BUSINESS MONITOR international

Q1 2010

www.businessmonitor.com

IRAN

POWER REPORT

INCLUDES 5-YEAR FORECASTS TO 2014

ISSN 1755-7054

Published by Business Monitor International Ltd.

Iran Power Report Q1 2010

Including 5-year and 10-year industry forecasts by BMI

Part of BMI's Industry Survey & Forecasts Series

Published by: **Business Monitor International**

Publication date: January 2010

Business Monitor International
Mermaid House,
2 Puddle Dock,
London, EC4V 3DS,
UK
Tel: +44 (0) 20 7248 0468
Fax: +44 (0) 20 7248 0467
email: subs@businessmonitor.com
web: http://www.businessmonitor.com

© 2010 **Business Monitor International**.
All rights reserved.

All information contained in this publication is copyrighted in the name of **Business Monitor International**, and as such no part of this publication may be reproduced, repackaged, redistributed, resold in whole or in any part, or used in any form or by any means graphic, electronic or mechanical, including photocopying, recording, taping, or by information storage or retrieval, or by any other means, without the express written consent of the publisher.

DISCLAIMER
All information contained in this publication has been researched and compiled from sources believed to be accurate and reliable at the time of publishing. However, in view of the natural scope for human and/or mechanical error, either at source or during production, **Business Monitor International** accepts no liability whatsoever for any loss or damage resulting from errors, inaccuracies or omissions affecting any part of the publication. All information is provided without warranty, and **Business Monitor International** makes no representation of warranty of any kind as to the accuracy or completeness of any information hereto contained.

CONTENTS

Executive Summary 5

SWOT Analysis 6

Iran Power Business Environment SWOT 6
Iran Political SWOT 7
Iran Economic SWOT 7

Industry Overview 8

Global 8
Table: Global Summary, 2007-2014 8
Middle East And Africa 9
Table: Middle East And Africa Power Generation, 2007-2014 (TWh) 10
Table: Middle East And Africa Thermal Power Generation, 2007-2014 (TWh) 11
Table: Middle East And Africa Primary Energy Demand, 2007-2014 (mn toe) 12
Table: Middle East And Africa Gas Consumption, 2007-2014 (bcm) 13
Table: Middle East And Africa Coal Consumption, 2007-2014 (mn toe) 14
Table: Middle East And Africa Nuclear Energy Consumption, 2007-2014 (TWh) 15

Market Overview 16

Primary Energy Demand 16
Power Generation 16
Power Consumption 18
Regulation And Competition 18
Pricing 19
Power Transmission 19

Business Environment 20

Middle East And Africa Power Business Environment Ratings 20
Table: Middle East And Africa Power Business Environment Ratings 20
Iran's Power Ratings 21
Legal Framework 22
Infrastructure 23
Labour Force 24
Foreign Investment Policy 25
Tax Regime 26
Security Risk 27

Industry Forecast Scenario 28

Iran's Power Outlook 28
Generation 28
Gas-Fired 28
Oil-Fired 29
Coal-Fired 29
Nuclear Energy 29
Hydro-Electric 30
Renewable Energy 30
Power Costs 30
Table: Iran's Power Costs, 2007-2014 (US$mn, unless otherwise stated) 31
Transmission 31

Table: Iran's Power Sector, 2007-2014 ... 32
Table: Iran's Thermal Power Sector, 2007-2014 (US$mn unless otherwise stated) ... 33
Table: Iran's Non-Thermal Power, 2007-2014 ... 34
Assumptions And Methodology ... 34
Key Risks To BMI's Forecast Scenario ... 34
Long-Term Power Outlook ... 35
Macroeconomic Outlook ... 35
Table: Iran – Economic Activity, 2007-2014 ... 38

Power Outlook: Long-Term Forecasts ... 39

Global Snapshot ... 39
Table: Global Summary, 2012-2019 ... 39
Regional Outlook ... 39
Table: Middle East And Africa Electricity Generation, 2012-2019 (TWh) ... 40
Table: Middle East And Africa Primary Energy Demand, 2012-2019 (mn toe) ... 41
Table: Middle East And Africa Thermal Power Generation, 2012-2019 (TWh) ... 42
Table: Middle East And Africa Hydro-Electric Generation, 2012-2019 (TWh) ... 43
Table: Middle East And Africa Nuclear Generation, 2012-2019 (TWh) ... 44
Iran Overview ... 44
Methodology And Risks to Forecasts ... 44

Competitive Landscape ... 46

Country Snapshot: Iran Demographic Data ... 47

Section 1: Population ... 47
Table: Demographic Indicators, 2005-2030 ... 47
Table: Rural/Urban Breakdown, 2005-2030 ... 48
Section 2: Education And Healthcare ... 48
Table: Education, 2002-2005 ... 48
Table: Vital Statistics, 2005-2030 ... 48
Section 3: Labour Market And Spending Power ... 49
Table: Employment Indicators, 1996-2005 ... 49
Table: Consumer Expenditure, 2000-2012 (US$) ... 50
Table: Average Annual Manufacturing Wages, 2000-2012 ... 50

BMI Methodology ... 51

How We Generate Our Industry Forecasts ... 51
Power Industry ... 51
Cross Checks ... 52
Sources ... 52

Executive Summary

We forecast that Iran will account for 16.19% of Middle East and Africa (MEA) regional power generation by 2014. **BMI**'s MEA power generation estimate for 2009 is 1,264 terawatt hours (TWh), an increase of 5.4% year-on-year (y-o-y). We forecast an increase in regional generation to 1,659TWh by 2014, a rise of 31.3% between 2009 and 2014.

Regional thermal power generation in 2009 is estimated by **BMI** at 1,158TWh, accounting for 96.5% of the total electricity supplied in the MEA. Our forecast for 2014 is 1,523TWh, implying 31.5% growth that reduces slightly the market share of thermal generation to 97.6% – thanks in part to environmental concerns that should be promoting renewables, hydro-electricity and nuclear generation. Iran's thermal generation in 2009 was an estimated 199TWh, or 17.20% of the regional total. By 2014, the country is expected to account for 15.40% of regional thermal generation.

Gas was the dominant fuel for Iran in 2008, accounting for 55.1% of primary energy demand (PED), followed by oil at 43.3% and hydro with a 0.9% share of PED. Regional energy demand is forecast to reach 929.8mn tonnes of oil equivalent (toe) by 2014, representing 25.1% growth over the period since 2009. Iran's estimated 2009 market share of 25.83% is set to reach 25.97% by 2014. Iran's nuclear demand is forecast to reach 10TWh by 2014, with its share of the MEA nuclear market rising to 42.55%.

Iran is still fourth in **BMI**'s updated Power Business Environment rating. This reflects its market size and relatively high proportion of renewables (hydro-power) use. The power sector is not competitive, with no appreciable progress towards privatisation. The regulatory environment is unattractive and the risk outlook is suffering thanks to the controversy over the country's nuclear energy programme. We see scope for a reduced score and a drop down the rankings during the next few quarters.

BMI forecasts that Iran's real GDP growth will averaging 3.46% a year between 2010 and 2014, with 2008 growth estimated at 1.60%. The population is expected to expand from 74.2mn to 78.5mn over the period, with GDP per capita and electricity consumption per capita forecast to increase by 84% and 17%, respectively. Power consumption is expected to increase from an estimated 176TWh in 2009 to 218TWh by 2014, providing export potential rising from an estimated 35TWh in 2009 to 51TWh in 2014, assuming 4.5% annual growth in electricity generation. Losses during power transmission and distribution mean the actual level of power exports is well below the theoretical surplus, but is set to rise. Between 2009 and 2019 we forecast a 53.8% increase in Iranian electricity generation, near the middle of the MEA range. This equates to 21.1% in 2014-2019, down from 27.0% in 2009-2014. PED growth is will fall from 25.8% in 2009-2014 to 18.4%, representing 49.0% for the entire forecast period. From 2010, the availability of nuclear power is one key element of generation growth. Thermal power generation is forecast to rise by 38.1% between 2009 and 2019. Details of the longer-term **BMI** power forecasts can be found later in this report.

