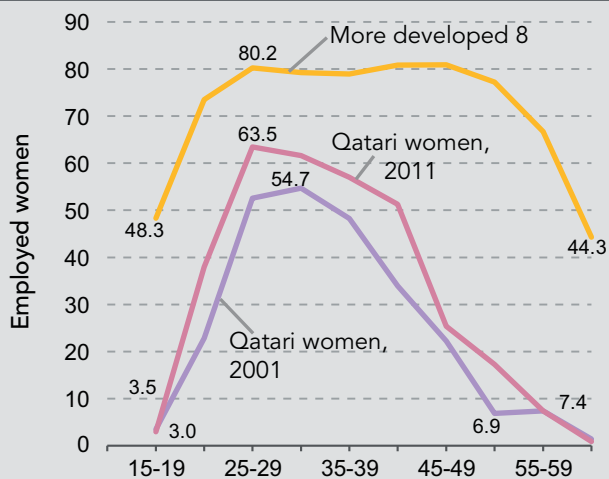


Note: OECD countries include: France, Germany Japan, Norway, Singapore, Sweden, United Kingdom, United States
 Source of data: GSDP/QSA (2012).

A high-skilled and capable workforce is crucial for transforming Qatar into a diversified economy. Creating a more productive, skilled and motivated labour force requires major labour market reforms, especially for incentivizing Qataris to take advantage of higher education and training opportunities and to work as entrepreneurs.

While skill development and more effective labour force participation of Qataris are essential, so too is establishing the regulatory frameworks and other conditions to attract and retain a skilled expatriate workforce to support the nation's development vision.

Figure 2.15 Labour force participation rates of Qatari women have risen rapidly but remain below those in selected developed countries
(Percentage distribution)



Source of data: GSDP/QSA (2012).

Qatar meeting the challenges

As part of the labour market strategy, the government is reviewing and improving labour market legislation, as well as providing life-long opportunities for skills upgrading, to increase flexibility and provide the needed support to raise Qatari labour force participation rates. A comprehensive programme to encourage private sector participation of Qataris is being put in place, including establishing entrepreneurship initiatives targeting youth and Qatari women and lowering attitudinal barriers to women's employment.

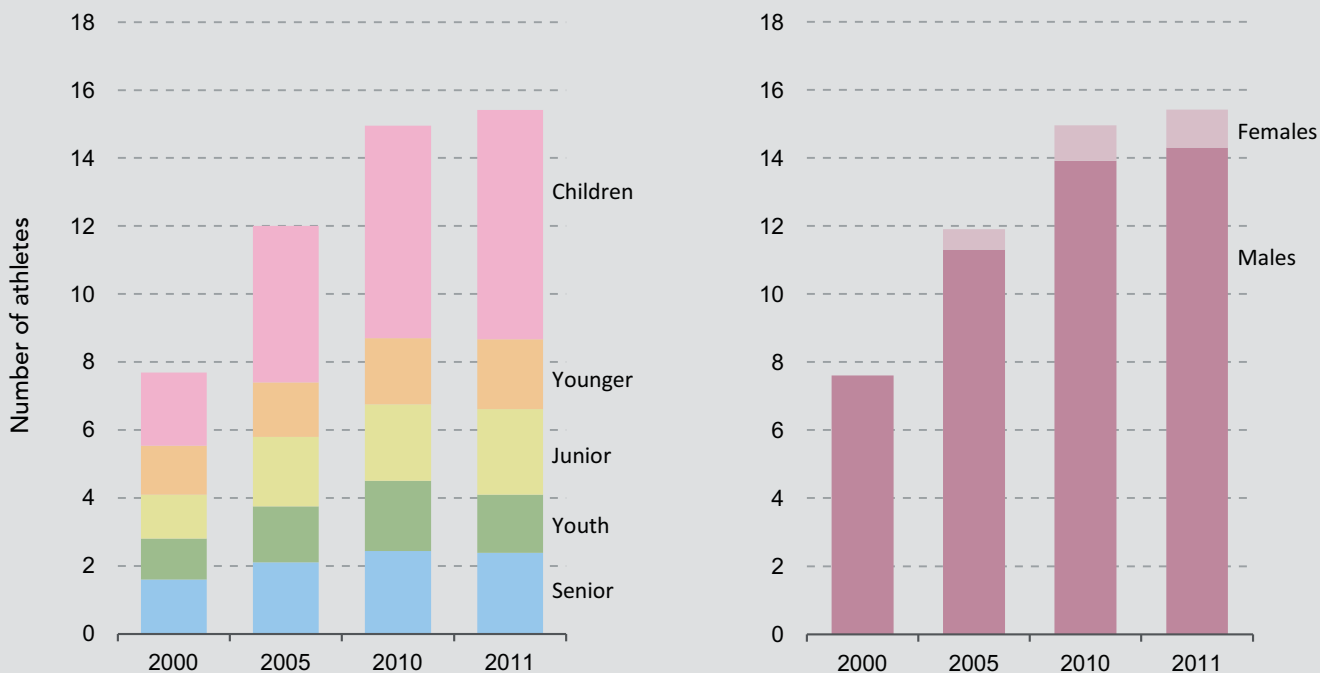
In order to satisfy the increasing demand for skilled expatriates, Qatar is creating incentives through improved working and living conditions, including the provision of appropriate schooling. The government is also reviewing recruitment and retention policies, including its sponsorship system.

ENCOURAGING SPORTS

Promoting an active and healthy lifestyle

Figure 2.16 Qatar has growing number of federation registered athletes

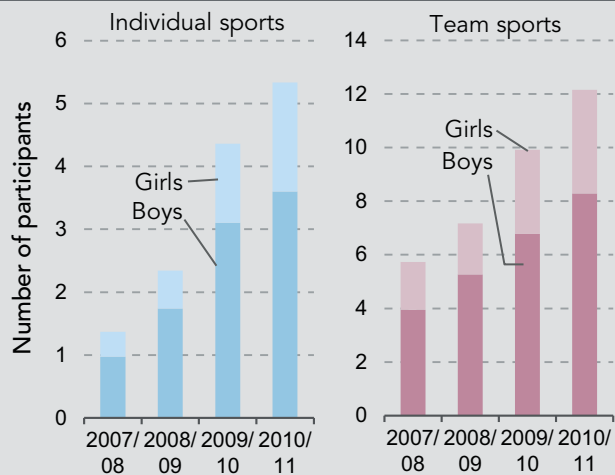
Thousands



Source of data: QSA (2012a).

Figure 2.17 Substantial increase in boys and girls participation in the Qatar Schools Olympic Programme

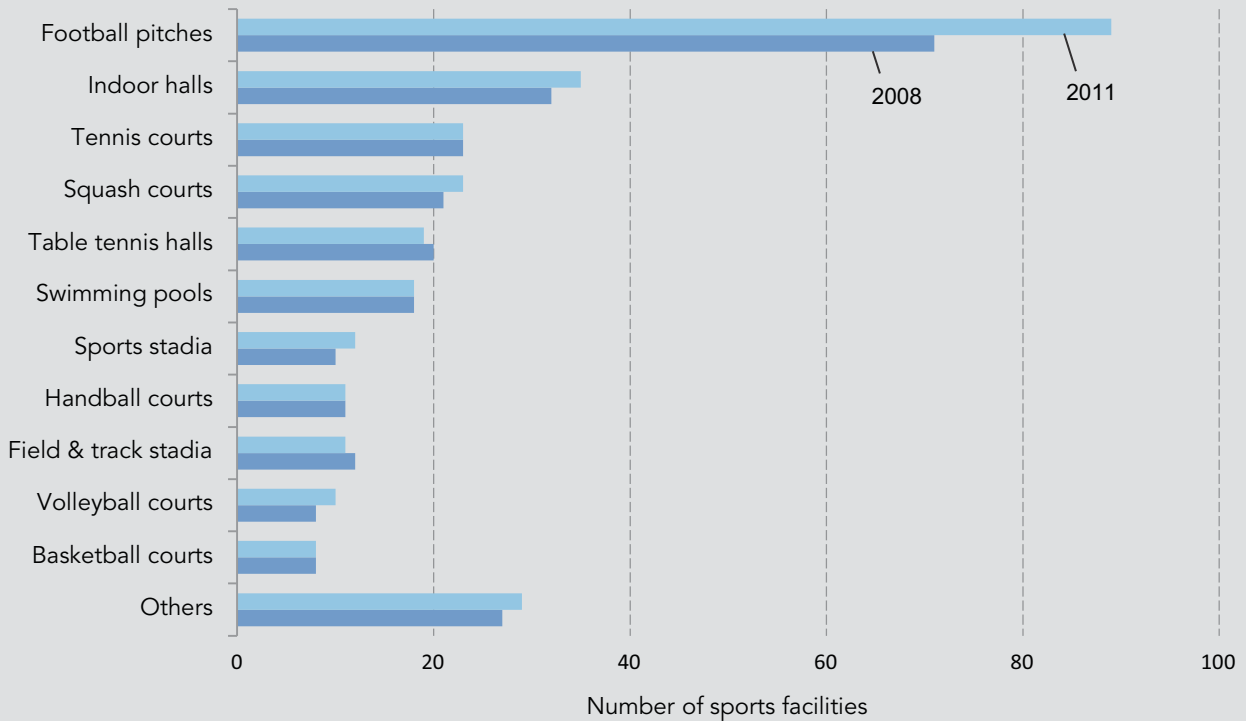
Thousands



Source of data: GSDP (2012).

- The number of federation registered athletes is increasing. While the overwhelming majority are males, the share of female athletes is rising (figure 2.16).
- Qatar Schools Olympic Programme which began in 2007, is inspiring more and more young boys and girls to participate in individual and team sports (figure 2.17).
- The growth in the number of sports and recreational facilities is in line with the national aim of promoting physical fitness and of nurturing sporting excellence (figure 2.18)
- While the number of medals Qatar won at the Asian Games in 2010 fell back from the peak when it hosted the event in 2006, it is still above that of other GCC countries (figure 2.19).

Figure 2.18 Increasing national sports and recreation facilities
Number



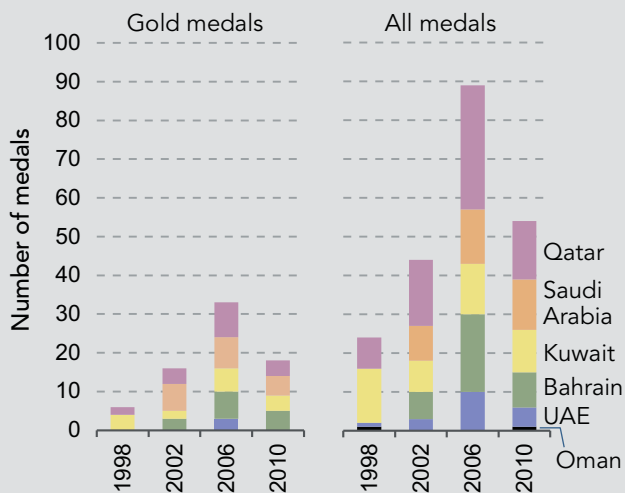
Source of data: GSDP (2011) and QOC (2011).

Qatar is committed to continue building top-class sporting facilities. The country is increasingly becoming an international destination for a wide range of sporting events and has hosted several highly prestigious regional and world sporting events. In the pipeline going forward are the world swimming championship in 2014; the men's

handball world championship in 2015; the world cycling championship in 2016; and the FIFA world cup in 2022.

Hosting major sporting events helps create a culture of physical fitness, enables youth to see their sporting heroes, participate in clinics and serve as volunteers.

Figure 2.19 Qatar leading GCC countries in medals won at Asian Games



Source of data: OCA (2012)

Qatar meeting the challenges

Recognizing that sports and physical activity are integral features of healthy lifestyles, the government is actively promoting sports and fitness. Starting from 2011, it designated a national day for sports.

Encouraging young women to participate in sport and physical activities is being given greater emphasis, overcoming social and cultural constraints.

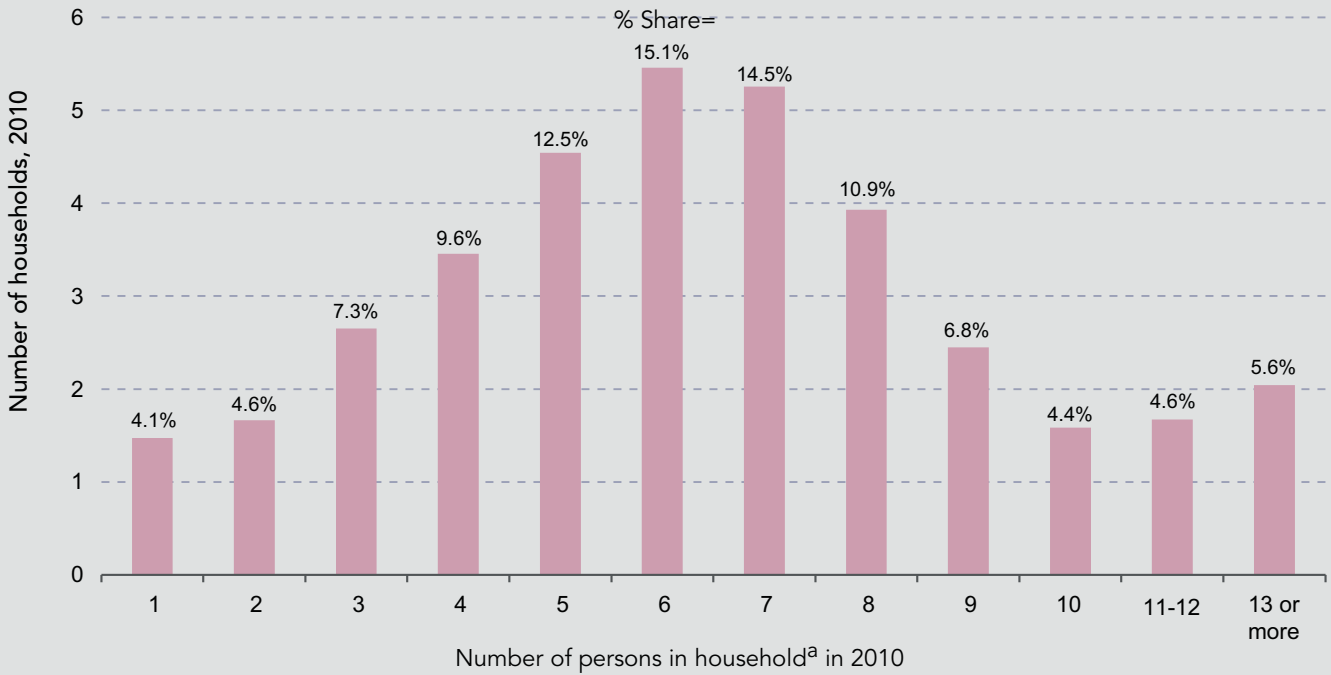
A national sports and recreation facilities master plan is being developed. The aim is to provide accessible sports and recreation facilities for everyone.

Aspire Academy for Sports Excellence is providing specialized sports education and training to youth and is tasked with identifying and transforming promising student athletes into world-class competitors.

REINFORCING FAMILY COHESION

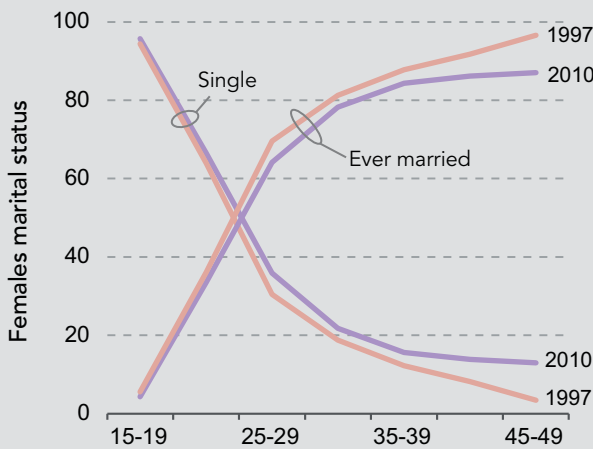
Strengthening marriage and family ties

Figure 2.20 Qatari Households remain relatively large
Thousands



a. The data exclude domestic workers
Source of data: GSDP (2012).