© Business Monitor International Ltd

SWOT Analysis

Iran Power Business Environment SWOT	
Strengths	▪ The Foreign Investment Promotion and Protection Act (FIPPA) gives some protection to foreign investors and now allows relatively good terms for the repatriation of profits ▪ Although stifled in the years since the Islamic revolution, Iranians have traditionally been renowned for their entrepreneurial skills, a factor that is potentially a strong pull for foreign investors ▪ The country has vast oil and gas riches, which provide the basis for energy self-sufficiency. It also has some hydro-electric resources and in 2009 should commission its first nuclear reactor
Weaknesses	▪ Progress on privatisation remains slow ▪ Foreign firms are currently unable to own Iran's hydrocarbon resources. The resultant 'buy back' deals offer less advantageous terms than those elsewhere, limiting hopes of new investment ▪ The price of natural gas to residential and industrial consumers is state controlled at extremely low prices, encouraging rapid consumption growth and replacement of fuel oil, kerosene and liquefied petroleum gas (LPG) demand
Opportunities	▪ As part of the fourth Five-Year Development Plan (2005-2009), the government will end tax and customs concessions currently afforded to the country's quasi-statal bonyads, or foundations ▪ The government has inaugurated the first phase of an oil swap project with Russia, Kazakhstan and Turkmenistan. The project will compete with the rival US-backed pipeline that will run to the Mediterranean from Baku in Azerbaijan, through Georgia, to Ceyhan in Turkey ▪ Iran is controversially developing a nuclear energy capability to reduce its increasing dependence on natural gas as a power station fuel
Threats	▪ UN and EU sanctions on the republic pose a significant threat to the participation of foreign firms in the oil and gas sector ▪ Central bank supervision of charitable funds will be stepped up sharply, after it emerged that a number of these funds had collapsed due to indiscriminate lending practices ▪ International resistance to the nuclear energy programme could result in delays to reactor start-up

© Business Monitor International Ltd

Iran Political SWOT	
Strengths	▪ Since the overthrow of the Pahlavi family in 1979 there has been some reduction in the level of political corruption, and wealth distribution has improved marginally ▪ The Revolutionary Guard and Basij militia are fiercely loyal to the supreme leader, helping to maintain social stability
Weaknesses	▪ The country has one of the poorest human rights records in the region and the authorities do not hesitate to quell dissidents. A number of journalists are being held in custody ▪ While ultimately decision making rests with the supreme leader, the regime is heavily fragmented and consensus is hard to reach ▪ Widespread perceptions of electoral fraud during the course of June's presidential elections has damaged the regime's legitimacy in the eyes of many Iranians
Opportunities	▪ The majlis (parliament) is more than just a rubber stamp – the move by 150 parliamentarians (out of 290) to hold the president accountable for his handling of the economy is a positive indication that checks exist
Threats	▪ Nuclear tensions raise prospect of further US and UN Security Council sanctions and the, albeit very limited, possibility of military strike by the US or Israel ▪ Ethnic tensions are on the rise ▪ High youth unemployment ▪ The rising influence of the Revolutionary Guards within the political and economic arena may present a challenge to the status quo over the long term

Iran Economic SWOT	
Strengths	▪ Iran has the world's second largest proven oil reserves after Saudi Arabia, and the world's second largest proven gas reserves after Russia ▪ Oil and gas aside, the republic is rich in other resources and has a strong agricultural sector
Weaknesses	▪ Local consumption of hydrocarbons is rising rapidly and this, coupled with ageing technology in the oil and gas sector, will have a negative impact on its oil and gas exporting capacity ▪ After a concerted effort to reduce public debt in recent years, there are signs that it is once again rising
Opportunities	▪ The gas sector remains underdeveloped and there is considerable room to maximise this source of revenue
Threats	▪ Decline in world oil prices will have a marked impact on the economy. Although an Oil Stabilisation Fund (OSF) exists to protect the economy at times of weaker oil prices, it has increasingly been used to fund government overspending and could be close to empty ▪ A further deterioration in Iran's relations with the international community over its nuclear programme could result in the imposition of more extensive economic measures by the UN Security Council or the US ▪ There is a serious risk of capital flight owing to fears of conflict or sanctions

© Business Monitor International Ltd

Industry Overview

Global

Supply and demand growth in the power sector is a reflection of population expansion, increased economic activity and changing energy intensity/efficiency. Beyond the weakness of 2009-2010, consumption and generation growth are expected to be significant, but with a wide variation of trends by fuel source. Oil is set to continue to lose market share, particularly if prices remain high, with costly but cleaner natural gas remaining first choice for many countries and regions. Climate change and the entire environment debate is leading to a shift in sentiment as regards nuclear power generation, which had been falling out of fashion. Renewables should see the most dramatic growth, from a very low base, in response to environmental pressures and the higher cost of conventional energy sources. As with the hydrocarbons sector, non-OECD growth dominates the supply and demand trends, overshadowing the developed markets. Expansion of gas and coal-fired power supply is at its greatest in these countries, although the likes of China are likely to see rapid growth in virtually all forms of electricity supply and demand.

Table: Global Summary, 2007-2014

	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Electricity generation (TWh)	18,549	18,851	18,701	19,429	20,273	21,113	21,950	22,821
Primary energy demand (mn toe)	10,218	10,389	10,360	10,730	11,146	11,561	11,983	12,410
Gas consumption (bcm)	2,730	2,805	2,799	2,897	3,020	3,155	3,278	3,395
Thermal power generation (TWh)	13,101	13,322	13,233	13,728	14,285	14,865	15,408	15,980
Coal consumption (mn toe)	3,109	3,221	3,244	3,386	3,547	3,713	3,870	4,038
Hydro-electric consumption (TWh)	2,619	2,706	2,713	2,847	3,020	3,168	3,325	3,490
Nuclear energy consumption (TWh)	2,611	2,599	2,529	2,610	2,706	2,788	2,894	2,997

e/f = BMI estimate/forecast. Source: Historical data: BP Statistical Review of World Energy, June 2009; BMI

In the 67 countries covered by **BMI**'s Oil & Gas service, PED is set to increase from an estimated 10,360mn toe in 2009 to 12,410mn toe by 2014. The 2008 estimate of global PED published in the **BP**'s annual *Statistical Review of World Energy* (June 2009) was 11,295mn toe, which reflects its broader coverage than the **BMI** universe. According to BP's report, oil accounted for 34.8% of 2008 energy demand, followed by coal with 29.3% and gas with 24.1%; nuclear energy's share of the pie was just 5.5%, behind hydro-electric power with 6.4%. **BMI**'s forecasts suggest that, in spite of rapid demand growth, gas will still account for just 24.9% of PED in 2014, with much of the increased market share reflecting power generation usage. In spite of environmental pressure, we see coal's share of overall

demand edging higher to 32.5% by the end of the forecast period. Our estimates point to a 5.4% market share for nuclear power by 2014, with hydro-electricity remaining marginally ahead with an estimated 6.2% share of the energy market.

BMI's forecasts for electricity generation suggest an increase from an estimated 18,701TWh in 2009 to 22,821TWh in 2014 (+22.0%), based on a universe of 67 countries. According to the BP data, world electricity generation in 2008 was 20,202TWh. The Energy Information Administration (EIA), which is a division of the US Department of Energy, predicts a 29.2% rise in power generation from 17,982TWh in 2006 to 23,228TWh by 2015.

Thermal power generation will continue to dominate, although gas will gain market share at the expense of oil, while coal will hold its ground. Our projections for thermal power generation suggest a generation market share of 70.0% in 2014, down from the estimated 2009 level of 70.8%. The EIA's long-term energy outlook predicts a 65.8% market share for thermal power generation in 2015, with coal having 40.8%, gas holding a 21.0% market share and oil claiming just 4.0% of overall generation.

According to the EIA, nuclear power will account for 13.1% of electricity generation by 2015, with its market share falling steadily during the period. **BMI**'s own data suggest a market share of around 13.1% for nuclear in 2014, in spite of signs that this form of power generation is gaining fresh support as countries struggle to reduce greenhouse gas emissions. The EIA includes hydro-electric power in the renewables segment, where generating market share is predicted to reach 21.1% by 2015. **BMI**'s data point to a hydro-power market share of 15.3% by 2014, implying that the contribution made by 'alternative' sources such as wind will remain very modest during the forecast period.

Middle East And Africa

The dominant regional electricity generator and consumer is South Africa, which has a high dependence on local coal to fuel its power stations. Iran and Saudi Arabia are also significant regional players, with both reliant on domestic oil and gas resources to meet their power needs. The BP data show regional electricity generation of 1,377TWh, of which South Africa, Iran and Saudi Arabia accounted for 48.9%. **BMI**'s own estimates for 2009 suggest generation of 1,264TWh. Iran's market share in 2009 was an estimated 16.73%. We are forecasting an increase in regional generation to 1,659TWh by 2014, representing a rise of 31.3% in 2009-2014. By the end of the forecast period, we expect Iran to account for 16.19% of regional power generation.

© Business Monitor International Ltd

Table: Middle East And Africa Power Generation, 2007-2014 (TWh)

Country	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Algeria	37.0	40.0	70.4	70.4	70.4	70.4	70.4	70.4
Angola	2.2	2.5	2.8	3.2	4.0	5.0	5.8	6.6
Bahrain	9.6	10.0	10.3	10.8	11.2	11.6	12.1	12.6
Egypt	119.0	127.9	133.0	137.7	143.2	149.6	157.1	162.6
Iran	**196.0**	**206.3**	**211.5**	**219.9**	**232.0**	**244.8**	**257.0**	**268.6**
Iraq	60.0	70.0	80.0	90.0	100.0	115.0	129.4	145.5
Israel	55.5	58.3	61.2	64.2	67.4	70.8	73.3	75.9
Kuwait	49.3	52.0	53.0	55.0	59.0	62.0	65.7	69.7
Libya	26.9	28.8	30.8	32.9	35.2	37.7	40.3	43.1
Nigeria	23.0	28.0	33.0	40.0	48.0	55.0	60.0	66.0
Oman	10.9	11.5	12.1	12.7	13.3	14.0	14.5	15.1
Qatar	17.5	19.7	21.3	23.4	25.5	28.3	31.1	34.9
Saudi Arabia	185.9	193.7	206.3	224.9	241.7	256.2	270.0	285.0
South Africa	266.2	273.7	262.0	268.6	272.6	283.5	292.0	297.8
UAE	71.9	77.2	76.5	80.0	85.0	92.0	98.9	105.3
BMI universe	1,130.9	1,199.5	1,264.1	1,333.6	1,408.6	1,495.9	1,577.6	1,659.1

e/f = BMI estimate/forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Thermal power generation in 2009 is estimated by **BMI** at 1,158TWh, accounting for 91.6% of the total electricity supplied in the region. Our forecast for 2014 is 1,523TWh, implying 31.5% growth that increases slightly the market share of thermal generation to 91.8% – in spite of environmental concerns that should be promoting renewables, hydro-electricity and nuclear generation. Iran's thermal generation in 2009 was an estimated 199TWh, or 17.20% of the regional total. By 2014, the country is expected to account for 15.40% of regional thermal generation.

Table: Middle East And Africa Thermal Power Generation, 2007-2014 (TWh)

Country	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Algeria	36.6	39.5	40.6	42.7	44.8	47.2	49.8	52.2
Angola	0.7	0.9	1.0	1.1	1.4	1.7	2.0	2.2
Bahrain	na	na	na	na	na	na	na	na
Egypt	106.5	109.5	112.8	117.3	122.2	126.8	131.9	136.3
Iran	**178.0**	**198.0**	**199.2**	**197.9**	**207.3**	**218.1**	**226.6**	**234.4**
Iraq	60.0	70.0	80.0	90.0	100.0	115.0	129.4	145.5
Israel	55.5	58.3	61.2	64.2	67.4	70.8	73.3	75.9
Kuwait	49.3	52.0	53.0	55.0	59.0	62.0	65.7	69.7
Libya	26.9	28.8	30.8	32.9	35.2	37.7	40.3	43.1
Nigeria	23.0	28.0	30.0	35.0	43.0	50.0	55.0	61.0
Oman	na	na	na	na	na	na	na	na
Qatar	17.5	19.7	21.3	23.4	25.5	28.3	31.1	34.9
Saudi Arabia	185.9	193.7	206.3	224.9	241.7	256.2	270.0	285.0
South Africa	246.3	256.0	245.8	248.3	253.4	261.5	269.3	276.9
UAE	71.9	77.2	76.5	80.0	85.0	92.0	98.9	105.3
BMI universe	1,058.2	1,131.5	1,158.4	1,212.7	1,286.0	1,367.4	1,443.3	1,522.5

e/f = BMI estimate/forecast; na = not available. Source: BP Statistical Review of World Energy, June 2009; BMI

BMI suggests that MEA hydro-electric power generation amounted to 37.2TWh in 2009, or 2.94% of regional electricity generation. By the end of the forecast period, we see hydro power having 3.21% of the electricity market, with generation at 53.2TWh. Iran's estimated 12TWh of hydro generation in 2009 is forecast to reach 18TWh by 2014, with its share of the MEA hydro market rising from 34.9% to 36.9% over the period.

In terms of PED, the MEA region in 2008 consumed 969.5mn toe, according to BP data. The **BMI** figure for 2009 is 743.2mn toe, implying year-on-year (y-o-y) growth of just 1.1%. The regional preference is

© Business Monitor International Ltd

for oil, which accounted for 45.6% of 2008 regional PED. Next in line is gas, with a 39.2% market share. Coal takes a 12.3% share of the regional energy pie, with nuclear accounting for 0.3% and hydro-electric energy representing 2.6% of regional demand.

For Iran, gas was the dominant fuel in 2008, accounting for 55.1% of PED, followed by oil at 43.3% and hydro with a 0.9% share of PED. Regional energy demand is forecast to reach 929.8mn toe by 2014, representing 25.1% growth over the period since 2008. Iran's estimated 2009 market share of 25.83% is set to reach 25.97% by 2014.

Table: Middle East And Africa Primary Energy Demand, 2007-2014 (mn toe)

Country	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Algeria	35.6	37.6	38.0	39.5	41.3	43.5	45.5	48.0
Angola	na	na	na	na	na	na	na	na
Bahrain	na	na	na	na	na	na	na	na
Egypt	69.6	74.3	76.5	79.6	82.8	86.5	90.8	94.0
Iran	**188.4**	**192.1**	**192.0**	**201.6**	**211.7**	**224.4**	**233.4**	**241.5**
Iraq	na	na	na	na	na	na	na	na
Israel	na	na	na	na	na	na	na	na
Kuwait	24.5	26.8	27.5	30.0	32.3	33.5	35.8	38.0
Libya	na	na	na	na	na	na	na	na
Nigeria	na	na	na	na	na	na	na	na
Oman	na	na	na	na	na	na	na	na
Qatar	21.7	22.5	23.7	25.8	28.2	31.0	33.6	37.5
Saudi Arabia	163.1	174.5	183.2	188.7	198.2	208.1	218.5	229.4
South Africa	127.1	132.3	127.0	128.3	132.1	135.0	138.4	142.6
UAE	65.0	75.2	75.3	78.0	82.0	88.0	93.3	98.9
BMI universe	695.0	735.3	743.2	771.5	808.5	850.0	889.3	929.8

e/f = BMI estimate/forecast; na = not available. Source: BP Statistical Review of World Energy, June 2009; BMI

Thanks to the likes of Qatar, Iran, the UAE, Algeria, Egypt and Saudi Arabia, the MEA region is significant both as a supplier and a consumer of natural gas. It is a major and growing feedstock for power generation. In 2008, the region consumed 422bn cubic metres (bcm) of gas (BP data) and, according to **BMI** estimates, demand in 2009 was 434.9bcm (+5.0% over 2008). By 2014, we expect the region to be consuming 621.5bcm of gas. Iran's estimated 2009 market share of 27.59% is forecast to fall to 24.48% by 2014. Gas exports by Iran are expected to reach 58bcm by the end of the forecast period.

The MEA region is a net exporter of gas, thanks to Qatar, the UAE, Algeria, Nigeria and Egypt. The region in 2009 exported an estimated 218bcm (**BMI** data), but could be exporting 410bcm of gas in 2014.

Table: Middle East And Africa Gas Consumption, 2007-2014 (bcm)

Country	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Algeria	24.3	25.4	26.1	27.5	28.9	30.5	32.1	33.7
Angola	2.5	3.5	4.0	5.0	6.0	7.0	8.1	9.3
Bahrain	9.0	9.2	10.0	10.5	10.7	12.0	12.6	13.2
Egypt	38.4	40.9	42.5	44.6	46.9	49.0	51.4	53.5
Iran	**113.0**	**117.6**	**120.0**	**125.0**	**132.0**	**140.0**	**146.3**	**152.2**
Iraq	4.0	5.0	5.0	5.0	5.5	6.0	6.6	7.3
Israel	6.0	7.0	8.0	8.0	9.0	10.0	10.5	11.0
Kuwait	12.1	12.8	16.0	18.0	21.0	23.0	25.3	27.3
Libya	6.3	6.5	6.7	6.9	7.1	7.3	7.6	7.9
Nigeria	11.0	13.0	18.0	25.0	35.0	45.0	50.0	53.0
Oman	12.0	12.6	13.0	13.7	14.5	16.0	16.5	17.0
Qatar	19.7	19.8	21.4	23.5	25.6	28.5	31.3	35.1
Saudi Arabia	74.4	78.1	81.2	81.6	87.2	95.4	102.2	110.1
South Africa	4.0	4.7	5.0	7.0	9.0	10.0	10.5	12.0
UAE	49.3	58.1	58.0	60.0	64.2	69.0	74.2	79.0
BMI universe	386.0	414.2	434.9	461.4	502.6	548.6	585.2	621.5

e/f = BMI estimate/forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Coal consumption for 2008 is estimated by BP at 119.7mn toe, which represents approximately 180mn tonnes of the fuel. By 2014, we expect to see the **BMI** MEA universe consuming 112.2mn toe, or 168.3mn tonnes of coal (+11.8% from the 2009 level). Iran's share of estimated 2009 regional consumption was 1.10% and is forecast to ease to 0.89% by 2014.