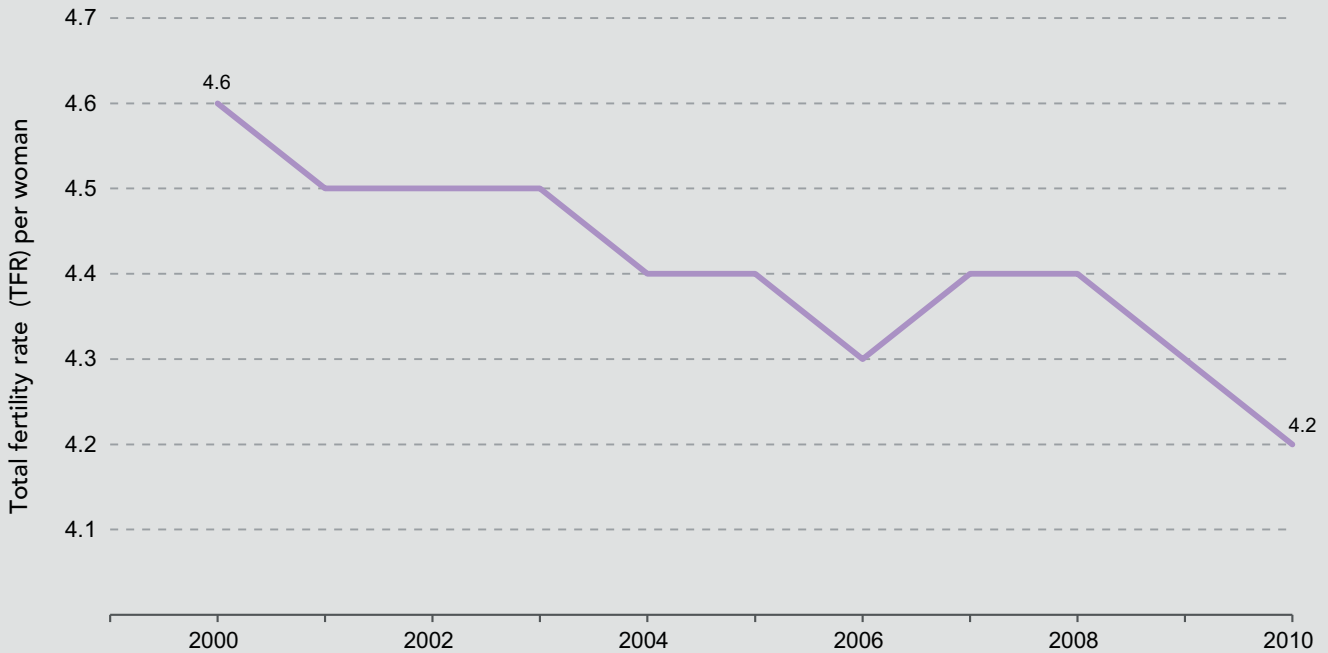
Figure 2.21 Rising proportion of Qatari females remaining permanently unmarried
Percentage



Source of data: QSA (1998 and 2011f) and PC (1998).

- Most Qatari households are relatively large as compared to households of high income countries, with the mean household size being 6.7 persons (figure 2.20).
- Qatari women are entering first marriage at a later age and an increasing proportion are remaining permanently unmarried (figure 2.21).
- Qatari women have an average of just 4 children (figure 2.22).
- Numbers of Qatari divorces rose sharply between 2000 and 2010, but the divorce rate has remained steady over the corresponding period (figure 2.23).

Figure 2.22 Total fertility of Qatari women fell from 4.6 in 2000 to 4.2 in 2010

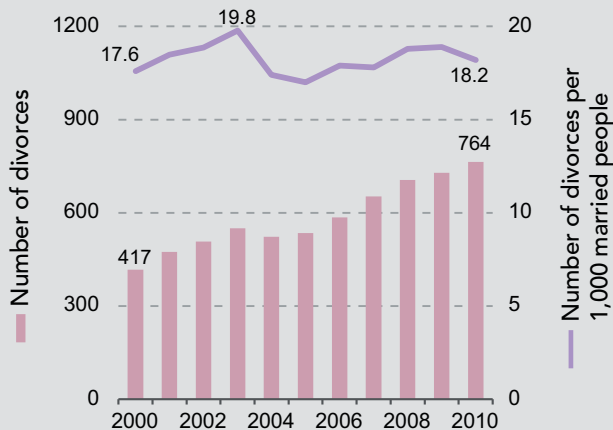


Note: The TFR measures the average number of children women will have by the end of their childbearing years at current levels. TFRs are computed as 3-year moving averages.
Source of data: GSDP/QSA (2012).

Qatar’s strong Arab and religious identity pervades all aspects of family life and continues to inform the family structure through extended household makeup, traditional kinship ties, ethnic affiliations and a tribal authority that determines the behavior of sons and daughters.

Ensuring the continuity of cohesive families is crucial since families are the core of society and have a moral and religious obligation to care for their members. The family is the first and most influential educator and inculcator of values. Yet traditional Qatari family life and behavior are being influenced by rapid modernization trends.

Figure 2.23 The divorce rate per 1000 married Qataris rose from 16.9 in 2000 to a peak of 19.8 in 2003 but has since declined slightly



Note: Divorce numbers are three-year moving averages of average number of Qatari men and women divorces.
Source of data: QSA (2011e).

Qatar meeting the challenges

Family cohesion is being strengthened, including through a programme of premarriage counseling and education on the obligations of marriage and the importance of family formation.

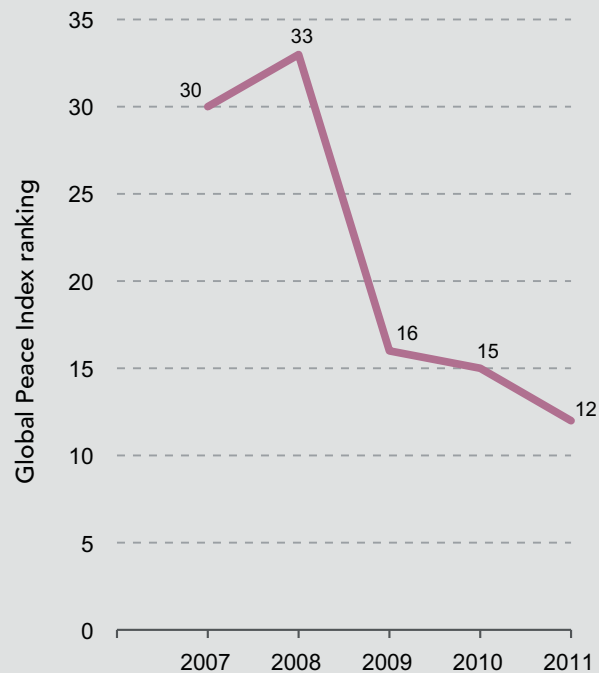
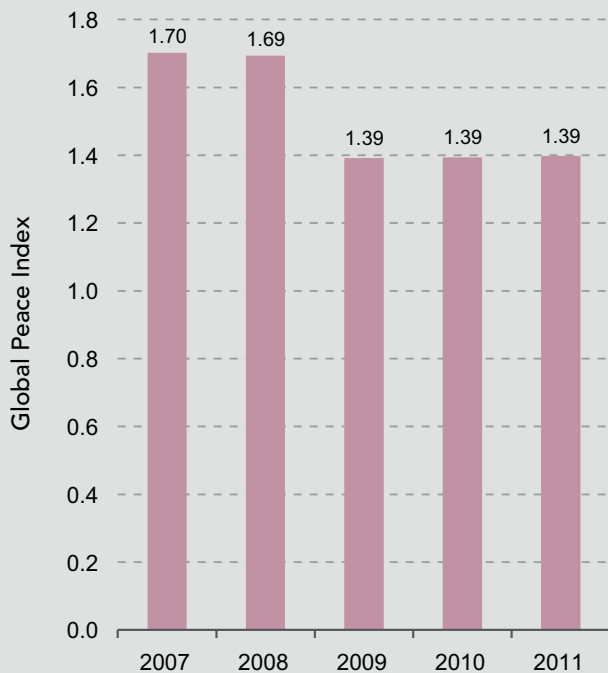
Measures are being taken to increase support for divorcees with the social safety net being expanded for those in need of extra help. Efforts are being made to reduce the number of couples seeking divorce through expanded psychological and counseling services for couples who face separation. A programme to improve families’ financial management skills will lessen economic and social vulnerability.

Laws relating to the family are being reviewed and revised to reflect social changes and international commitments under the UN Convention for the Elimination of Discrimination Against Women. Support is being given to help women balance work-life responsibilities

ENSURING PUBLIC SAFETY AND SECURITY

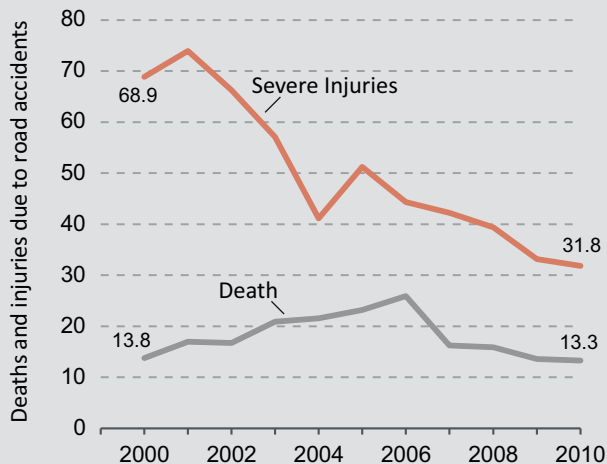
Improving public protection for a stable society

Figure 2.24 Qatar ranks 12th out of 153 nations on the Global Peace Index



Source of data: IEP (2012).

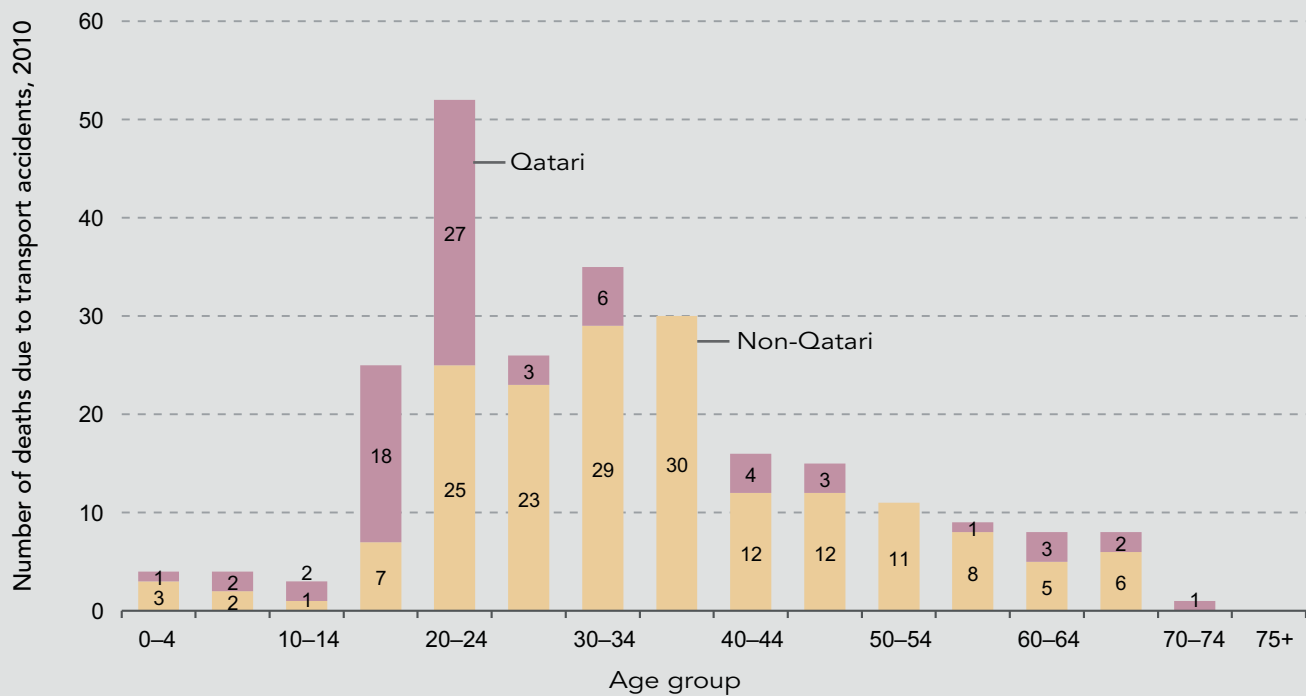
Figure 2.25 Death rates and severe injuries from road traffic accidents have fallen from their peak but remain relatively high (Per 100,000 population)



Source of data: QSA (2011b).

- Qatar has advanced to achieve a commendable level in the Global Peace Index (GPI), from 1.70 in 2007 to 1.39 in 2011, thereby ranking as the 12th most peaceful out of 153 nations, and the highest ranking among middle-eastern countries (figure 2.24). The GPI ranks nations by their relative peace status using a composite of 23 indicators.
- Traffic accident deaths are a major cause of accidental deaths. Qatar's death rates and severe injury rates from road traffic accidents have fallen from their peak and stabilized in recent years, but they remain relatively high (figure 2.25).
- The highest road traffic fatality rates are among youth, especially at ages 20-24 (figure 2.26).

Figure 2.26 Road traffic fatalities highest among youth
Number



Source of data: SCH (2011).

A society that offers its people safety and security in a respectful and dignified way and demonstrates a duty-of-care to its constituents will become one that operates on the principles of justice, equality and the rule-of-law.

Qatar seeks to provide its citizens with a secure and stable society based on strong families and personal safety. Its recorded crime rates are among the lowest in the world, despite a massive increase in the country's expatriate population.

Qatar meeting the challenges

The government is cognizant that the public safety and security sector has to play a key role in enhancing and improving the quality of life and well-being of all citizens. Priority safety and security initiatives being undertaken include improving crime management by strengthening the country's criminal knowledge management system; improving building safety, including regular monitoring of regulations and putting in place a high-level coordinated approach to national disaster management.

A high priority is improving road traffic safety to counter reckless and undisciplined driving. With the aim of reducing road traffic accidents, a comprehensive strategy is being implemented that relies on intra-governmental cooperation to raise awareness, improve

safety and strengthen laws. These measures are seeking to reduce risk-taking driving behavior, instill courteous driving behavior, improve the safety of pedestrians, and better protect children and young people who are overrepresented in casualty statistics.

Among the specific measures designed to improve driving behavior are better use of police resources, enforcement of speed limits, seatbelt laws and mobile phone bans while driving. The safety strategy is also analyzing the number of stop signs, traffic lights, road markings, road shoulders and footpaths and vehicle safety regulations. The target is to reduce the annual number of road accidents, from 300 per 100,000 people to 250 by 2016, and related fatalities from 14 per 100,000 people to 10.

CLEANER WATER AND SUSTAINABLE USE

Water security is a basic human right and the provision of clean water is fundamental to national progress. With one of the world's lowest levels of rainfall, Qatar relies on water from three sources: desalination, groundwater and recycled water, and all three face stress. And water stress is rising due to rapidly growing demands from population growth, industrialization, urbanization and agriculture.