Table: Middle East And Africa Coal Consumption, 2007-2014 (mn toe)

Country	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Algeria	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Angola	na	na	na	na	na	na	na	na
Bahrain	na	na	na	na	na	na	na	na
Egypt	0.9	1.0	1.1	1.1	1.1	1.3	1.3	1.3
Iran	**1.1**	**1.1**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Iraq	na	na	na	na	na	na	na	na
Israel	na	na	na	na	na	na	na	na
Kuwait	na	na	na	na	na	na	na	na
Libya	na	na	na	na	na	na	na	na
Nigeria	na	na	na	na	na	na	na	na
Oman	na	na	na	na	na	na	na	na
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	97.7	102.8	97.5	98.5	100.9	103.0	106.0	109.2
UAE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BMI universe	100.4	105.6	100.4	101.2	103.7	105.9	109.0	112.2

e/f = BMI estimate/forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

© Business Monitor International Ltd

Nuclear energy demand, put at 13.3TWh in 2008 by the 2008 BP survey, accounted for just 1.0% of the MEA power market. By 2014, **BMI** sees nuclear consumption reaching 23.5TWh, representing growth since 2009 of 80.8%. There is not the same potential in the region for nuclear power that is seen in the oil and gas segments, thanks largely to political restrictions and plentiful hydrocarbons. Iran's nuclear demand is forecast to reach 10TWh by 2014, with its share of the MEA nuclear market rising to 42.55%. Given the hostile reaction of the international community to Iran's nuclear ambitions, and the strong possibility of fresh and tougher sanctions, there is a question mark over the timing and scale of Iranian nuclear capacity introductions.

Table: Middle East And Africa Nuclear Energy Consumption, 2007-2014 (TWh)

Country	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Algeria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Angola	na	na	na	na	na	na	na	na
Bahrain	na	na	na	na	na	na	na	na
Egypt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iran	**0.0**	**0.0**	**0.0**	**5.0**	**6.0**	**6.0**	**8.0**	**10.0**
Iraq	na	na	na	na	na	na	na	na
Israel	na	na	na	na	na	na	na	na
Kuwait	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	na	na	na	na	na	na	na	na
Nigeria	na	na	na	na	na	na	na	na
Oman	na	na	na	na	na	na	na	na
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	13.2	13.3	13.0	13.3	13.5	13.5	13.5	13.5
UAE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BMI universe	13.2	13.3	13.0	18.3	19.5	19.5	21.5	23.5

e/f = BMI estimate/forecast; na = not available. Source: BP Statistical Review of World Energy, June 2009; BMI

© Business Monitor International Ltd

Market Overview

Primary Energy Demand

Iran is controversially developing a nuclear energy capability to reduce its increasing dependence on natural gas as a power station fuel. The first of several planned reactors may reach full design capacity during 2010. Pressure was mounting in late 2009 for tougher sanctions to be introduced by the international community in an effort to check the advance of Iran's nuclear programme, which is believed by many to have military applications.

The country has vast oil and gas riches, which provide the basis for energy self-sufficiency. It also has some hydro-electric resources. The country wishes to maximise oil exports and develop a major gas export capability. It is also an exporter of electricity. For Iran, gas was the dominant fuel in 2008, accounting for 55.1% of PED, followed by oil at 43.3% and hydro with a 0.9% share of PED. Regional energy demand is forecast to reach 929.8mn toe by 2014, representing 25.1% growth over the period since 2008. Iran's estimated 2009 market share of 25.83% is set to reach 25.97% by 2014.

Despite the fact that domestic gas demand is growing rapidly, Iran has the potential to become a significant exporter due to its large reserves, estimated at 29,610bcm. Gas already accounts for more than half of Iran's total energy consumption, and the government is investing billions of dollars in order to increase this share. The price of natural gas to residential and industrial consumers is state controlled at extremely low prices, encouraging rapid consumption growth and replacement of fuel oil, kerosene and liquefied petroleum gas (LPG) demand.

Our projections suggest that by 2014 Iran will be dependent on gas for 57% of PED, with the share of oil down to a forecast 39%. Hydro, at this point, should have claimed nearly a 2% market share, with nuclear becoming part of the energy mix, but with less than 1% of the market.

According to EIA estimates, CO_2 emissions from fossil fuels per capita in 2006 were 7.25 tonnes per annum (tpa). **BMI** estimates, based on a higher proportion of thermal power generation, suggest an increase to 8.42 tpa in 2009.

Power Generation

The country's share of MEA regional electricity generation in 2009 was an estimated 16.73%. By the end of the forecast period, we expect the country to account for 16.19% of regional power generation, and to remain a net exporter of electricity to neighbouring states. Electricity generation in Iran is largely based on gas, oil and hydro power. Gas provides 76% and oil almost 18% of generated electricity. Hydro accounts for 6% of generation. Renewables do not yet make a meaningful contribution.

© Business Monitor International Ltd

According to **BMI** calculations, by of end-2009 Iran had installed power generation capacity of around 51GW. In 2009, the country generated an estimated 212TWh and consumed an estimated 176TWh of electricity. Since 2000, electricity generation has risen by 70% and consumption by more than 60%. The highly subsidised price of gas for the power sector has resulted in a large share of steam-cycle and single-cycle gas turbines in the generation mix, with a slower incorporation of combined-cycle gas turbines and hydro-power technologies.

Iran's thermal generation in 2009 was an estimated 199TWh, or 17.20% of the regional total. By 2014, the country is expected to account for 15.40% of regional thermal generation. Iran in 2009 had an estimated 32.2% share of the regional hydro-electric power generation segment.

In March 2009, Iran's energy minister said the country's nuclear power plant at Bushehr would begin operating by the end of 2009. Speaking to reporters at the World Water Forum in Istanbul, Parviz Fattah said the Bushehr nuclear plant was to begin producing at about half capacity (500MW) by late August. He said it should reach its full 1GW capacity by the end of March 2010. Testing was taking place in early December 2009, suggesting that the site could become operational early in 2010.

It became apparent in late September 2009 that the nuclear programme was more advanced than expected, causing renewed friction between Tehran and the West. It is claimed that Iran has concealed a partially built second uranium enrichment plant, in breach of International Atomic Energy Authority (IAEA) rules. Iran told the UN about the plant at the end of September, saying it was not yet operational and would provide only nuclear energy. Tehran had previously acknowledged it has one enrichment plant, at Natanz.

India is assessing plans to build a 6GW gas-fired power plant in Iran. This will be connected to India via a 1,500km high voltage transmission line. According to August 2009 reports in the *Hindustan Times*, Indian power company **NTPC** and Indian transmission company **Power Grid Corporation of India Ltd** (PGCIL) are currently assessing the project, which is estimated to cost US$10bn. NTPC may be enrolled to construct and operate the plant, either through a subsidiary or in a joint venture with Iran. Initial discussions have been held on the project and the power ministry is currently looking into the project, according to NTPC chairman, R.S. Sharma, as quoted by the *Hindustan Times*.

The power plant would be located in Iran, and the majority of electricity generated may then be exported to India. PGCIL had been asked to assess the financing and technical feasibility of the project and has come up with two options for transmitting the power, according to the company's chairman, S.K. Chaturvedi. The first is an overland transmission line which will link the two countries via Pakistan. This option is estimated to cost US$4.12bn. The second option is a 1,000km sub-sea connection, thus avoiding Pakistan. However, this option would cost at least twice as much and has therefore been cited as

© Business Monitor International Ltd

uneconomical. According to Reuters, quoting Chaturvedi, the company has submitted its feasibility study to the power ministry.

Power Consumption

Electricity consumption in Iran has been growing at a steady rate of about 8% per year in the last few decades. Iran's estimated 12TWh of hydro-electric demand in 2009 is forecast to reach 18TWh by 2014, with its share of the MEA hydro market rising from 34.9% to 36.9%. Iran's nuclear demand is forecast to reach 10TWh by 2014, with its share of the MEA nuclear market rising to 42.55%. Overall 2009 electricity demand in Iran was an estimated 17TWh and forecast to rise to 218TWh by 2014. The industrial segment is the largest user of power, accounting for 34% of all electricity consumed. Residential customers consume 32%, with commerce having an 18% share of the power market and agriculture using 12% of Iran's electricity.