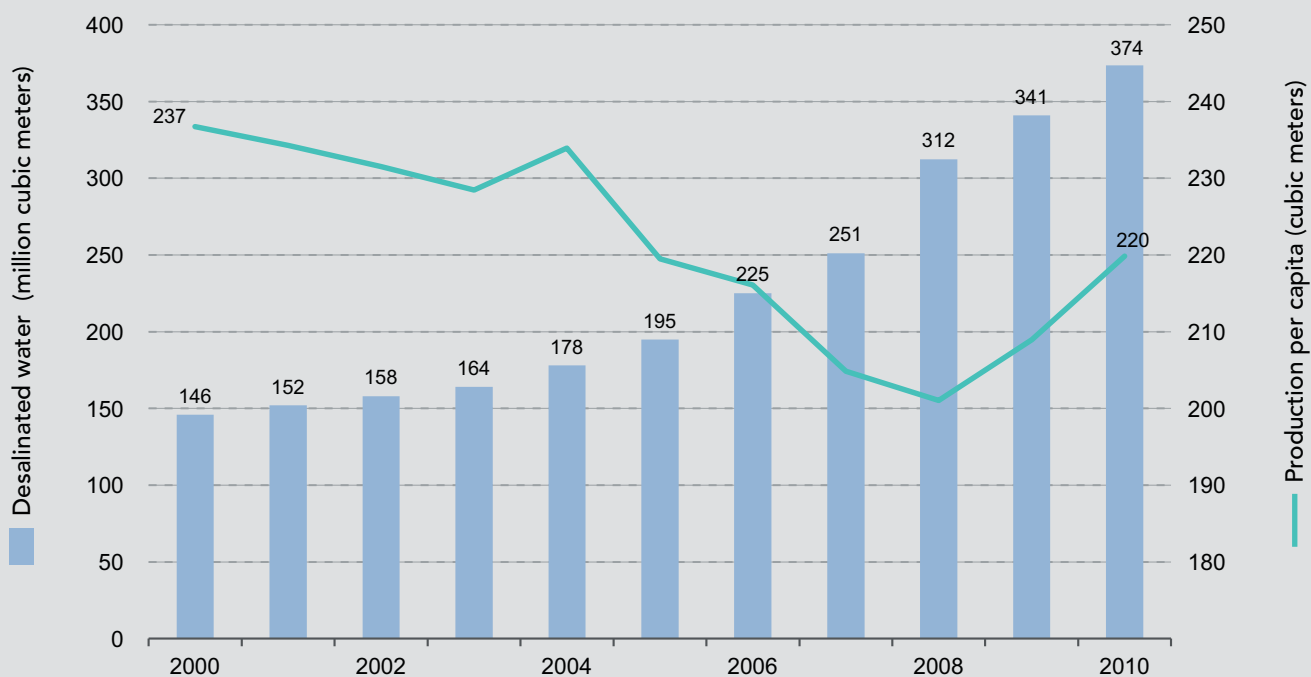
Sub-theme

Promoting sustainable
water consumption

PROMOTING SUSTAINABLE WATER CONSUMPTION

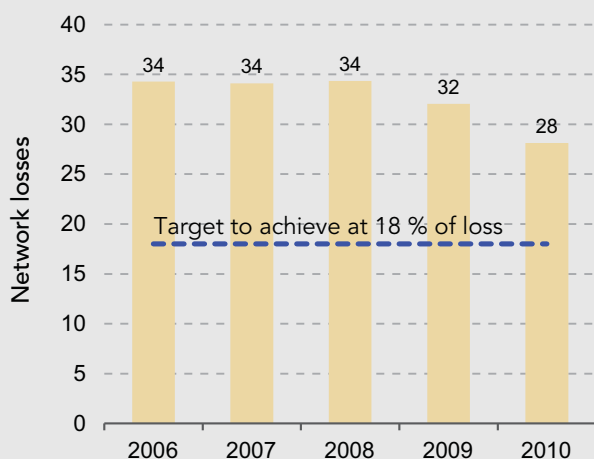
Ensuring water security for a water-scarce country

Figure 3.1 Qatar's production of desalinated water rising but barely keeping pace with population growth



Source of data: Kahramaa (2011).

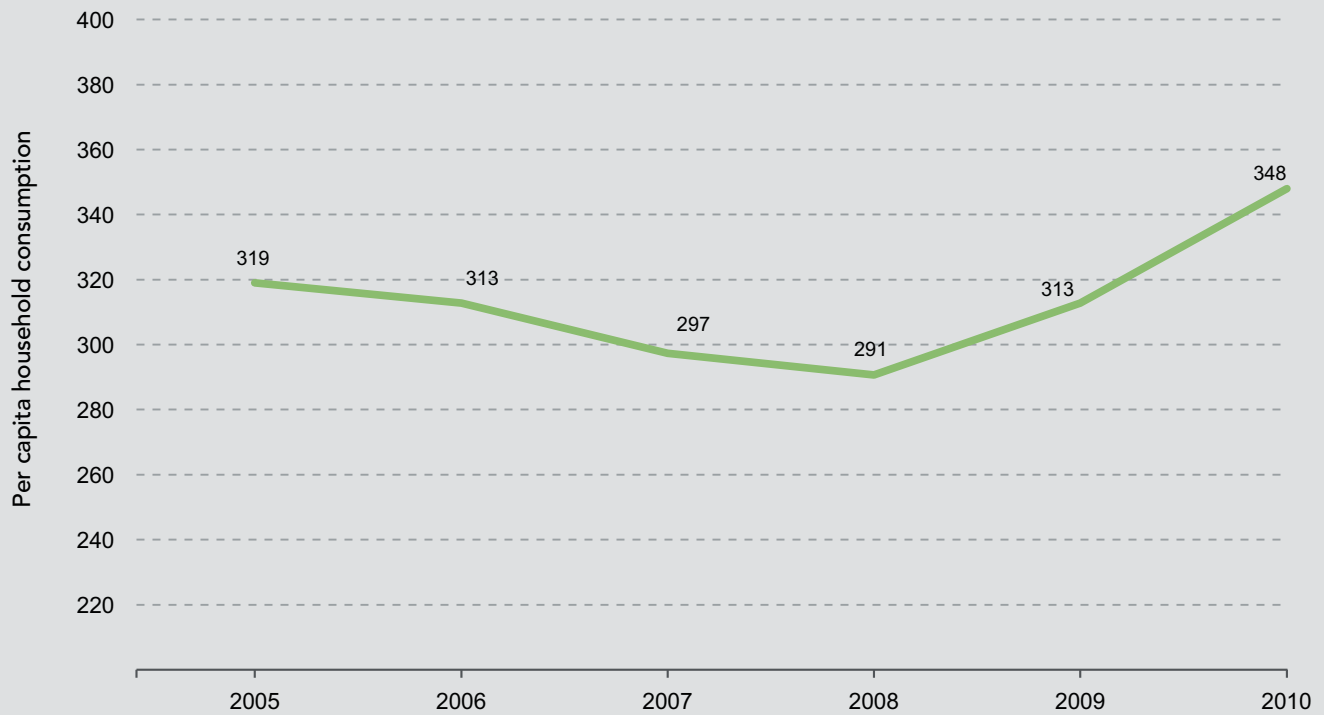
Figure 3.2 A large proportion of desalinated water is lost by network leakages, but leakages have declined % of production



Note: Network losses = production - consumption - change in stocks.
Source of data: Kahramaa (2011).

- Qatar's domestic and industrial water demand is met primarily through desalination. Production of desalinated water tripled by 2010, as compared with 2000, despite the massive increase, on a per capita basis production is lower than a decade earlier (figure 3.1).
- Qatar's network leakage rates are high and amounted to just over a third in 2006, although this rate had declined to 28% by 2010. It is still much higher than the target level of 18% (figure 3.2).
- Qatar's per capita water consumption rates are high. In 2005 Qatar's population consumed on average 319 litres each day, and this had increased to 348 liters by 2010 (figure 3.3).
- In recent years the proportion of domestic freshwater withdrawal has risen markedly – annual freshwater withdrawals (including desalination) refer to total water withdrawals, not counting evaporation losses from storage basins (figure 3.4).

Figure 3.3 Per capita household water consumption high and increasing in recent years
litres a day per capita

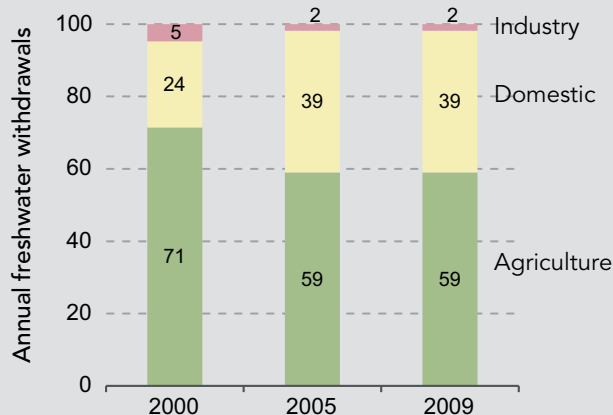


Source of data: Kahramaa (2011); and WB (2012b).

Increasing demands on desalinated water are projected to continue. Currently available desalination technologies limit how much new water Qatar can produce from seawater. Reducing network losses, investing in new technologies and adopting energy conservation measures are thus imperatives.

Qatar is developing a comprehensive National Water Act to replace the current fragmented system of laws and regulations so as to improve its water management. The strategy for improved water management calls for an aggressive programme to cut significant network losses from the current level of 28% to the international best practice benchmark level of 18%.

Figure 3.4 Largest proportion of usage of freshwater goes for agriculture
% of total fresh water



Note: Withdrawals for agriculture are total withdrawals for irrigation and livestock production. Data are for the most recent year available for 1987 - 2010

Source of data: WB (2012b).

Qatar meeting the challenges

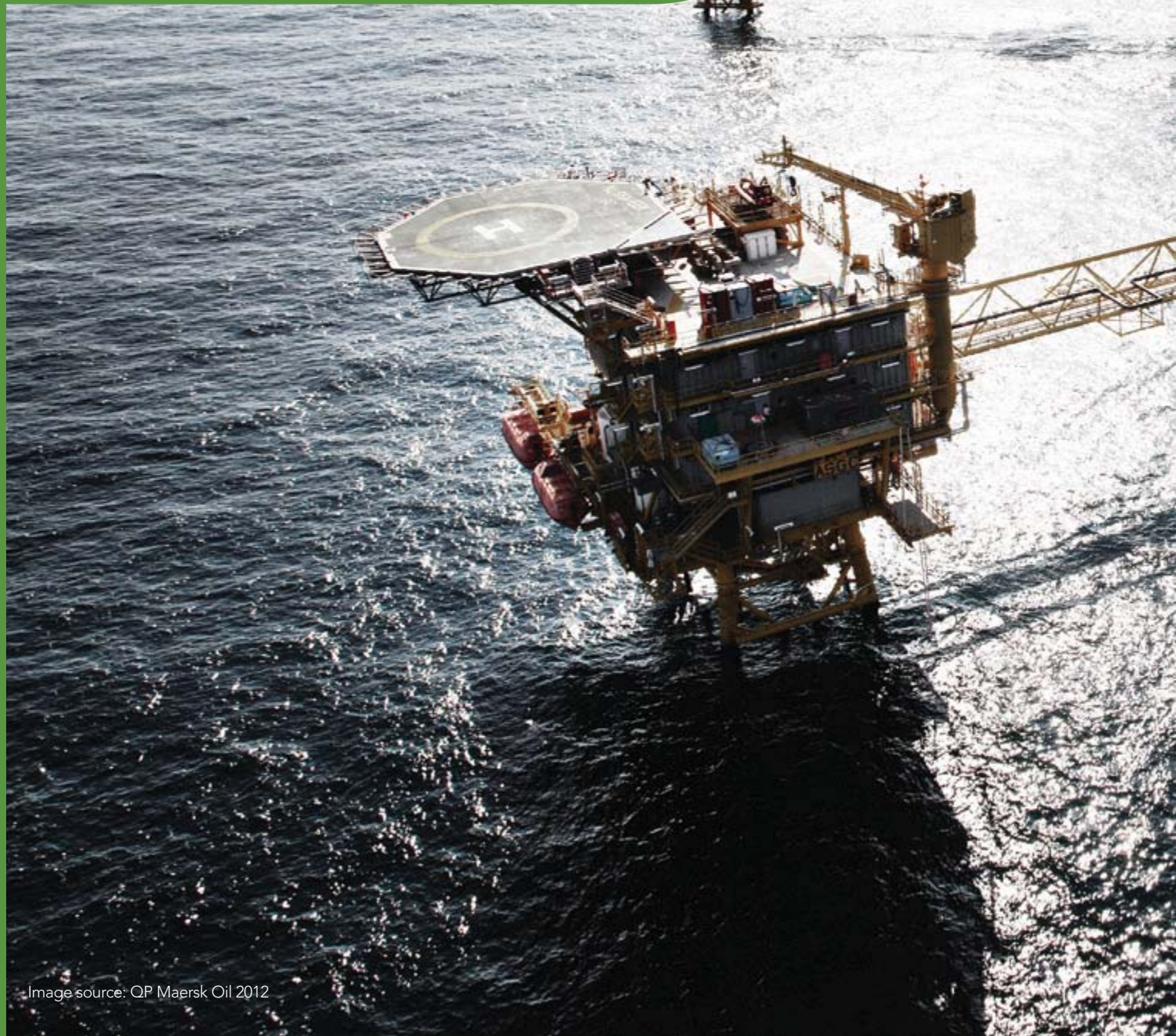
A broad campaign for public awareness is helping to reduce water use. The campaign strategy highlights the importance of civic mindedness in the consumption of natural resources, greater use of water-saving technology and promotes the principle of sustainability.

An urban water table management plan is being implemented to monitor groundwater, conserve fresh water aquifers where possible and eliminate excess water in Doha's water table. A national priority is to improve the management of water resources so that future generations do not face difficulties meeting basic needs.

Recycled water, or treated sewage effluent, is the only water source in surplus and is being utilized to play a larger role in industrial processes, for watering green spaces, and for watershed management.

CLEANER AIR AND EFFECTIVE CLIMATE CHANGE RESPONSES

Qatar has two categories of air quality challenges. First, various local pollutants mixed with particulate in the air – including chronically high levels of dust – to cause air quality problems that contribute to asthma and respiratory illnesses. Second, carbon dioxide emissions, mostly from energy production, add to greenhouse gases and contribute to global climate change.





Sub-themes

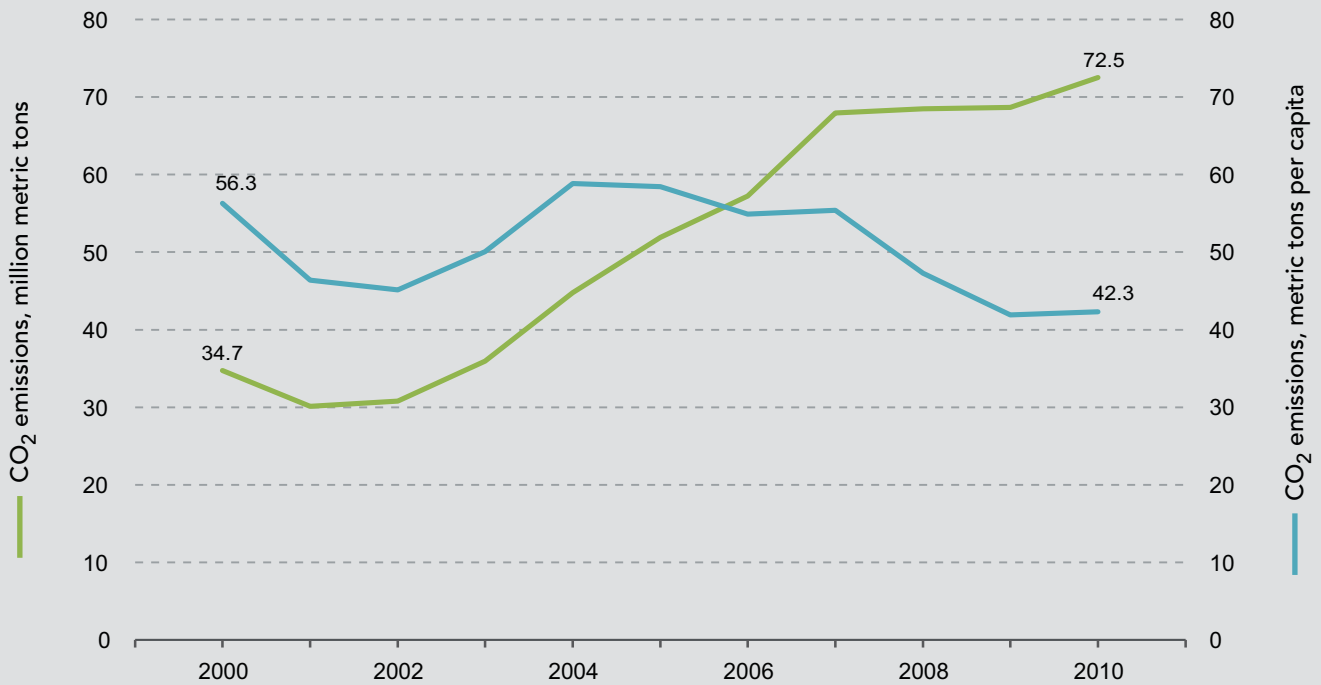
Reducing greenhouse gases

Reducing air pollution

REDUCING GREENHOUSE GASES

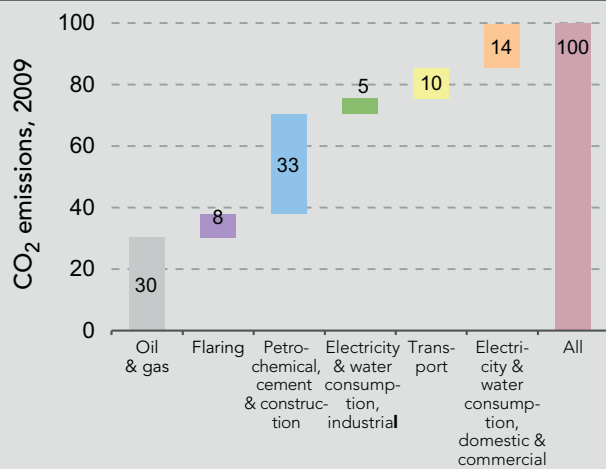
Ensuring healthier living and working environments

Figure 4.1 Continuing substantial CO₂ emissions, but Qatar has declining emissions per capita
million metric tons



Source of data: CDIAC (2012); and WB (2012b).