Iran trades electricity with Afghanistan (exports to the western part of the country), Armenia (exports and imports), Azerbaijan (exports and imports), Pakistan, Turkey and Turkmenistan (exports and imports). It has more recently begun to supply Iraq with power. In December 2004, a protocol was reached on synchronising the power grids of Iran, Azerbaijan and Russia, with 500MW being exchanged beginning 2006.

Regulation And Competition

Although the government is said to be considering privatisation, at present Iran's power sector is controlled by state-owned utility **Tavanir**. Power plant construction is handled by the **Iran Power Development Company** (IPDC), a wholly owned subsidiary of Tavanir. Eventually, Tavanir may be broken up as part of a privatisation package. In addition to power generation, Tavanir is also responsible for electrical transmission. Iran has three main power distribution networks and a government goal is to join these into one national grid. Currently, around 95% of Iran's rural population has access to electricity.

Iran has received several offers for investment in the form of loans and build-operate-transfer (BOT) contracts, but progress has been relatively slow – not aided by the challenging political climate that acts as a deterrent for foreign investors. BOT contracts allow the investing company to build and operate the generating facility for a period of 15-20 years, after which time the plant is turned over to the Energy Ministry. Negotiations have taken place with international energy firms on expansion plans for power plants at Bandar Abbas, Shaid Rajai, Alborz, Ramin and Kerman.

In June 2009, Iran's first BOT power plant became fully operational, when the last of six 159MW open-cycle gas turbine generating sets comprising the Chehelsotun power plant in South Isfahan were brought online. The 950MW gas-fired plant was developed by a 50:50 JV between the Iranian investment house

© Business Monitor International Ltd

IHAG and local power contractor **Mapna**. The first unit at the Chehelsotun plant was brought on line in 2005.

In addition to BOT plants, Iran has attempted to promote a build-own-operate (BOO) model for the 2GW Zanjan 1-4 independent power project (IPP). In September 2004, the BOO plan was dealt a setback due to a lack of bidders. Overall, Iran is planning 5.8GW of BOT projects and 7GW of BOO projects.

In June 2005, the World Bank was invited by the government of Iran to engage in a dialogue on reform of the power sector, as well as to identify areas of co-operation. In January 2006, a workshop was held in Tehran to discuss private sector participation in the power sector and the development of a power exchange. During this workshop, the World Bank presented international lessons learned and was further informed of the government's plans for power sector reform.

In July 2008, Iran's minister of energy announced that the country was in the final stages of privatising 10 power plants. During 2009, the Ministry aimed to have handed over 80 plants to the private sector as it seeks to reform the power industry and increase capacity. It is hoped that privatisation steps will help attract investment, increase efficiency and encourage the sector to compete in international markets and many other industries.

Pricing

The price of gas to the power sector is state controlled at extremely low prices, encouraging rapid consumption growth and replacement of fuel oil demand. The financial revenues and costs are consolidated at the level of Tavanir, which also plays a role in managing the sector's cash flow. Due to lack of cost recovery thanks to power selling prices well below purchase cost, Tavanir borrows from local banks to meet the cash flow requirements of the sector. These loans are guaranteed by the government. Tariff increases have to be approved by the government and many requests have been turned down.

Power Transmission

Tavanir is responsible for electricity transmission. Iran has three main power distribution networks: the interconnected network, which serves all of Iran except for remote eastern and southern areas using 440 kilovolt (kV) and 230kV transmission lines; the Khorassan network, which serves the eastern Khorossan province; and the Sistan and Baluchistan network, which serves the remote south eastern provinces of Sistan and Baluchistan. The government goal is to join these three networks into one national grid.

In December 2004 a protocol was reached on synchronising the power grids of Iran, Azerbaijan and Russia, with 500MW being exchanged beginning 2006. In August 2004 Turkmenistan had begun power exports to Iran via a new transmission line (Sarahs). This line added to previous power export capacity from Turkmenistan to Iran via the Balkanat-Gonbad line started in June. Another line is to be constructed.

© Business Monitor International Ltd

Business Environment

Middle East And Africa Power Business Environment Ratings

This quarter sees the latest update to the regional Business Environment Ratings, which incorporate more industry-specific elements and a more sophisticated approach to political and economic risk assessment. The ratings provide a detailed analysis of growth outlook and market conditions for the power industry.

MEA continues to comprise eight countries and the strength of electricity demand growth is a key positive factor, matched by the expansion of generating capacity. Power consumption growth for the period to 2014 ranges from 16% for South Africa to a more impressive 54% in Qatar. Saudi Arabia and Algeria are also set for high-level growth, reflecting in part the underlying macroeconomic trends. PED is expected to rise by 5% to 49% across the region. State involvement in the power industry is very high, with very little international company access to the region's key power markets. The regulatory framework has a long way to go, relative to other regions. The political and economic environment also varies dramatically. Unlike some other regions, it cannot be argued that the business environment is improving, as there is little privatisation activity.

Table: Middle East And Africa Power Business Environment Ratings

	Limits of potential returns			Risks to realisation of returns				
	Power sector	Country structure	*Limits*	Industry risks	Country risk	*Risks*	Rating	Rank
Qatar	49	85	*58*	50	66	*56*	57	1
UAE	49	70	*54*	55	74	*62*	56	2
Egypt	60	50	*58*	40	55	*45*	54	3
Iran	**70**	**38**	***62***	**10**	**52**	***25***	**51**	**4**
Saudi Arabia	61	38	*55*	15	63	*32*	48	5
South Africa	56	23	*47*	30	59	*40*	45	6
Kuwait	41	33	*39*	10	72	*32*	37	7
Algeria	40	28	*37*	10	52	*25*	33	8

Scores out of 100, with 100 the best. The Power Rating is the principal rating. It comprises two sub-ratings, 'Limits of potential returns' and 'Risks to realisation of returns', which have a 70% and 30% weighting, respectively. In turn, the 'Limits' rating comprises 'Power sector' and 'Country structure', 75% and 25% weightings, respectively. They are based on generation/capacity/demand/import dependence of power (Power) and the broader economic/ socio-demographic environment (Country). The 'Risks' rating comprises 'Industry risks' and 'Country risk', 65% and 35% weightings, respectively, and are based on a subjective evaluation of industry regulatory and competitive issues (Industry) and the industry's broader country risk exposure (Country), which is based on BMI's country risk ratings. The ratings structure is aligned across all Industries for which BMI provides business environment ratings, and is designed to enable clients to consider each rating individually or as a composite. Source: BMI

© Business Monitor International Ltd

Qatar is at the top and Algeria at the bottom of the updated business environment league table, with the former having only a one-point lead over its nearest rival UAE and the latter state having 33 points. Scores range from Algeria's 33 out of a possible 100 at the bottom to Qatar's more impressive 57 at the top, although this is a pretty unexceptional overall tally. The UAE may have the long-term potential to challenge Qatar for regional leadership, although the latter's gas-based energy wealth could keep it in the top slot for the foreseeable future. Iran may find it increasingly hard to keep Saudi Arabia at bay, if its risk profile deteriorates further. Algeria seems destined to flounder in the wake of Kuwait at the bottom of the league table.

Iran's Power Ratings

Iran is still ranked fourth in **BMI**'s updated Power Business Environment rating. This reflects its market size and relatively high proportion of renewables (hydro-power) use. The power sector is not competitive, with no appreciable progress towards privatisation. The regulatory environment is unattractive and the risk outlook is suffering thanks to the controversy over the country's nuclear energy programme. We see scope for a reduced score and a drop down the rankings during the next few quarters.

Limits Of Potential Returns

Power Sector

On the basis of power data alone, Iran is ranked first in the region, ahead even of Saudi Arabia. This reflects the top-ranked installed generating capacity and PED, second highest electricity generation and the second highest score for the percentage of renewables (hydro-power) in the power mix.

Country Structure

Influencing Iran's first place ahead of Egypt and Qatar in the 'Limits to Potential Returns' section is its largely unexceptional country structure, ranked equal fourth alongside Saudi Arabia. Growth in GDP per capita is the third highest in the region, offsetting the low score for population growth, and the state's extensive ownership of the power industry, with limited non-state competition.

Risks To Realisation Of Returns

Industry Risks

Iran has the region's equal lowest score and position in the 'Risks to Realisation of Potential Returns' section of our ratings, alongside Algeria. Its joint-lowest score for 'Industry Risks' with Algeria and Kuwait is due to the lack of progress in privatisation that exacerbates an unimpressive showing for market deregulation.