Figure 4.2 More than two-thirds of Qatar's CO₂ emissions stem from heavy industry
% share, 2009

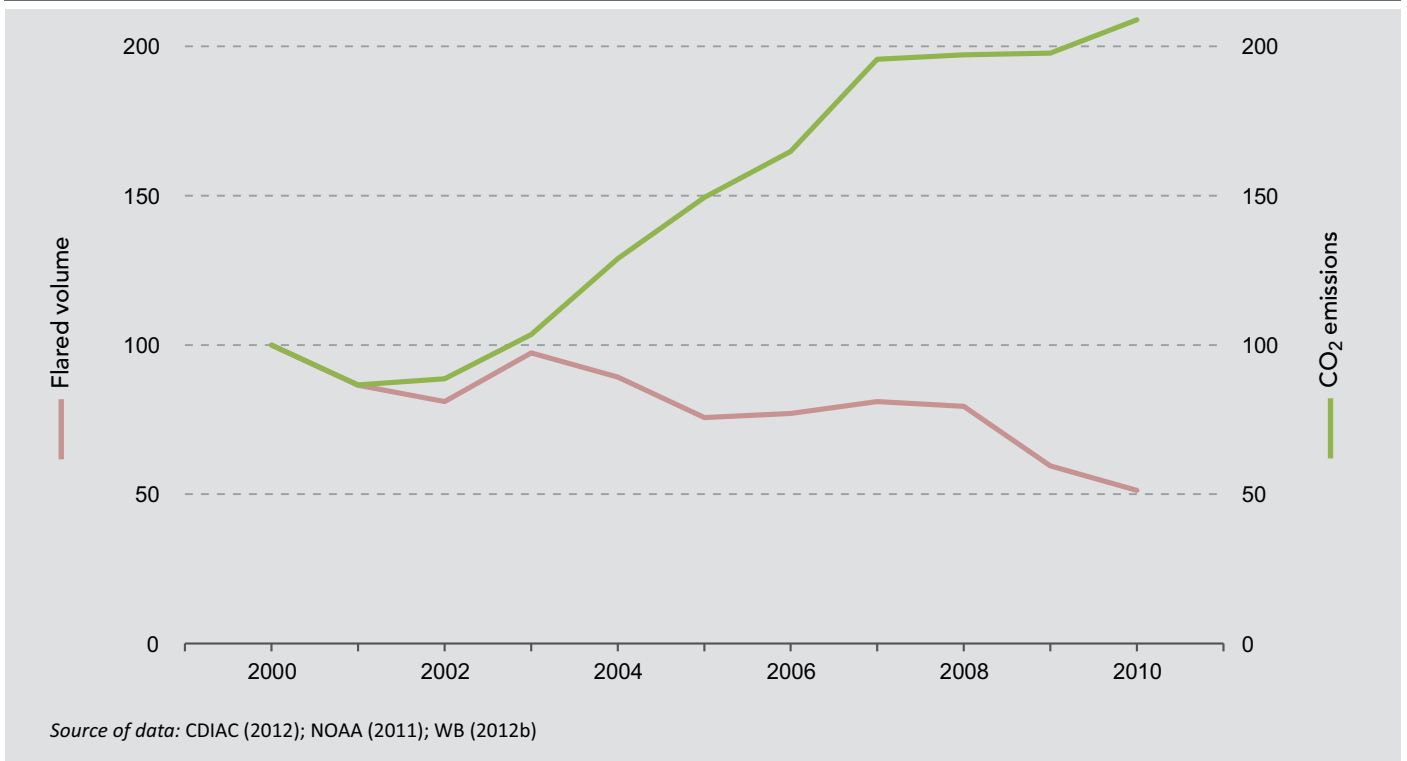


Source of data: CDIAC (2012); and IEA (2011).

- While Qatar's CO₂ emissions continued to rise over the decade 2000 to 2010, the rate of increase slowed markedly between 2007 and 2010. On a *per capita* basis, emissions have declined moderately since 2005 (figure 4.1). Overall Qatar contributes just 0.2% of global CO₂ emissions.
- More than two-thirds of Qatar's CO₂ emissions stem from the oil and gas sector and from its heavy industry (figure 4.2).
- The slower increase in Qatar's CO₂ emissions stems from marked reductions in gas flaring and venting (figure 4.3).
- Qatar's flaring intensity declined by half between 2008 and 2010 as the impact of new technologies to reduce emissions started to take effect (figure 4.4).

Figure 4.3 Slower increases in CO₂ emission starting from 2007 is a result of progress in flaring reduction

Index: 100 in year 2000



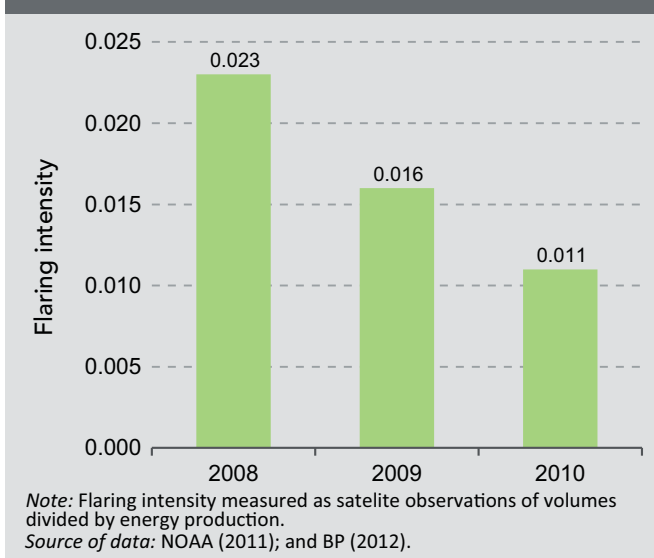
Climate change has been identified as the most pressing global environmental problem with potentially catastrophic consequences for humankind, biodiversity and marine eco systems.

Qatar is committed to working with multiple countries to address climate change challenges and to eliminating inefficiencies that raise carbon dioxide emissions. Qatar,

like its neighbours, is highly vulnerable to the various shifts that may result from climate change.

Qatar is developing a national policy to manage air pollution, greenhouse gas emissions and the broader challenges of climate change, with all sectors of society, and critically the private sector, playing an important role.

Figure 4.4 Gas flaring halved between 2008 and 2010
bcm/million metric tons of energy production



Qatar meeting the challenges

There are ongoing initiatives to reduce carbon emissions, especially from gas flaring and venting, including through new legislation to limit emissions, investment in cleaner technologies, and improvements in industrial processes.

As part of a National Flaring and Venting Reduction Project, formal reporting and voluntary reduction targets for industries have been introduced. The flaring reductions stem from reduced routing flaring and best-practice non-routing flaring among existing facilities, as well as clear standards for new facilities to minimize flaring.

Innovative research is underway on new carbon capture and sequestration technology from the oil and gas industries, including at the Imperial College London's Centre for Carbon Capture and Storage, in partnership with the Qatar Science and Technology Park.

REDUCING AIR POLLUTION

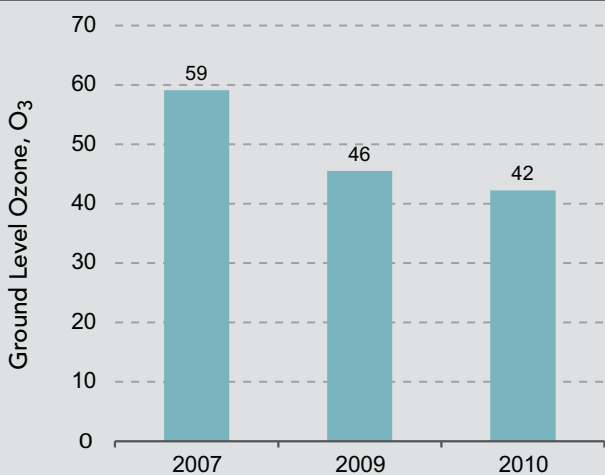
Improving air quality management

Figure 4.5 National concentrations of particulate matter (PM10)* have declined but levels are much higher in Doha
Microgram/cubic metre



Note: PM10 consists of a complex mixture of solid and liquid particles of organic and inorganic substances suspended in the air.
Source of data: QSA (2010a and 2011a); and WB (2012b).

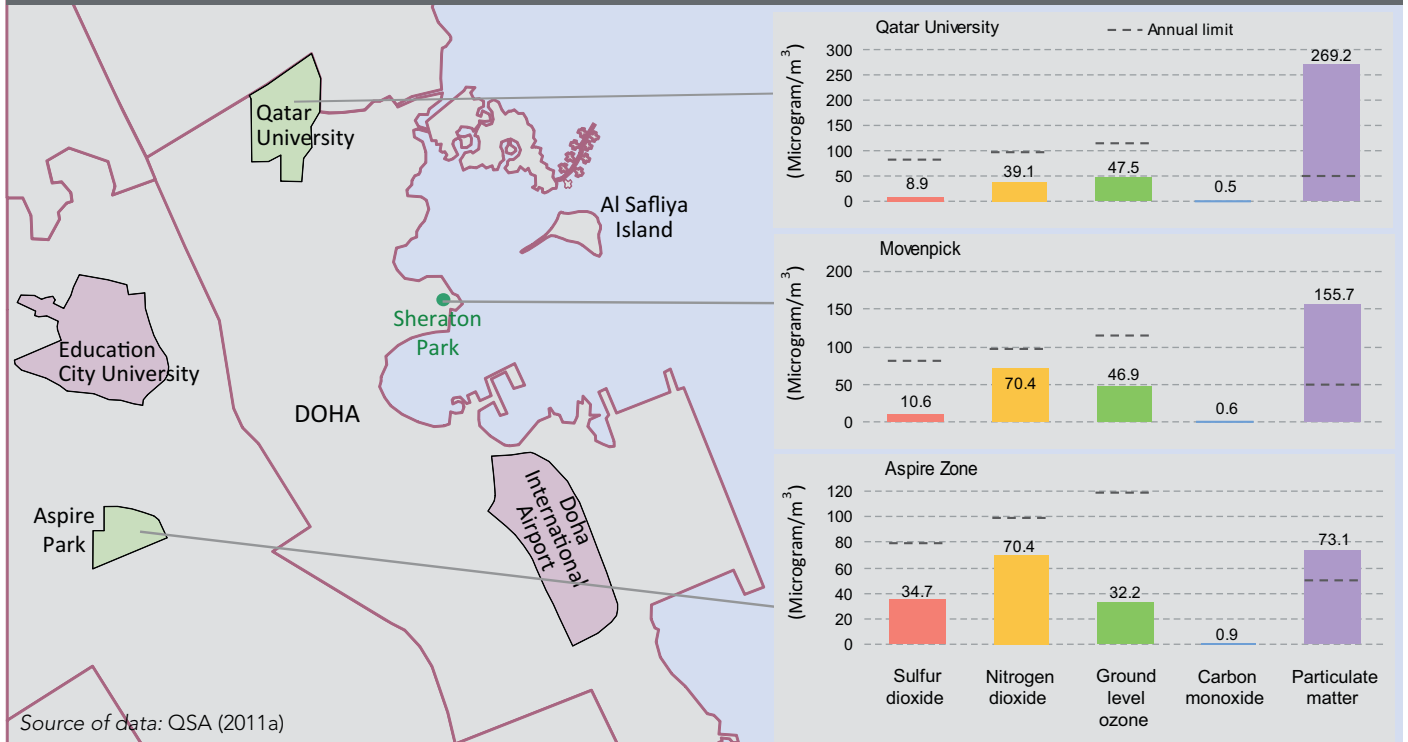
Figure 4.6 Doha's ground level ozone (O₃) declining
Microgram/cubic metre



Source of data: QSA (2010a and 2011a).

- Qatar's levels of particulate matter (PM10) have declined from 47 microgram/cubic metre in 2000, to 31 microgram/cubic metre in 2009. In Doha concentrations of PM10 are much higher than the national average levels (figure 4.5), due to the combination of dust storms and dust arising from mega-construction activities.
- Ground level ozone in Doha showed a small improvement between 2007 and 2010 (figure 4.6). While the industrial and transportation sectors contributes to ozone creation, ozone is also destroyed by vehicle emissions. As a result ozone levels are lower in Doha relative to other areas in Qatar, particularly industrial zones.
- In contrast to ozone levels, nitrogen oxides have been rising in Doha in recent years and now exceed ozone levels (figure 4.7).
- Consumption of imported ozone depleting substances has risen markedly since 2007 in line with industrial expansion and population growth (especially organic chlorine and fluorine compounds.) (figure 4.8).

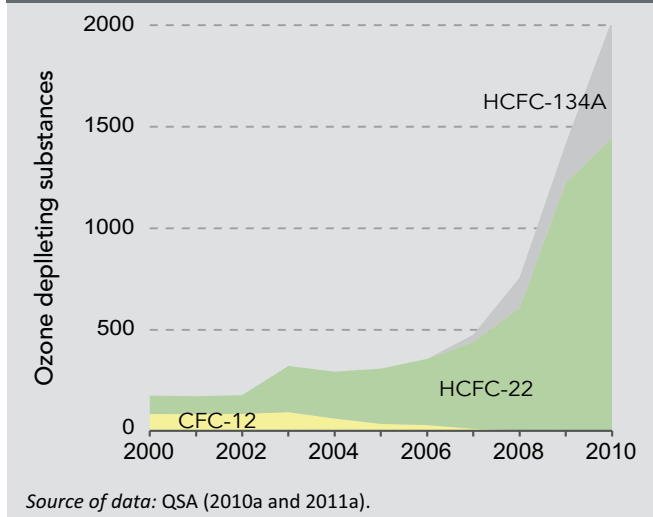
Figure 4.7 Variations in annual average of air quality in Doha from different pollutants



Qatar’s rapid industrialization, urbanization and infrastructure development have led to rising pollution levels, especially from particulate matter, for which daily exceedences above ambient air quality standards are relatively high. Reducing air pollution will lead to positive effects on health.

Cognisant that Qatar’s air pollution derives primarily from the desert environment, industry and transport – the dust from the desert environment and construction activities is responsible for the high particulate matter concentrations, while industry and transport are primarily responsible for the high ozone concentrations – a national air quality management project is underway.

Figure 4.8 Consumption of imported ozone depleting substances continues to increase but imports of CFC-12 have ceased in line with the Montreal Protocol
Metric tons



Qatar meeting the challenges

As part of the air quality management project, efforts are being made to increase compliance with environmental regulations that govern air quality. Further, improvements are being made in the effectiveness of air quality monitoring and management systems, including through the integration of a network of air quality and meteorological monitoring stations, validation exercises on air quality readings, enhanced modelling tools, and regional cooperation on transboundary air quality concerns.

Increased dialogue and information sharing of air quality data, including with national stakeholders and GCC countries, are supporting these efforts.

The national air quality management project aims to reduce air pollutants and lower the high asthma rates and other respiratory problems. Research is being undertaken to quantify the links between air pollution and respiratory diseases.

NATURE AND NATURAL HERITAGE SUSTAINABLY MANAGED

Biodiversity is an essential component of Qatar's nature and natural heritage. It is the natural life support system that needs to be sustained if the land and sea are to remain healthy and capable of adding value to the economy and the community. Robust ecosystems help sustain food security, offer tourism and recreation benefits and provide grounds for scientific and medical research. Successful biodiversity conservation and rehabilitation programmes also enhance Qatar's reputation as a green, forward thinking regional and global leader.





Sub-themes

Valuing biodiversity

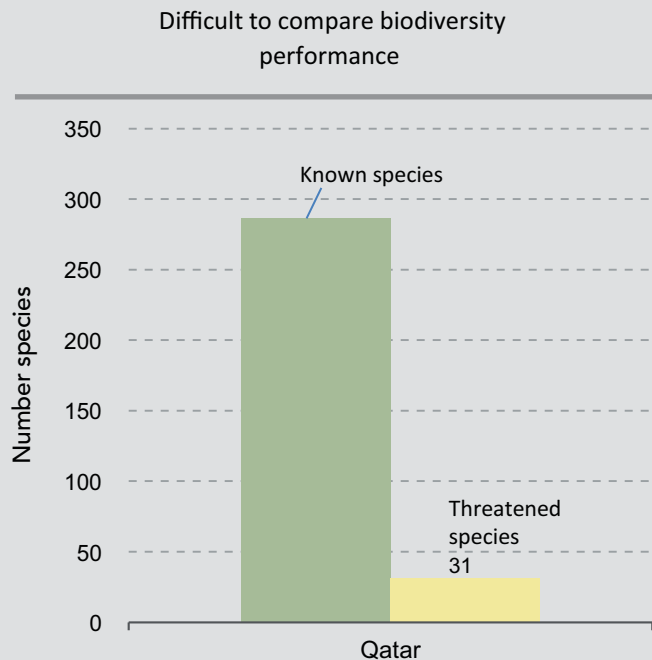
Maintaining fisheries

Preserving coastal areas

VALUING BIODIVERSITY

Strengthening biodiversity management

Figure 5.1 While full species report has not been conducted, at least 31 species in Qatar are at risk of extinction



Despite gaps in surveys many species known to be threatened including

Terrestrial

Arabian Oryx
Greater Spotted Eagle
Lesser Kestrel
Corn Crake
Sociable Lapwing
Socotra Cormorant
Great Snipe
Ferruginous Duck
Cinereous Bunting
Houbara Bustard

Marine

Hawksbill Turtle
Leatherback Turtle
Green Turtle
Loggerhead Turtle
Olive Ridley Turtle
Dugong
Blacktip Shark
Brown Shark
Green Sawfish

Source of data: IUCN (2008)

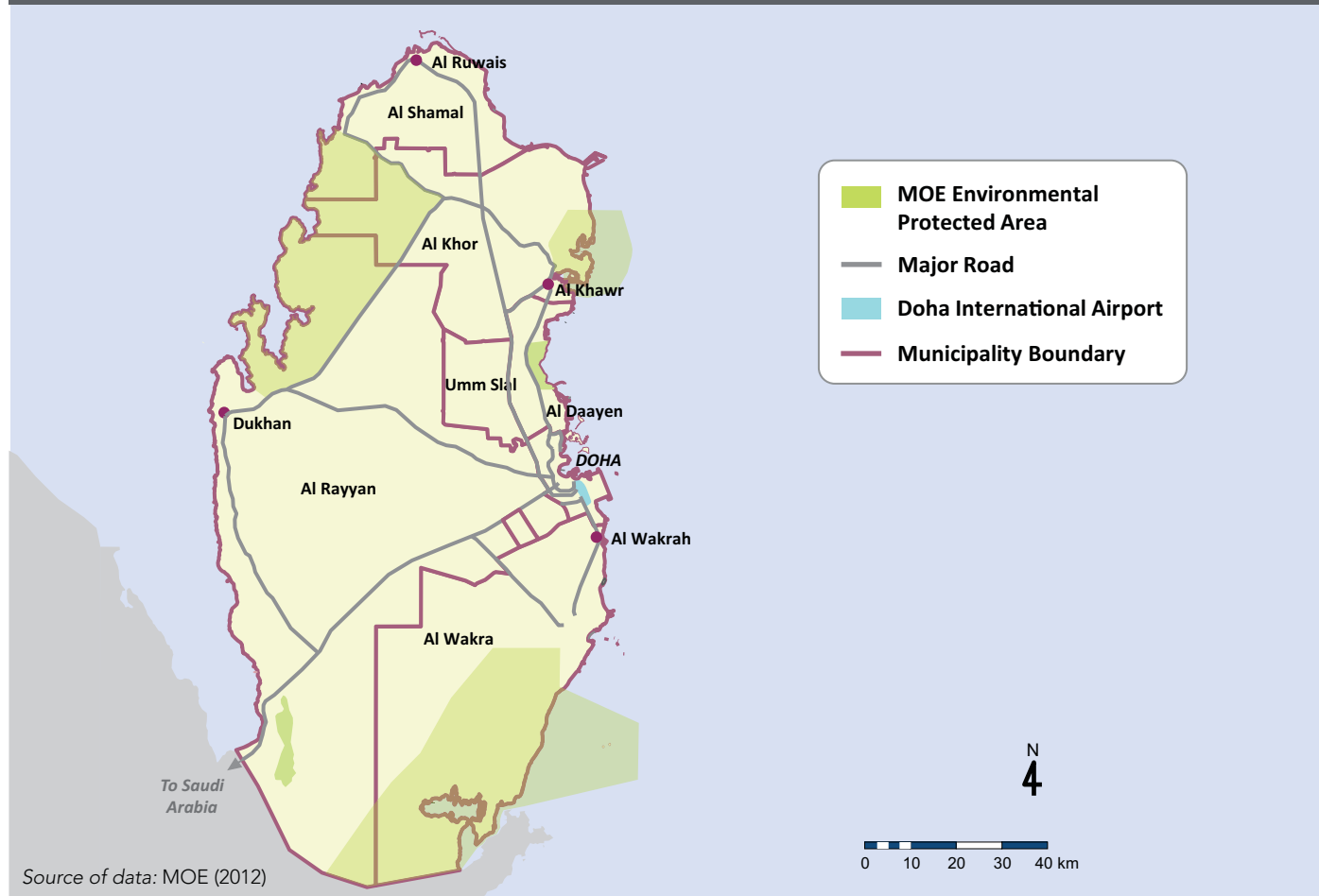
Figure 5.2 Protected area (land and marine) increased from 0.17% in 2003 to 29.7% by 2010 (%)



Note: Total area of Qatar: 11651.25 Square kilometer.
Source: QSA (2010a and 2011a).

- Thirty-one of Qatar's species were classified by the International Union for the Conservation of Nature (IUCN), marine and terrestrial, as threatened (figure 5.1) including several species of turtles, sharks, the dugong, oryx, and a number of birds.
- Qatar's protected territorial area increased from less than 1% in 2004 to 30% in 2007 – a larger proportion than in many countries (figure 5.2). Environmental protected areas are needed because a rapidly rising population and massive urban, industrial and infrastructure growth threaten biodiversity through alteration of habitats, over exploitation, invasive species and global warming.
- There are 10 protected environmental areas that include preserved land, parks and landscapes, and sensitive stretches of coast extending across many ecosystems (Figure 5.3).
- Qatar is a signatory to the Convention on Biological Diversity and related global conferences. The tools and processes of these agreements are being embodied in national policies to achieve sustainable development.

Figure 5.3 Significant parts of Qatar designated as protected areas



Source of data: MOE (2012)

Qatar’s biodiversity is facing threats from a range of human activities. Population growth and rapid urbanization have put pressure on the delicate balance of natural endowments. Construction and industrialization are impinging on fragile coastal habitats and disrupting marine life. International shipping and trade have introduced invasive species that threaten indigenous species. Overfishing has emerged as both an ecological concern and a threat to future food supply.

Turtles, one of the country’s most famous and endangered species, are particularly sensitive to climatic change. If temperatures continue to rise, there could be mass deaths of fish, coral bleaching, flooding of sea turtle nesting grounds and a substantial increase in jelly fish.

Biodiversity is essential to national identity and culture, and nature conservation is a religious and moral duty.

Qatar meeting the challenges

Initiatives are underway to monitor the substantial land and marine areas designated as protected, and to avoid any increase in the number of threatened species. Threats to the health, productivity and biodiversity of the marine environment result largely from human activities.

Four components frame Qatar’s responses to the growing threats against biodiversity: designating protected areas; conducting environmental impact assessments; framing rules and laws for sustainable exploitation of living marine resources; and undertaking rehabilitation projects.

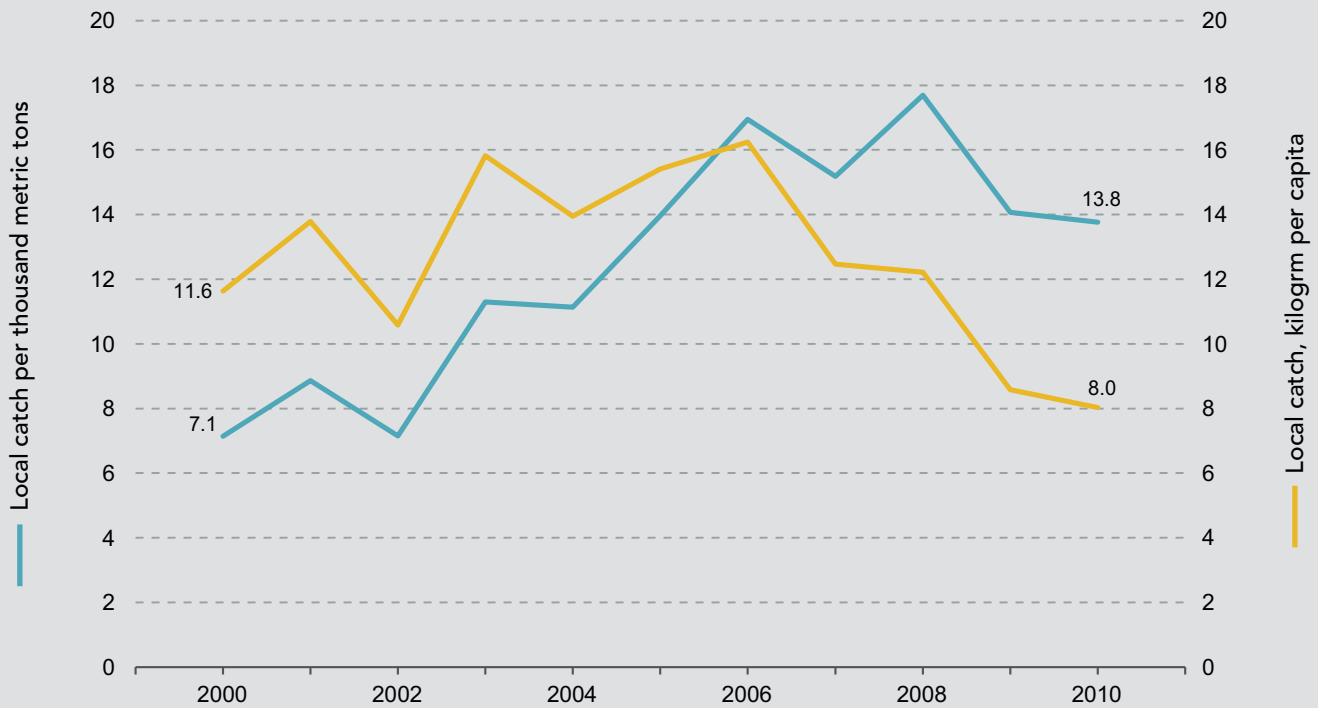
Detailed surveys that establish biodiversity baselines to enable decision-makers to build new protections based on solid evidence are being supported.

A National Biodiversity Database is being developed to inform decision-making, improve management plans and support research activities. The database will facilitate identification of species and areas where biological resources are in greatest need of protection and rehabilitation. It will enable the creation and implementation of targeted protection and conservation laws.

MAINTAINING FISHERIES

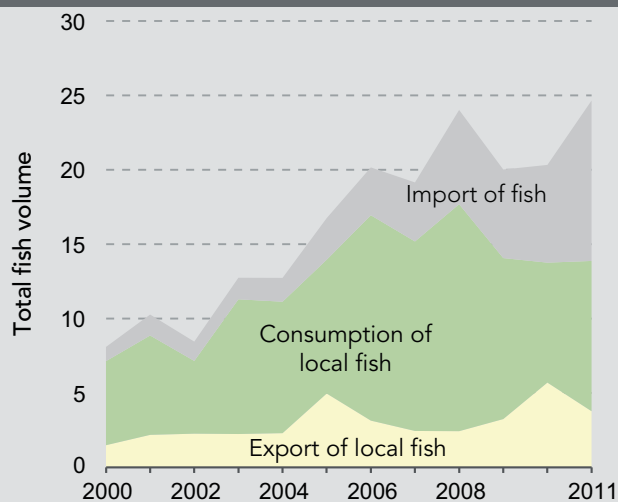
Improving fisheries management

Figure 5.4 Fish catches are barely keeping pace with Qatar's population growth and on a per capita basis have been declining since 2006



Source of data: QSA (2011a).

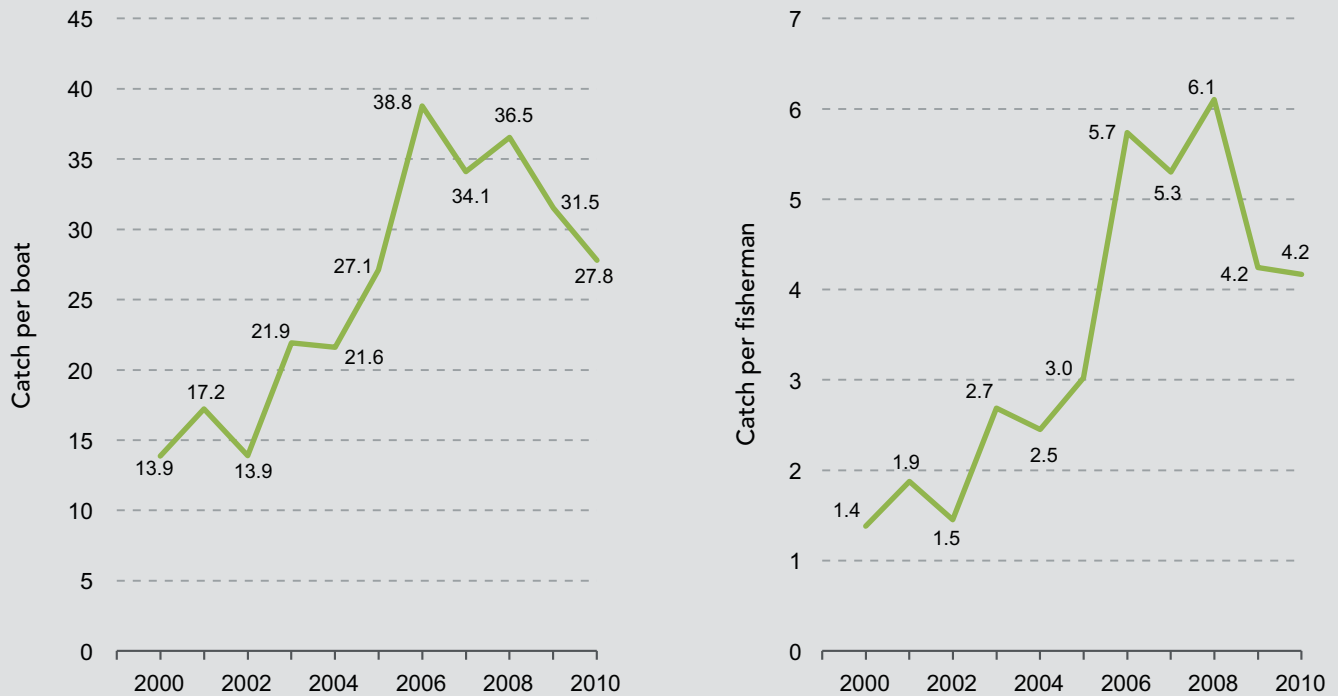
Figure 5.5 Imports for Qatar's total fish consumption rising sharply
Thousand metric tons



Source of data: QSA (2011a and 2012e).