Country Risk

Its broader 'Country Risk' environment is unattractive for the region, sharing last place with Algeria.

Physical infrastructure and long-term policy continuity are the strongest suits, but are still far from perfect. The score for long-term economic growth risk is moderate, but Iran is let down by its chronic lack of openness and the legal framework, which raise the operational risks for private companies.

Legal Framework

The Iranian legal system is very complicated. It has its historical foundations in Western systems, and provides separate courts for civil and criminal hearings, plus higher and lower courts according to the value or seriousness of the case. However, in addition to these courts there are clerical tribunals, revolutionary tribunals and the Court of Administrative Justice. Furthermore, the Iranian legal system is firmly based on shari'a law – as it has been since the 1979 Revolution – with all judges and most members of the ruling clergy certified in Islamic Law.

Clerical tribunals, which function independently of the regular judicial framework, hear cases against the clergy and are accountable only to the supreme leader. The revolutionary tribunals, on the other hand, deal with crimes against national security, narcotics smuggling and acts that undermine the Islamic state. Decisions rendered in these courts are final and cannot be appealed. The Court of Administrative Justice hears complaints against government officials, organs and statutes.

A complicated and poorly enforced commercial legal code undermines the effectiveness of the Iranian judicial system. The supreme leader appoints the head of the judiciary, who in turn appoints the head of the Iran's Supreme Court and the chief public prosecutor. Though nominally independent, political influence and interference with the administration of justice are rife, and the judiciary does not enjoy the independence theoretically accorded to it by constitutional provisions. Lower court judges are often pressured to investigate cases by senior officials with business or political interests to pursue. Safeguards for defence against unfair trial are minimal, and conservative clerics still control the main levels of power in the judiciary. In addition, the system suffers from structural inadequacies, which can result in irregular trial procedures. Resorting to the court system seldom leads to speedy dispute resolution, and written contracts are only rarely of any use in investment disputes. Many foreign firms instead attempt to use connections with Iranian partners to ensure their interests are upheld.

Stoning and hanging are accepted means of execution, and can be applied to charges of homosexuality. Children are still executed, despite Iran signing up to international treaties that prohibit it. One recent case caused an outcry from Human Rights Watch and Amnesty International when a man was hanged for raping three other young men, although his alleged accusers withdrew their charges before he was convicted.

Foreigners nominally enjoy the same rights as nationals with regard to the leasing of houses, apartments and offices, whether for dwelling or business purposes. For instance, in case of foreign investment, the

Iranian government theoretically guarantees fair compensation when foreign investors' property is expropriated, and extends its protection to all foreign capital imported into the country.

However, in reality, foreigners do not have the same rights as Iranian nationals. Most foreign firms have bad experiences when disputing a contract, and written agreements offer very little protection for the contracting party. Indeed, according to the Heritage Foundation's International Index of Economic Freedom, Iran only scores 10 out of 100 in the property rights category, the worst score of any country in the Middle East region. Often, finding an influential local business partner that also enjoys substantial political patronage is the more effective way to protect contracts.

Iran has its own trademark and patent law, and is a party to the Paris Convention for Protection of Industrial Property, which safeguards non-Iranians' rights to intellectual property. Iran also joined the World Intellectual Property Organisation Convention in 2002. However, Iran is not a member of the Berne Convention for the Protection of Literary and Artistic Works. Since Iran only has observer status with the WTO – due primarily to vehement US opposition – it does not comply with the TRIPS agreements. However, efforts are under way to modernise Iran's IPR regime, with the government planning to remove the defects in Iran's IPR system as part of the country's fourth Five Year Plan (2005-2009).

Iran scored a dismal 2.3 in Transparency International's 2008 Corruption Perception Index, and ranked 141st out of 180 countries measured. Worryingly, the Islamic Republic's score in the index has fallen every year since 2002, when it was 3.0, indicating a growing level of corruption in the country. With newspapers and news agencies tightly controlled and censored, there is little information available from inside the country on the level of corruption; independent estimates, such as Transparency International's CPI, remain the best indicator.

Infrastructure

Iran has a well-developed transport system that is reliable, cheap and extensive. There is 8,367km of railway, most single tracked; and 172,927km of roads, of which 73% are paved. There are 331 airports in the country, although the majority (61%) have unpaved runways.

Although road surfaces are generally excellent and petrol is extremely cheap thanks to subsidies, travelling by road can also be extremely dangerous. To all appearances, there are no road rules and the country has one of the highest rates of road accidents in the world. In addition, the authorities sometimes mount informal roadblocks in cities and highways, which can be problematic for foreign travellers. It is advisable to carry ID at all times in case of such an incident. With a number of bus companies offering competitive services, transport by bus is cheap, although it can be quite slow and unsafe, mainly due to poor driving by other road users. The train network is extensive – covering most of Iran's major cities – and offers efficient services that are safer and more comfortable than bus travel.

© Business Monitor International Ltd

Air travel is generally less reliable and frequent than any other form of transport and comes with an added risk, as most of the aircraft flown on domestic routes in Iran are ageing. Indeed, Mahan Air had its UK and EU operating licence suspended in 2007 due to safety concerns, which highlights the risk of air travel. The ban was rescinded in 2008.

Iran has a number of ports, although many areas of the Caspian Sea and Persian Gulf are highly sensitive politically. The waters around the islands of Abu Musa and the Tunbs in the southern Persian Gulf are particularly sensitive and are militarised. In recent years there have been a number of cases of tourists being arrested and imprisoned for entering these waters, and individuals are advised by the UK Foreign and Commonwealth Office (FCO) not to sail into waters around these islands without express permission from the Iranian authorities, and not to dock at all.

The communications infrastructure is rapidly improving, thanks to investment and privatisation plans. Iran now has one of the most developed fixed-line networks in the region, as the government continues to modernise the sector by increasing the volume of the urban service, and bringing services to several thousand villages not presently connected. Main line availability has more than doubled to 19mn lines since 1995. In addition, mobile telecommunications have increased dramatically, serving some 45.9mn subscribers by the end of 2008. The internet is becoming more and more prevalent, as the number of private internet service providers (ISPs) grows rapidly. In addition, with more than 21mn internet users, over 1,500 internet cafés have been set up – mainly in Tehran – to respond to growing demand, especially as the government has banned residential ADSL services with a speed higher than 128 kbit/s. Although the speed limitation only applies to houses and not offices, Iran has one of the lowest broadband penetration rates in the region, at an estimated 1.4% in 2008.

Labour Force

The working population is estimated at nearly 28mn, out of a total population approaching 75mn. Unemployment was officially at 12.5% of the active population in Q109, although there is considerable anecdotal evidence to suggest that official data underestimate the true unemployment rate. Around 30% of the workforce is employed in agriculture, 25% in industry and 45% in services. In recent years, robust oil and gas income from high oil prices drove economic expansion, resulting in employment growth. However, economic growth is not matching the rise of new entrants to the labour market, averaging 750,000 a year, and job creation in Iran remains a key challenge for the authorities. On a positive note, the World Bank has noted a phenomenal leap in the participation of women in the labour force in Iran, which has risen from 33% to 41% in the last five years.

The government faces a tough task in reforming Iran's highly convoluted raft of labour legislation, which remains a distinct problem for running businesses in the country. In some respects, labour laws are beneficial to business: strikes are not permitted, and workers are not allowed to bargain collectively. Sometimes employers have demanded 'blank contracts' that workers are required to sign in order to get

© Business Monitor International Ltd

jobs, with the conditions subsequently filled in by the employer. However, the labour market operates under restrictive regulations that hinder employment and productivity growth. The non-salary cost of employing a worker is high, and dismissing a redundant employee is costly.

Furthermore, regulations on increasing or contracting the number of work hours are very inflexible. Firing a worker requires the approval of the Islamic Labour Council or the Labour Discretionary Board. Hiring and firing costs are prohibitive, with the sum of social security payments and payroll taxes as a percentage of the worker's salary high by international standards. According to the World Bank's *Doing Business* 2010 report, the firing cost is currently equal to 87 weeks of wages. In the rigidity of employment index (which measures the average of three sub-indexes – a difficulty of hiring index, a rigidity of hours index, and a difficulty of firing index), Iran scores 29 out of 100, against a Middle East and North Africa average of 24.5 (higher scores indicate a more rigid labour market). Overall, economic reform is having an effect in the workplace. Workers in establishments with fewer than 10 employees and workers in the carpet industry have had the protection of the labour law removed in recent years, in order to make the companies more competitive.