- Qatar's fish catches rose up to 2006 after which they have tended to stabilise. However, since 2006 fish catches have not kept pace with the country's rapid population growth and have declined on a per capita basis (figure 5.4).
- While Qatar continues to export a small proportion of its fish catch, an increasing proportion of its growing consumption is met through imports (figure 5.5).
- Up to 2006 the fish catch per boat and per fisherman were rising largely as a result of increased labour productivity and improved technology. Since then both indicators have been falling (figure 5.6).

Figure 5.6 Increased labour productivity up to 2006 but declining since
Metric tons



Source of data: QSA (2010a and 2011a).

The fish in Qatar’s waters are highly diverse, with about 136 species recorded, providing an important supply of protein for human consumption. The richest fishing grounds are situated in the northeast of Qatar.

As in many other parts of the world, fish stocks in Qatar’s waters are being seriously depleted, because there is no incentive for any one fishing boat to limit its catch. Overfishing and coastal development are damaging fish breeding and nursery grounds, thus reducing fish populations and undermining the sustainability of fisheries. Coastal population growth

and the resulting increases in demand for food and income, together with the use of more efficient and often inappropriate fishing practices, are driving overfishing at a local level.

The fishing industry is increasingly impacting on subsistence and small-scale fisheries through direct competition for species, the discarding of huge quantities of bycatch, and the use of destructive fishing practices. This is exacerbated by increasing demand for a range of other marine-based commodities, such as traditional medicines, aquarium fish and sand.

Qatar meeting the challenges

Conservation and sustainable use of fish stocks and feeding grounds will be promoted through control of exploitation rates and the adoption of appropriate technical and conservation practices, according to scientifically-based management plans. Measures include fishing exclusion areas, temporary closures to enhance survival of juveniles or spawning concentrations, and regulation and enforcement of net mesh sizes.

To serve the public interest in ensuring the sustainability of fish stocks, Qatar is exploring effective limits on both the fishing fleet and the catch, including

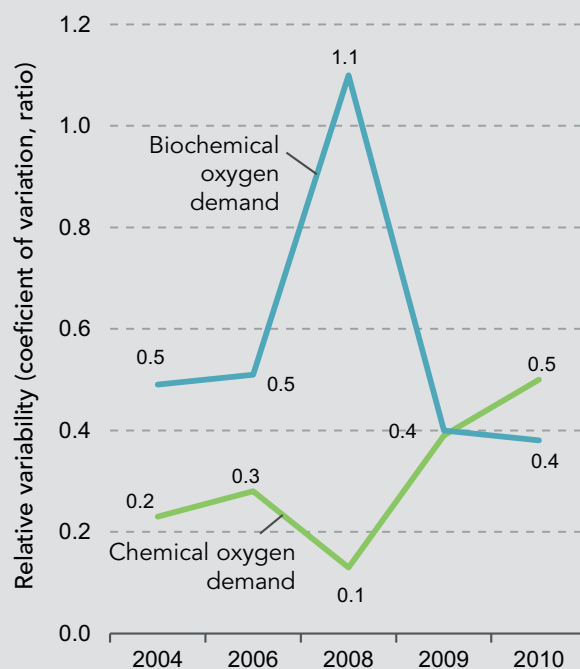
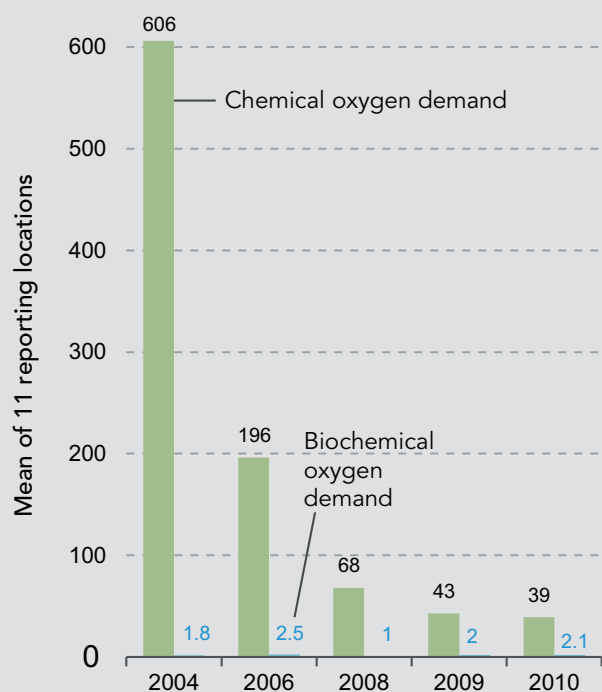
restrictions on the size and age of fish that can be caught and sold. Size selectivity of targeted species reduces harmful discards of juvenile fish and ensures optimum utility of desired species.

Qatar is also contemplating opportunities for the development of a local aquaculture capability to meet domestic demand. The state would provide initial support for technical and feasibility studies and temporary financial assistance for new ventures, with the objective of establishing commercial viability and financial independence. Aquaculture will be prohibited in sensitive localities.

PRESERVING COASTAL AREAS

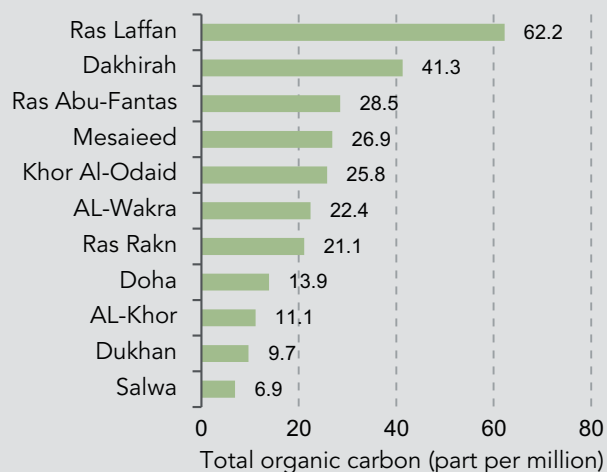
Strengthening coastal management

Figure 5.7 Chemical pollution in Qatar’s coastal waters improved between 2004 – 2010
Milligram per litre



Source of data: QSA (2010a and 2011a)

Figure 5.8 High variability of total organic carbon in coastal waters around Qatar
Part per million



Source of data: QSA (2011a).

- Qatar’s marine environment is a shallow, restricted body of water that has developed a unique environmental character, in which marine species have adapted and developed a tolerance for the extreme conditions.
- Organic pollution in Qatar’s coastal waters (BOD and COD) declined over the period 2004-2010 (figure 5.7) – Biochemical oxygen demand (BOD) and chemical oxygen demand (COD) tests measure relative oxygen-depletion of a waste contaminant. BOD measures the oxygen demand of biodegradable pollutants and COD measures the oxygen demand of biodegradable pollutants plus the oxygen demand of non-biodegradable oxidizable pollutants.
- While there has been improvement, there is still considerable variability between reporting locations in total organic carbon levels (figure 5.8) – Total organic carbon (TOC), an alternative to the BOD and COD tests, describes any organic (carbon-containing) compounds dissolved in natural waters. TOC is released from both natural and man-made sources. All aquatic life naturally releases TOC through normal metabolism, excretion and eventual decomposition. Man-made sources include sewage, leachate from waste disposal landfills, fish farms and food processing effluents.

Box 5.1 Externalities from land reclamation and coastal industries

Coastal development involving dredging and land reclamation for projects such as residential areas, industry, causeways, fishing ports, airports and harbours takes a significant toll on the coastal and marine environments.

The most important effects include: destruction of marine habitats and physical stress to marine species due to alteration of bottom topography and hydrography; stress to corals due to high suspended sediment concentrations and their effects on light attenuation; and threats to fishing stocks as a result of damage to nursery and feeding grounds of fish.

Additional impacts include deterioration in water quality due to the increase in suspended sediments and potential release of contaminants during dredging or disposal. Rising sea water temperatures as a result of climate change introduce additional instability into marine environments.

Globally land-based pollution is also having a significant impact on marine biodiversity. Qatar, along with its neighbouring states, faces this issue directly due to the structure of the Gulf and the high number of coastal industries, especially related to the energy sector.

As more industries move into the marine environment for product extraction, plant cooling, water desalination, or as a convenient sink, careful control is required both locally and throughout the region to preserve fragile coastal and marine ecosystems.

Global climate change and the expansion of industrial activities in coastal areas and their related catchments are increasingly causing degradation to marine environments.

Qatar has already experienced a preview of some of the biodiversity strains brought on by climate change. For example, in 2002 the Arabian Gulf experienced

record ocean heat that stressed the marine ecosphere. Ocean acidification is affecting some of Qatar's waters and is being monitored so as to contain its impact on vulnerable ecosystems

Qatar's energy and industry sector has put in place sound marine environment management plans to avoid environmental and accidental oil spills.

Qatar meeting the challenges

Qatar will systematically monitor Gulf sea temperatures, taking into account seasonal variations, as part of a biodiversity database it is developing. The country is committed to protecting the productivity and utility of its marine ecosystem to maintain its biodiversity. It is cognisant of ocean acidification and its impact on marine and coastal ecosystems.

Qatar's long term plan is to reduce water discharges into the sea and minimize the harmful effects on the marine ecosystem by increasing the use of the excess flow for irrigation, wetland habitats and recycling. Wetlands can play a significant role as a biological filter, allowing less polluted water to recharge aquifers or flow into the sea.

A healthy interconnection between land and marine environments is crucial to achieving Qatar's sustainable development aspirations.

Qatar's energy industry has a strong sense of social responsibility with environmental management plans that provide appropriate waste disposal facilities in ports and harbours. These need to be complemented by an efficient surveillance system for improved monitoring and enforcement.

Qatar is placing high importance on the conservation and sustainable use of its seas and resources, as well as protecting the marine environment. A national marine policy to facilitate the sustainable use of resources for all future developments that influence the marine environment is evolving. The need for basic research, baseline data collection for marine species, mapping, conservation, and the wise use of resources within the marine and coastal environments, is recognized.

REDUCED WASTE, MORE RECYCLING AND MORE EFFICIENT USE

Environmentally sound waste management – including the monitoring, collection, transport, processing and disposal of waste materials – is essential in protecting human health and livelihoods. Affluent societies tend to produce large quantities of waste, and Qatar is no exception. With an active construction business, extensive hydrocarbon sector and growing number of high-income households, Qatar creates more than 7,000 tonnes of solid waste each day.





Sub-theme

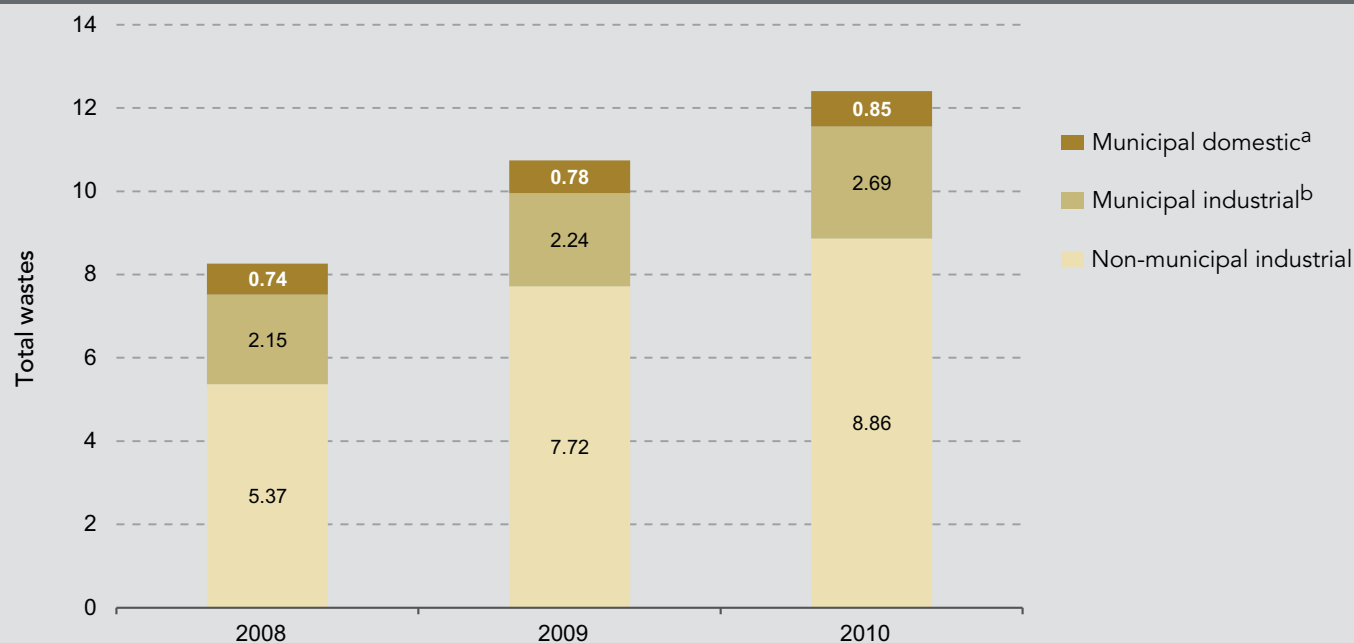
Improving waste management

IMPROVING WASTE MANAGEMENT

Containing waste generation

Figure 6.1 Qatar's non-municipal industrial waste forms a large and increasing proportion of total waste

Million metric tons



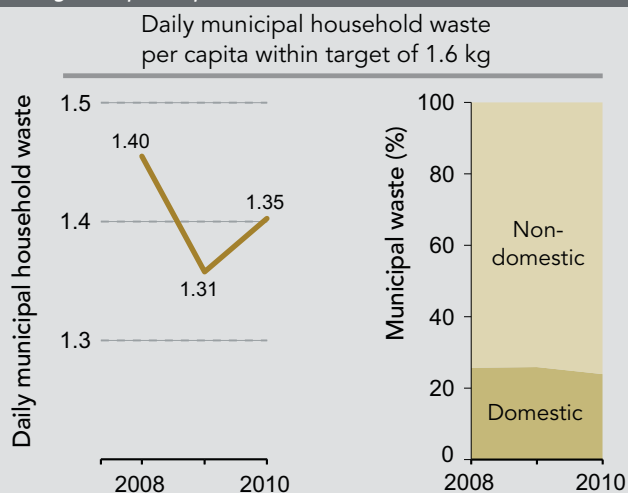
Note: a. Municipal domestic waste includes mixed household and commercial (office and market) waste.

b. Municipal industrial waste includes furniture, packaging waste, some electrical appliances and discarded items from construction activities that are described as development or maintenance waste (such as concrete formworks, pipes, ceramics, glass, metal and the like).

Source of data: QSA (2010a and 2011a).