The government maintains a ban on independent trade unions. The labour code grants workers the right to form their own organisation: however, the state-controlled Workers' House is the only authorised labour organisation; and a dissident labour leader who runs a union grouping of bus drivers was recently jailed for 'distributing statements against the system'. There are signs that the Islamic Republic is developing a more restive workforce. In 2007 thousands of deprived workers gathered in Tehran to protest about their unpaid wages and the regime's anti-labour law, and similar protests were organised in other cities such as Shiraz, Mashhad and Semnan. Work stoppages are frequent in the public sector, often precipitated by the failure to pay civil servants.

Foreign Investment Policy

The Islamic Republic is facing a significant challenge to its investment climate, with economic sanctions being imposed under the auspices of the UN and the US, a consequence of growing international pressure over Iran's alleged uranium enrichment programme.

While President Ahmadinejad has not sought to take a substantially tougher line on foreign investors, the heightened regional tensions that have accompanied his term in office have proved inclement for attracting more foreign direct investment (FDI). Still, the Iranian president has also committed to a five-year development plan, which supports structural economic reform. The truth is that, despite some improvements in the early part of the previous 2000-2004 five-year plan, which saw the introduction of a new FDI law, much of the impetus has drained since 2003, as the political battle between conservatives and the weakened band of reformists intensified. With arbitrary political decisions the order of the day, Iran is unlikely to see a substantial improvement in FDI flows.

© Business Monitor International Ltd

The key oil and gas sector has seen relatively little interest from foreign companies on account of the poor terms offered by the so-called 'buy back' contracts, a formula devised to get around Iran's historical antipathy to foreign equity ownership of its hydrocarbons. These contracts are arrangements in which the contractor funds all investments and receives remuneration from the National Iranian Oil Company (NIOC) in the form of an allocated production share, then transfers operation of the field to NIOC after the contract is completed. This policy could prove harmful for Iran as, according to Oil Minister Kazem Vaziri Hamaneh, the country needs an annual investment of around US$20bn in the oil industry. In addition, US pressure stemming from Washington's suspicions over Iran's nuclear programme has forced all Western oil majors with interests in the country to announce they will not be making any new investments in the country. The main sources of foreign investment are Germany, Italy, China and Turkey, with petrochemicals and oil and gas the key sectors.

Bureaucracy is widespread in Iran, and one area where investors find it difficult to gain access is the traditional marketplace. This is centred on the bazaars, where a number of merchant families (Bazaaris) maintain a strong hold. On top of this, prominent internal oil companies have in the past been found guilty of maintaining 'slush funds' to pay to local businessmen. Meanwhile, excessive regulation and controls can impose considerable costs on businesses. In addition, Iran's private sector remains hamstrung by extensive red tape and other market distortions.

Tax Regime

The tax regime has undergone substantial reform, with a sharp reduction in the maximum corporate tax rate to 25%. Resident companies enjoy a corporate tax rate of 10% on taxable income, with the remainder taxed according to a progressive scale ranging from 12-54% according to their income. The authorities are planning to curb tax exemptions.

The maximum corporate tax rate is now capped at 25%, down from a previous cap of 54%. According to the tax code, the taxable income of companies or non-resident persons operating in sectors including construction, technical installations, transport, preparation of construction and installation drawings, surveying, supervising, and technical calculations is limited to just 12%. For companies quoted on the Tehran Stock Exchange, there is a further 10% rebate on taxes.

The top rate of income tax is 54%, on a sliding scale going down to 12%. Various ceilings within these bands have been raised in recent years. VAT does not exist. Foreign contractors sub-contracting part of their project to Iranian firms must pay a withholding tax of 2.5% from payments to the Iranian sub-contractor.

Security Risk

There remains a small risk of terrorist attacks, although these have been sporadic in recent years. Foreigners may also be targeted due to widespread anti-Western sentiment, which is exacerbated by government statements: Tehran has blamed the US and/or UK governments for involvement in the February 2007 bombing that killed Iranian military forces in Zahedan in the south east, and in the 2005/2006 bombings in Ahvaz/Khuzestan in the south west. In addition, the government has accused the US and UK of inciting the post-presidential election unrest in June 2009. As a result, foreigners are advised by the UK Foreign and Commonwealth Office to maintain an increased level of vigilance and exercise good security practice.

A further threat comes from political demonstrations and public gatherings that are regularly organised to protest against the policies of Western governments, in particular those of the US, UK and Israel. In the last three years, there have been sporadic violent attacks on, and violent demonstrations outside, the British Embassy compound in Tehran, coinciding with moments of tension in political relations between the UK and Iran, and with events elsewhere in the region.

In April 2007, demonstrators blocked access to the embassy and threw bricks at the premises. In addition, there is a risk of a revival in the widespread anti-government demonstrations that took place following June 2009's presidential polls. The government is likely to continue to use heavy-handed tactics to break up any future demonstrations. Foreigners are advised to follow news reports and avoid public gatherings and demonstrations.

One area in which the security risk is high is Iran's borders with other countries in the Middle East, most notably the Iran/Afghanistan border and the Iran/Iraq border, and the UK government advises citizens not to travel within 100km of either border. The Pakistan border area is also insecure and is notorious for its banditry, as it is the main route for drug-traffickers from Afghanistan and Pakistan. There have been incidents of kidnapping of foreigners by armed gangs in south east Iran near Pakistan border. Local insurgent groups have also contributed to insecurity in the area, reportedly carrying out a series of violent attacks in 2006 that left a large number of civilians dead.

Major crime is generally not a problem for foreigners in Iran; and street crime in Tehran, as in other Iranian cities, is low. That said, incidents of robbery against foreigners are not unknown. There have been a number of robberies carried out by men in unmarked cars and on motorcycles, who drive up alongside their victims and snatch items. In addition, there have been a number of attempted robberies by bogus policemen, usually in civilian clothing, and foreigners are advised not to carry large amounts of hard currency or any important documents with them.

© Business Monitor International Ltd

Industry Forecast Scenario

Iran's Power Outlook

BMI is now forecasting real GDP growth for Iran averaging 3.46% per annum between 2010 and 2014, with the 2009 growth assumption being 1.60%. The population is expected to expand from 74.2mn to 78.5mn over the period, with GDP per capita and electricity consumption per capita forecast to increase 84% and 17%, respectively. The country's power consumption is expected to increase from an estimated 176TWh in 2009 to 218TWh by the end of the forecast period, providing export potential rising from an estimated 35TWh in 2009 to 51TWh in 2014, assuming 4.5% annual growth in electricity generation. Losses during power transmission and distribution mean that the actual level of Iranian power exports is well below the theoretical surplus, but is set to rise.

Generation

Iran has been building significant new generation capacity, with the goal of adding 18GW by 2010. As a result of significant state investment in this sector, a number of new power plants (mainly hydro-electric and combined-cycle) have come online in recent years. Over the period covered by the government's fourth Five-Year Development Plan (FYDP), a total of US$34bn is required by the sector – half of which will be dedicated to generation. Conventional thermal sources are expected to remain the dominant fuel for electricity generation in the coming years, with many power projects under construction or planned that will use gas. Nuclear generation looks set to play a role from 2010.

According to **BMI** calculations, Iran's installed capacity reached around 51GW at the end of 2009 and is forecast to increase to almost 65GW by 2014.

Gross Iranian power generation in 2009 was an estimated 212TWh, having grown 2.5% over the 2008 level. **BMI** is forecasting an average 4.5% annual increase to 269TWh by 2014. Iran's thermal generation in 2009 was an estimated 199TWh, or 17.20% of the regional total. By 2014, the country is expected to account for 15.40% of regional thermal generation.

Gas-Fired

Overall natural gas demand is forecast to rise from an estimated 120bcm in 2009 to 152bcm by 2014, with the proportion used in power generation rising to a forecast 33%. We are forecasting gas use in power generation climbing to 50bcm, with gas-fired power generation reaching 204TWh – representing 76% of total generation by the end of the forecast period. New gas-fired projects include two 1.04GW combined cycle plants in the south, a 1.3GW combined cycle plant at Arak, a 1GW facility in Bandar Abbas, and a 1GW combined-cycle plant being built by the **Tehran Regional Electricity Company** in

© Business Monitor International Ltd

Qom. In January 2006, it was reported that Iran is to build a 1GW gas-fired power plant in the western province of Khorramabad.

India is assessing plans to build a 6GW gas-fired power plant in Iran. This will be connected to India via a 1,500km high voltage transmission line. According to August 2009 reports in the *Hindustan Times*, Indian power company NTPC and Indian transmission company **PGCIL** is assessing the project, which is estimated to cost US$10bn. The power plant would be located in Iran, and the majority of electricity generated may then be exported to India.