Figure 6.2 Qatar's municipal waste generation and management

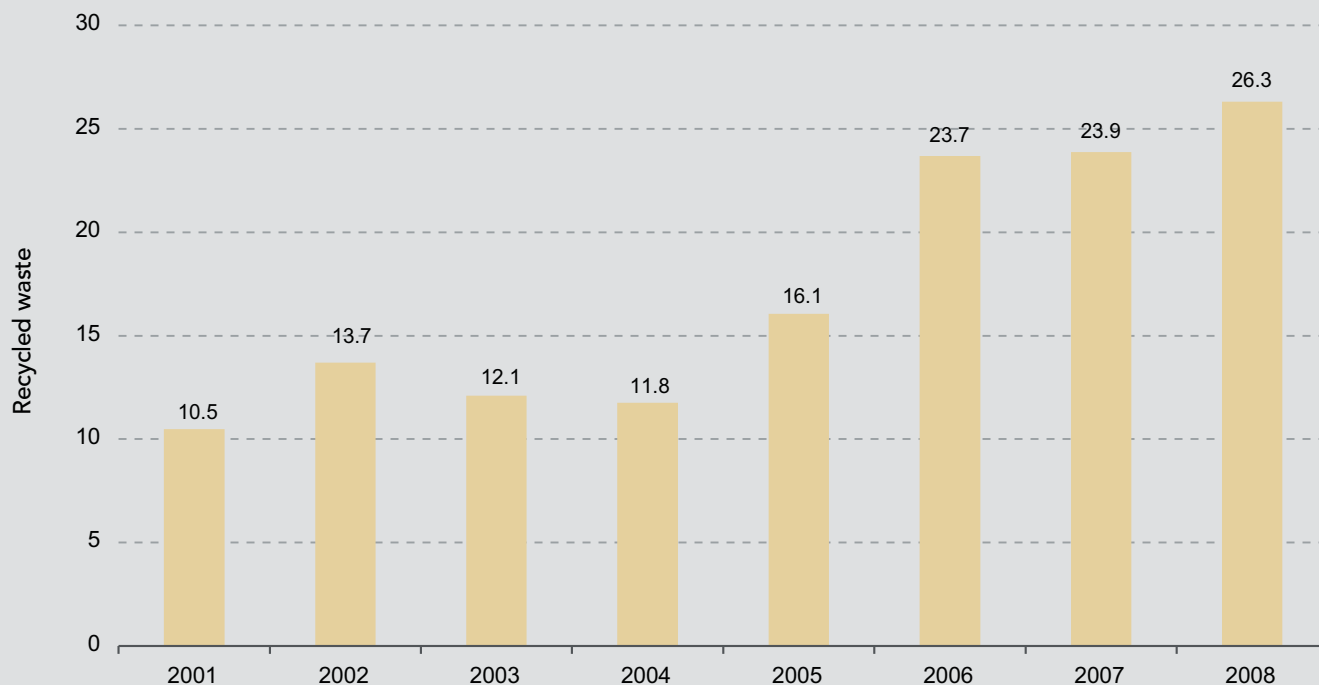
Kilograms per capita



Source of data: QSA (2010a and 2011a).

- Qatar's total volume of waste increased from 8.26 million metric tons in 2008 to 12.4 million metric tons in 2010, an increase of 50% (figure 6.1). Non-municipal industrial waste constitutes the largest portion of total waste 71% of the total in 2010.
- Three-quarters of municipal waste is from non-domestic sources, such as office and market waste (figure 6.2).
- The mean daily municipal domestic household waste generated is around 1.35kg per capita, below the targeted level Qatar has set itself which is 1.6kg (figure 6.2).
- The volume of recycled waste has increased, but remains less than 1% of total waste. (figure 6.3)
- Generation of hazardous waste is rising but is still low compared with some developed countries such as Germany, Sweden and Holland (figure 6.4).

Figure 6.3 Volume of recycled waste has increased, but remains low as a percentage of total waste
Thousand metric tons

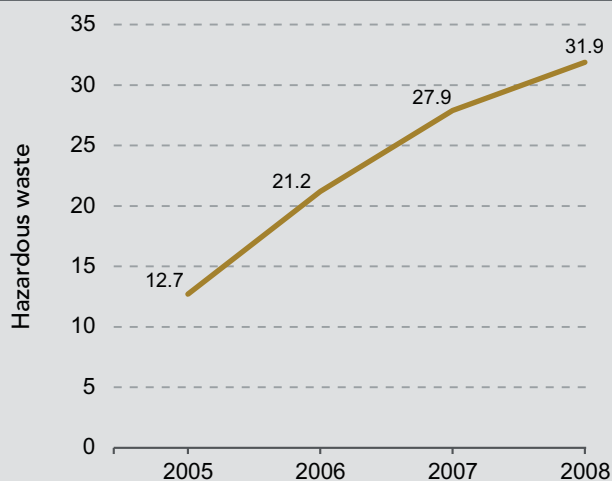


Source of data: DI-MOFA (2012).

Qatar is adopting a multifaceted strategy to contain the levels of waste generated by households, commercial sites and industry. Central to this strategy is the raising of public awareness of the ultimate goal: the avoidance, as far as possible, of the production of waste.

But where waste cannot be avoided the goals are to reduce it, reuse it or recycle it, and the least desirable outcome is to dispose of it. Public awareness campaigns and government sponsored demonstrations are beginning to encourage the adoption of waste separation, collection networks and recycling bins.

Figure 6.4 Generation of hazardous waste increasing but at slower rate
Kilogram per unit of GDP



Source of data: DI-MOFA (2012).

Qatar meeting the challenges

A comprehensive solid waste management plan is focusing on encouraging recycling, incentivizing waste reduction, promoting source separation and developing a robust recycling sector.

Source separation enables a material recovery facility to handle pre-separated recyclables from domestic and nondomestic waste. This is creating the potential for the closure of some landfill facilities.

New policy initiatives are encouraging the participation of recycling firms, transport companies, trading firms selling recyclable exports, and manufacturers that use recycled materials.

Under the Solid and Hazardous Waste Management Framework, a detailed and comprehensive procedure is also being worked on for the reduction and disposal of hazardous waste.

SUSTAINABLE URBANIZATION AND LIVING ENVIRONMENT

Qatar's surging economy has led to accelerated urbanization, exceptionally rapid population growth, mega-development projects and increasing traffic congestion. Doha is undergoing a remarkable transformation and will benefit from urban green spaces. The world's most liveable cities are enriched by parks, tree-lined avenues, public gardens and leafy residential areas. These features make cities more attractive and yield health benefits – people are drawn outdoors for recreation and trees filter pollution and cool the air.





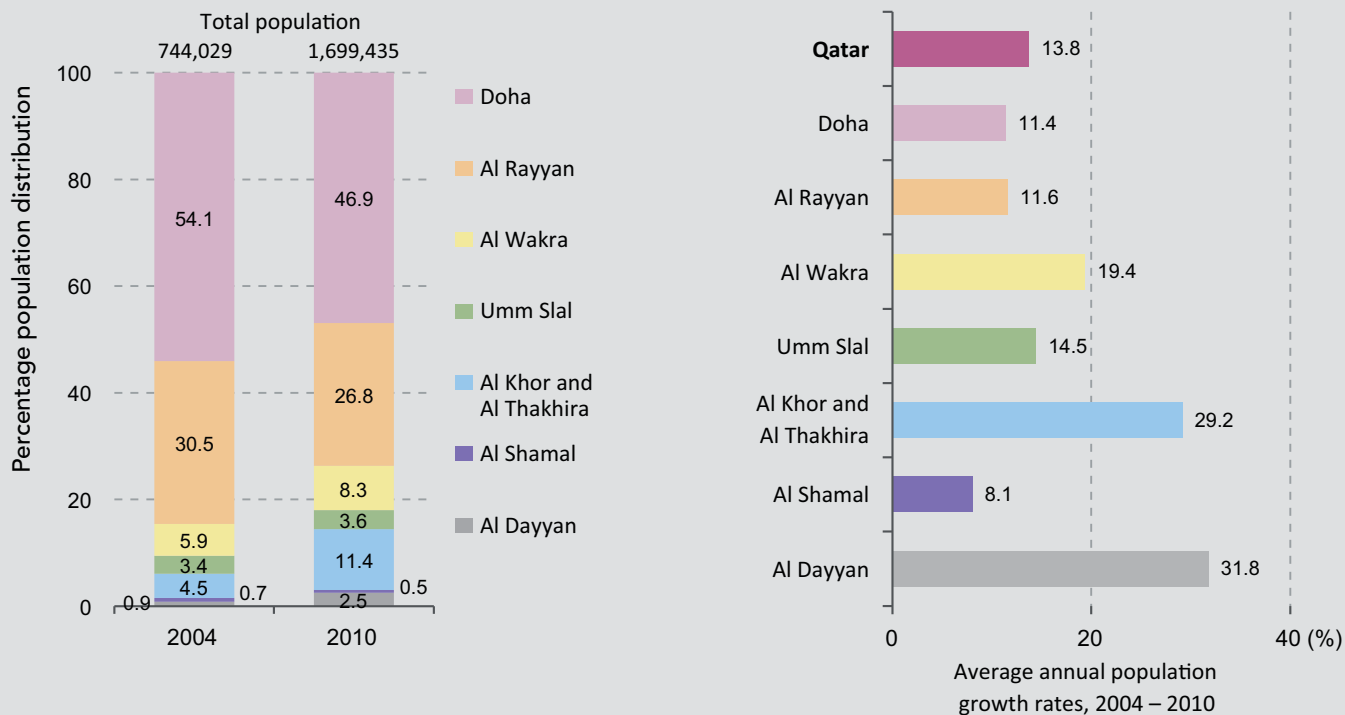
Sub-theme

Managing urbanization

MANAGING URBANIZATION

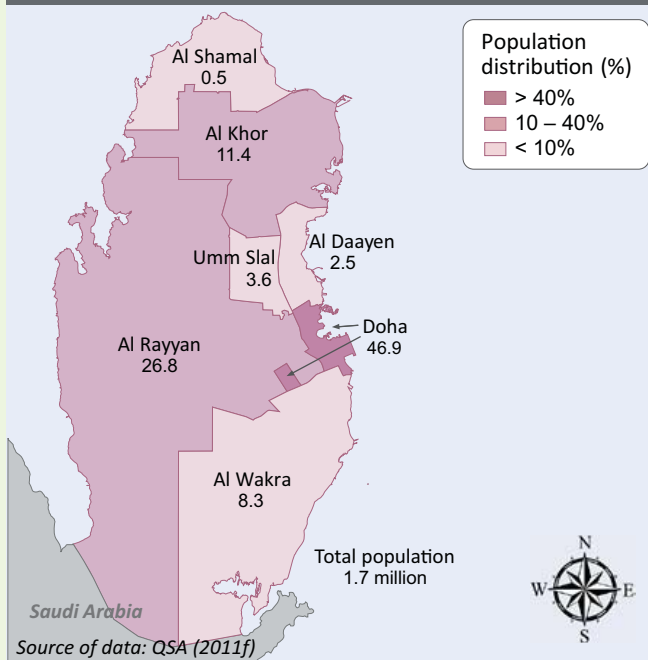
Balancing the natural and built environment

Figure 7.1 Qatar experienced exceptionally rapid population growth between 2004 and 2010



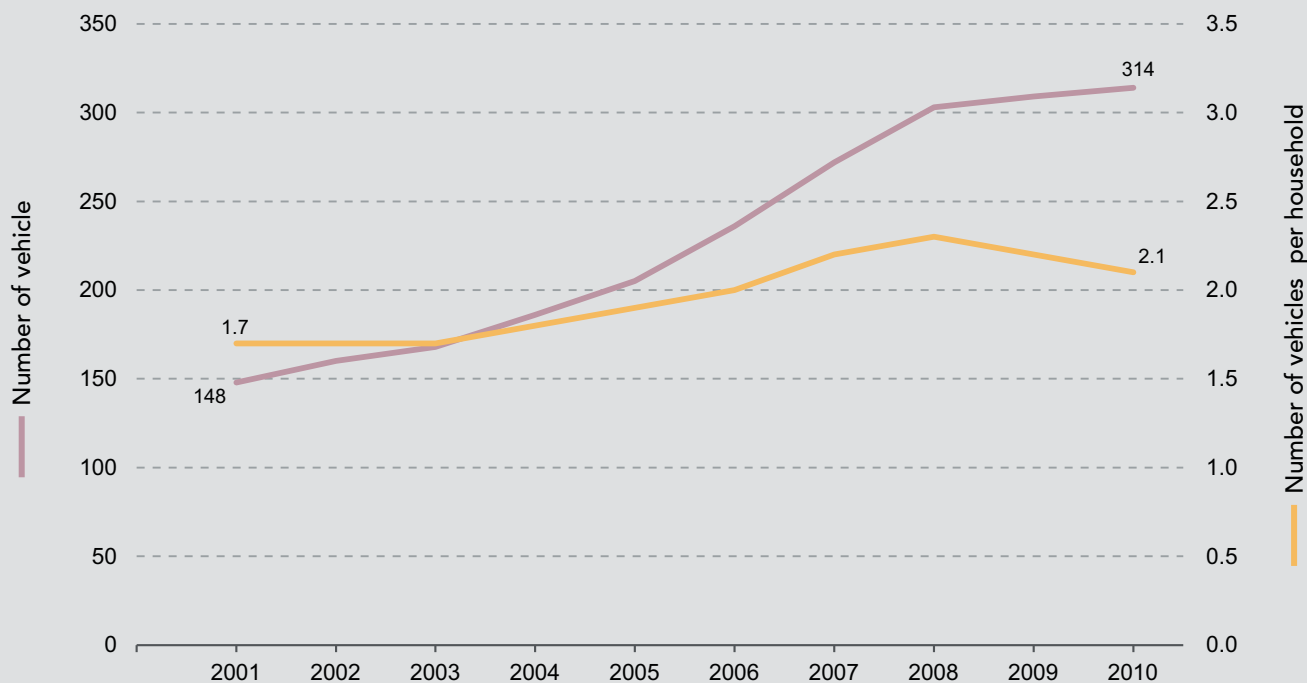
Source: PC (2005); and QSA (2011f).

Figure 7.2 Qatar's population highly concentrated in Doha and urban Al Rayyan



- Qatar's population grew at an exceptional annual average rate of 13.8 over the period 2004 to 2010, much higher than is typically experienced in other countries (figure 7.1).
- Nearly three-quarters of the country's population is concentrated in Doha and the adjacent municipality of Al Rayyan, but Al Khor (11%) is also becoming an increasingly important urban centre (figure 7.2).
- The number of private vehicles more than doubled between 2001 and 2010, and the mean number of vehicles per household also grew from 1.7 to 2.1 (figure 7.3).

Figure 7.3 Number of private vehicles and the number per household both increased rapidly until 2008
Thousands



Source of data: QSA (2010a and 2011b)

A surging economy, accelerated urbanization, and major construction projects have placed exceptionally heavy pressure on Qatar's urban infrastructure and services, especially in the capital, Doha. Rapid population growth and an increasingly affluent population have heightened demand for, *inter alia*, land and housing stock, scarce water resources, power reticulation, a sewage system, roads and transportation.

Traffic congestion stems largely from a fast-growing population, but in Doha where congestion is worst and the pace and scale of urban expansion greatest, spatial constraints limit the building of new roads and the

expansion of existing ones, and many localities have few sidewalks. Traffic management initiatives and a more comprehensive network of public transportation are gradually contributing to easing traffic congestion.

Rapid urbanization also exerts pressure on the delicate balance of natural elements in the environment. Conservation of fragile coastal habitats and marine life helps to preserve natural assets that are at risk in the urban environment. The planting of urban green spaces supports biodiversity and environmental sustainability and provides additional benefits in diminishing the impacts of air and noise pollution.

Qatar meeting the challenges

The pace and scale of urban expansion in Qatar have been dominated by large population inflows, mega construction projects, highways and so on. These developments constitute a major challenge to creating attractive working and living conditions and a healthy environment.

A Functional Greenspaces Project is being implemented to improve urban landscapes. Three functional green infrastructure plans are being prepared as part of ongoing urban development, the first two for commercial and residential neighbourhoods in Doha.

Many urban dwellers in Qatar have little experience of gardening or beautification of the environment, so demonstration planting schemes emphasizing shelter and shade are being delivered in partnership with Qatar Green Centre.

In Doha city centre, improvements to the severe traffic congestion at peak hours are limited by the lack of space for modification of the existing road network. Adoption of improved management technology and a greater responsiveness to road obstructions and traffic violations offer a partial solution. Ongoing enhancements of the public transportation system will relieve pressure on roads, and completion of the metro system has the potential to improve commuter movement and sustainability.

GOVERNANCE FOR EFFECTIVE ENVIRONMENTAL MANAGEMENT

Transitioning to sustainable environmental management requires effective and accountable institutions. A culture of evidence based policy making will be needed backed by information systems. A broad communications effort is required to shift public awareness and behavior with respect to balancing economic prosperity with environmental protection.





Sub-theme

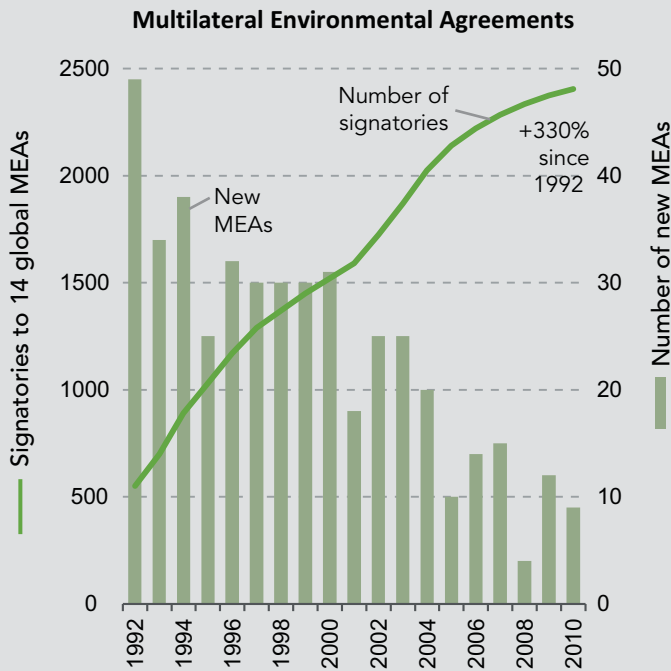
Improving governance and increasing awareness

IMPROVING GOVERNANCE AND INCREASING AWARENESS

Promoting effective environmental management

Figure 8.1 Qatar signed 13 out of 14 global Multilateral Environmental Agreements

Number



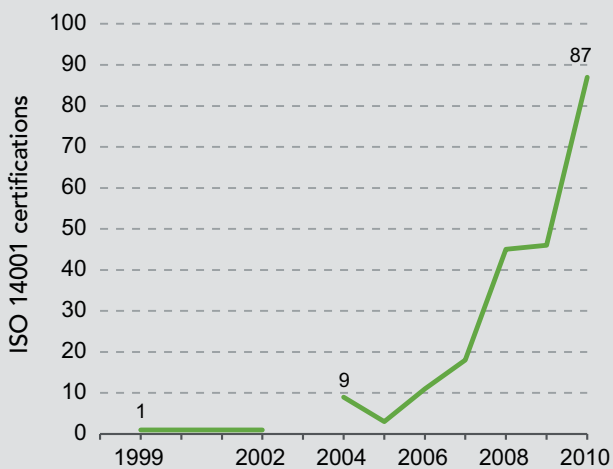
Source of data: UNEP (2012).

MEA's signed by Qatar

- Basel Convention
- Convention on Biological Diversity
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Convention on the Conservation of Migratory Species of Wild Animals
- Kyoto Protocol
- Ramsar Convention on Wetlands
- Rotterdam Convention
- Stockholm Convention on Persistent Organic Pollutants
- United Nations Convention on the Law of the Sea
- United Nations Convention to Combat Desertification
- United Nations Framework Convention on Climate Change
- Vienna Convention and Montreal Protocol
- World Heritage Convention

Figure 8.2 Qatar's private sector increasingly adopting environmental management standards

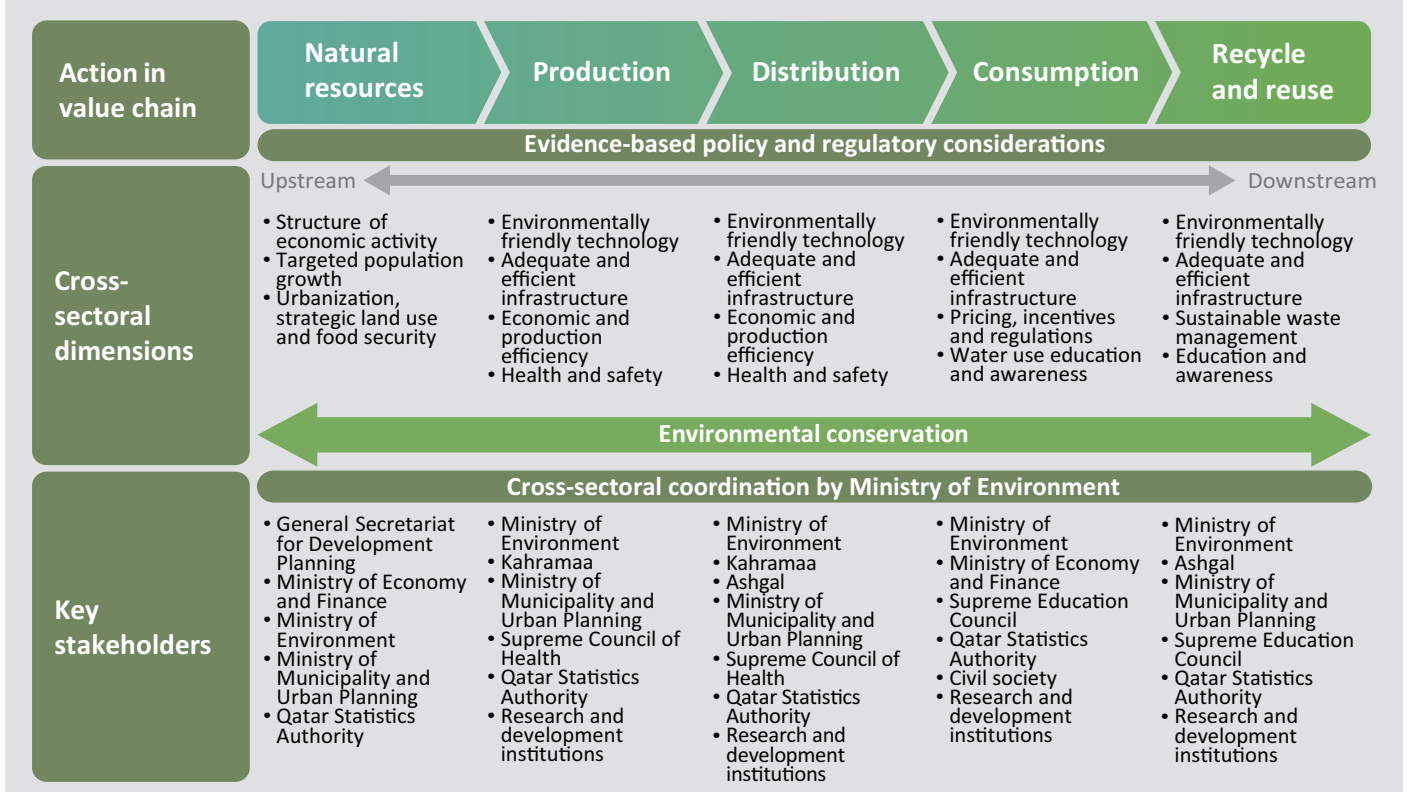
Number of certifications



Source of data: UNEP (2012): <http://geodata.grid.unep.ch>

- Qatar has signed 13 out of 14 major Multilateral Environmental Agreements (MEA): it has not signed the Cartagena Convention which relates to marine environments in the Caribbean Region (figure 8.1).
- A growing number of Qatar's private companies adopting the Organization for Standardization's ISO 14001 standard, which is primarily concerned with environmental management (figure 8.2).
- Cross-sectoral coordination is central in addressing environmental challenges across the value chain (figure 8.3).
- Qatar is increasing public awareness of sustainable development to create an environmentally aware population (figure 8.4).

Figure 8.3 Addressing environmental challenges requires working with stakeholders across value chains: in water management for example



Governing Qatar’s natural resources and balancing economic and population growth is an increasingly complex challenge, especially where environmental threats cross national borders. New national and regional responses are required with cooperation being critical for advancing towards a more sustainable future.

Economic success of corporations must take into consideration social and environmental objectives, including the interest of consumers. Qatar Petroleum is championing corporate responsibility through its Sustainable Development Industry reporting initiative and helping to promote best practice models. Over 30 companies in Qatar’s energy and industry sector have submitted their first reports.

Figure 8.4 Qatar increasing public awareness about sustainable development



Qatar meeting the challenges

Accurate and timely data are required to ensure informed environmental decision-making and to provide a sound basis for environmental governance. Qatar Statistics Authority is preparing a common framework for environment statistics to capture the needs of national and international users. Initiatives will also be undertaken to build capacities to collect, manage and analyse environmental data.

Qatar Foundation’s National Research Strategy 2012, through its energy and environment research focus, will help bridge the science policy gap and develop technological innovations that support policies, regulatory frameworks and diplomatic negotiations on sustainable development. Campaigns are planned to enhance the population’s awareness of the importance of sustainable development, and especially on protecting and conserving the environment for the benefit of future generations.

STRENGTHENED INTERNATIONAL COOPERATION

Responsibility for managing global development, as well as threats to international peace and security, must be shared among nations. Embodied in the United Nations Millennium Declaration is an international consensus on the imperative to form partnerships among countries to address the needs of developing countries, and to enhance the effectiveness of international development assistance.





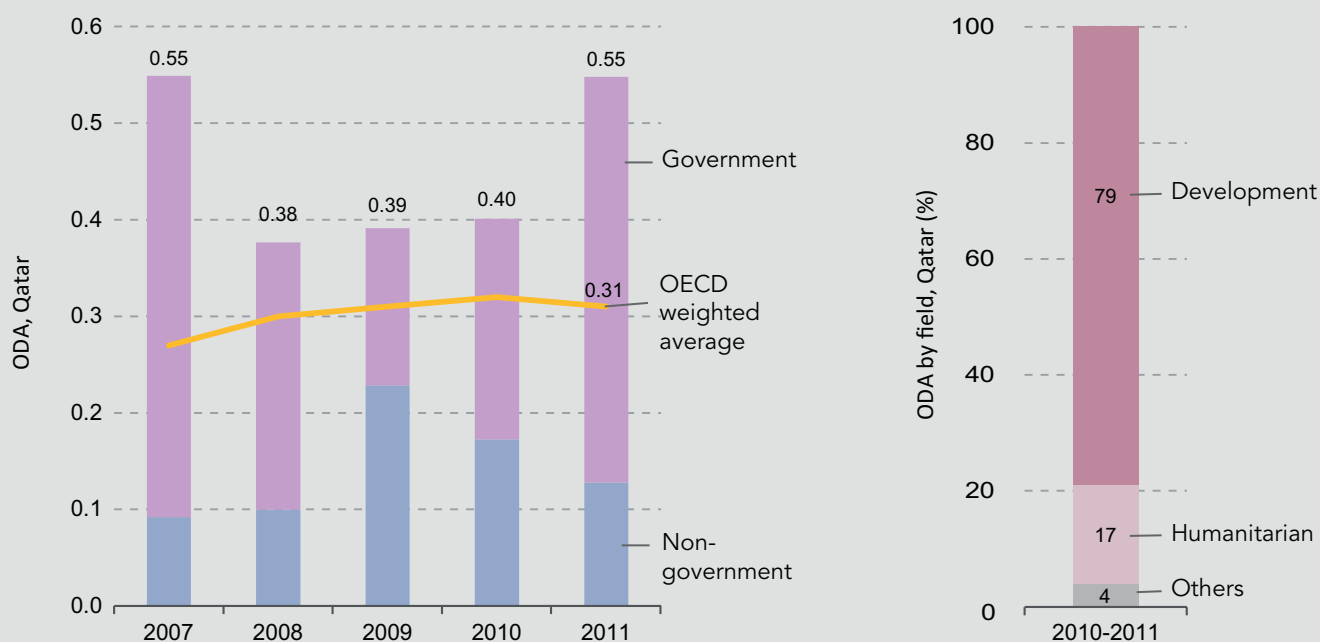
Sub-theme

Building global partnerships
for development

BUILDING GLOBAL PARTNERSHIPS FOR DEVELOPMENT

Committing to development and technical assistance

Figure 9.1 Qatar's official development assistance exceeds average of OECD countries: some 17% allocated to humanitarian crises
Percent of GDP



Source of data: MOFA (2012); and OECD (2012a).

Box 9.1 Qatar championing a Global Dry Land Alliance: partnering for food security

National food security is of increasing concern in dry land countries that are characterized by tremendous pressures on their natural resources, such as water, soil and biodiversity.

Qatar's National Food Security Programme (NFSP) has launched a Global Dry Land Alliance (GLDA). The GLDA is comprised of some 15 selected dry land countries willing and able to contribute to an agreed agenda. Qatar is supporting the start-up cost of a temporary secretariat based in Doha. The GLDA will work closely with international and multilateral organisations as well as private sector networks.

The GLDA is envisioned to be a collaborative undertaking to combat common threats, create new solutions to common food security challenges, and provide mutual assistance in times of extraordinary need. It will provide two types of support services. Preventive initiatives to help avoid food security crises, and response initiatives to alleviate the consequences of such crises.

Source: Adapted from GLDA (2012).

- As part of its commitment to the global partnership for development, Qatar is allocating 0.5% and above of its GDP to official development assistance – an amount that is higher than the average (0.31%) of OECD countries (figure 9.1).
- Qatar's Science and Technology Park is providing cutting-edge research and development opportunities with international partners in multiple fields, especially related to sustainable energy and the environment (figure 9.2).
- Qatar has launched a Global Dry Land Alliance initiative to help ensure food security in countries vulnerable to crises (Box 9.1).

Figure 9.2 Qatar’s Science and Technology Park expanding cutting-edge research opportunities through partnerships

Research programme	Objective	Partners
Development and deployment of cost effective sustainable energy technologies (2011)	<ul style="list-style-type: none"> ▪ Clean energy research and development ▪ Advanced cooling technologies ▪ Renewable power generation ▪ Energy storage ▪ Carbon capture and sequestration ▪ Water treatment systems 	Green Gulf, Chevron Energy Solution and Water Sustainability Centre (Conoco Phillips and General Electric)
Research on transportation solutions for integrated mobility and extreme climates (2010)	<ul style="list-style-type: none"> ▪ Mobile energy unites in light rail systems ▪ Understanding impact of extreme environmental conditions on urban mobility 	Siemens and Williams Technology Centre
Solar energy technology (2010)	<ul style="list-style-type: none"> ▪ Sustainable energy efficiency ▪ Improved performance of photovoltaic and solar thermal technologies 	Chevron and Green Gulf Inc
Solar technology (2010)	<ul style="list-style-type: none"> ▪ Solar cracking reactor for solar-thermal production of hydrogen from methane ▪ Reduction of CO₂ emissions 	Fraunhofer-Gesellschaft and TAMUQ
Research on LNG safety, sulfur, and environmental management (2006)	<ul style="list-style-type: none"> ▪ Carbon capture and sequestration ▪ Reduction of CO₂ emissions 	Qatar Petroleum, Qatar Shell Research Centre and Exxon Mobile

Qatar recognizes the importance of resource mobilization to support countries’ development efforts to eradicate poverty and promote sustainable development. It has also increased its assistance for humanitarian purposes, including for example providing assistance for the flood and earthquake victims in Pakistan and Haiti, droughts in the Horn of Africa and crisis support in Palestine and Darfur.

Qatar works with a wide range of partners in channeling its technical assistance, especially within the United Nations system.

Qatar sponsors participants to attend international conferences that it hosts in Doha as well as providing scholarships for students from developed countries to study at its Education City universities.

Qatar meeting the challenges

Qatar makes a significant contribution to the global partnership for sustainable development through various forms of international cooperation, including bilateral, regional and multilateral development assistance; championing South-South relations; and support for countries in complex humanitarian situations, such as in natural disasters and conflicts.

This spirit of partnership has provided the rationale for proactively engaging with numerous regional and international agencies of the United Nations, including hosting of major international conferences in Doha, and for being a signatory to international treaties and protocols.

Under the auspices of Qatar Foundation, Silatech is creating employment opportunities for Arab

youth by promoting large-scale job creation, entrepreneurship, and access to capital and markets in countries with very high rates of youth unemployment. Similarly, Reach Out to Asia (ROTA), working with local and international communities, is supporting children in crisis and less developed countries. ROTA gives children, especially girls, access to basic education by promoting and building educational and social infrastructure.

Working in multiple international partnerships, Qatar Charity supports disaster relief and emergency response. It is a pioneering Islamic institution that combines originality, creativity and professionalism in development and humanitarian assistance.

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