Oil-Fired

Oil will remain a relatively significant part of the Iranian power generation mix, although its market share is set to fall from 18% to around 11% during the forecast period as the focus remains on gas and, eventually, nuclear power. We believe there will be no more than 30TWh of oil-fired power generation by the end of the forecast period.

Coal-Fired

Coal will not feature as part of the Iranian power generation mix for the foreseeable future.

Nuclear Energy

The stand-off between the UN and Iran has not halted the Iranian nuclear energy programme. Uranium enrichment continues apace, with the country adding more centrifuges as the programme is accelerated. Iran's current effort includes several research sites, a uranium mine, a nuclear reactor and uranium processing facilities that include a uranium enrichment plant. The Iranian government asserts that the programme's goal is to develop nuclear power plants, and that it plans to use them to provide 6GW of capacity by 2010.

In March 2009, Iran's energy minister said the country's nuclear power plant at Bushehr would begin operating by the end of the year. Speaking to reporters at the World Water Forum in Istanbul, Parviz Fattah said the Bushehr nuclear plant will begin producing at about half capacity (500MW) by late August. He said it should reach its full 1GW capacity by the end of March 2010.

It became apparent in late September 2009 that the nuclear programme was more advanced than expected, causing renewed friction between Tehran and the West. It is claimed that Iran has concealed a partially built second uranium enrichment plant, in breach of IAEA rules. Iran told the UN about the plant at the end of September, saying it was not yet operational and would provide only nuclear energy. Tehran had previously acknowledged it has one enrichment plant, at Natanz.

© Business Monitor International Ltd

December 2008 press reports suggested that the Iranian authorities are planning to build two new nuclear power stations instead of completing a second unit at Bushehr, with news agencies quoting a civilian nuclear official. Iran had previously planned to build at least another two units at the plant. According to the press coverage, Iran has now decided to build two new plants, each with 1GW capacity, instead of completing the second unit at Bushehr. However, the new sites would be located close to Bushehr.

BMI is assuming nuclear generation will reach 10.5TWh by 2014, accounting for 3.9% of overall power supply. Given the hostile reaction of the international community to Iran's nuclear ambitions, and the strong possibility of fresh and tougher sanctions, there is a question mark over the timing and scale of Iranian nuclear capacity introductions.

Hydro-Electric

The largest hydro-power projects are the 2GW Karun 3 plant, the 2GW Godar-e Landar facility, and a 1GW station in Upper Gorvand. In July 2006, Abbas Aliabadi, director of **Iran Power and Water Resources Development Company**, announced that Iran plans to add 6.4GW of hydro-electric power generating capacity over the following five years. **BMI** is predicting 18TWh of hydro-power generation by 2014, accounting for a potential 6.7% of total generation.

Renewable Energy

Iran is believed to have the potential to produce some 6.5GW of electricity with wind energy. It also has solar power potential, but non-hydro renewables do not currently form a major part of Iranian energy policy.

The director of the solar energy division of the Iranian Renewable Energies Organization (IREO) in January 2009 stated that Iran's first solar power plant was inaugurated in Shiraz on January 10 2009. The plant has a capacity of 250KW, which can be extended to 500KW by establishing larger solar panels.

Power Costs

According to **BMI** estimates, the cost of power generation in Iran will have amounted to US$18.75bn in 2009, although the extensive subsidisation of gas prices makes the total particularly hard to calculate. We are forecasting that generating costs will rise from US$23.57bn to US$29.34bn between 2010 and 2014, with rising gas usage, an increase in hydro and nuclear generation and higher world gas prices. Gas is set to remain the largest component part of power generation costs. Iranian power prices should increase steadily over the next few years, to close in on world market levels. Power market reform is being considered but, with no firm timetable, subsidies will continue. We are assuming that residential and industrial power prices will track underlying generating costs.

© Business Monitor International Ltd

Table: Iran's Power Costs, 2007-2014 (US$mn, unless otherwise stated)

	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Cost of power generation	18,835	26,585	18,752	23,574	25,047	27,356	28,411	29,341
Power generation cost per TWh	96.1	128.9	88.7	107.2	108.0	111.8	110.5	109.2
Power generation cost per kWh, US$	0.096	0.129	0.089	0.107	0.108	0.112	0.111	0.109
Cost of power imports/(exports)	(2,660)	(4,318)	(3,123)	(3,878)	(4,294)	(4,878)	(5,216)	(5,530)
Overall power cost	16,175	22,266	15,629	19,695	20,753	22,477	23,194	23,811
Industrial power cost per kWh, US$	0.022	0.031	0.022	0.027	0.029	0.031	0.032	0.033
Residential power cost per kWh, US$	0.021	0.029	0.021	0.026	0.027	0.030	0.031	0.031

e/f = BMI estimate/forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Transmission

The government's current five-year investment plan for the power sector sees US$9.8bn spent on the transmission system and a further US$7.1bn ploughed into distribution. Iran has three main power distribution networks and the government goal is to join these into one national grid. Additional links into the power grids of neighbouring states are likely, in order to facilitate greater regional supply flexibility and accommodate Iranian power exports.

Further extending their energy co-operation, Iran and Russia have signed a letter of intent to accelerate the construction of shared power grids, both between them and regionally, according to a report from the Iranian News Agency.

According to the report, Iran's energy minister, Parviz Fattah, and Anatoly Chubais, head of Russian power grid monopoly **RAO Unified Energy System** (UES), agreed to seek further co-operation in the energy sector, specifically with exchanges of electric power between them and the CIS. The Iranian minister is quoted as saying that Iran is ready to connect to Russia's electricity grid and extend exchanges with Turkmenistan, Azerbaijan and Armenia.

Table: Iran's Power Sector, 2007-2014

	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
GDP, US$bn	310.8	374.3	372.9	436.2	498.4	572.4	648.8	724.5
Population, mn	72.4	73.3	74.2	75.1	75.9	76.8	77.7	78.5
GDP per capita, US$	4,290	5,106	5,026	5,809	6,564	7,455	8,355	9,225
Real GDP growth, %	8.10	1.70	1.60	3.40	3.70	3.70	3.46	3.10
Electricity generation, TWh	196.0	206.3	211.5	219.9	232.0	244.8	257.0	268.6
– Growth, % y-o-y	6.9	5.3	2.5	4.0	5.5	5.5	5.0	4.5
Electricity consumption, TWh	168.3	172.8	176.2	183.7	192.2	201.1	209.8	218.0
– Growth, % y-o-y	12.7	2.7	2.0	4.3	4.6	4.6	4.3	3.9
Electricity imports/(exports), TWh	(28)	(34)	(35)	(36)	(40)	(44)	(47)	(51)
Electricity consumption per capita, MWh	2.3	2.4	2.4	2.4	2.5	2.6	2.7	2.8
Per capita regional electricity consumption, MWh	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7
Regional GDP per capita, US$	20,782	25,191	21,711	26,610	28,407	31,024	32,156	33,598
Electricity cost per capita, US$	223	304	211	262	273	293	299	303
Primary energy consumption, mn toe	188.4	192.1	192.0	201.6	211.7	224.4	233.4	241.5
Primary energy consumption per capita, toe	2.6	2.6	2.6	2.7	2.8	2.9	3.0	3.1
Regional energy consumption per capita, toe	2.65	2.76	2.75	2.82	2.91	3.02	3.11	3.21
Thermal power generation, TWh	178.0	198.0	199.2	197.9	207.3	218.1	226.6	234.4

e/f = BMI estimate/forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Table: Iran's Thermal Power Sector, 2007-2014 (US$mn unless otherwise stated)

Gas	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Consumption, bcm	113.0	117.6	120.0	125.0	132.0	140.0	146.3	152.2
Use in power generation, bcm	35.11	38.79	39.58	41.23	43.54	46.18	48.26	50.19
% total gas consumption	31.07	32.99	32.99	32.99	32.99	32.99	32.99	32.99
% electricity generation	73.0	76.6	76.2	76.4	76.4	76.8	76.5	76.1
% primary energy consumption	54.0	55.1	56.3	55.8	56.1	56.2	56.4	56.7
Gas consumption	na	41,522	26,570	38,938	42,111	47,290	49,364	51,331
Gas imports, bcm	1	1	(5)	(17)	(23)	(25)	(44)	(58)
Gas imports	276	459	(1,107)	(5,296)	(7,337)	(8,445)	(14,745)	(19,516)
Gas-fired generation, TWh	143.0	158.0	161.2	167.9	177.3	188.1	196.6	204.4
Gas use in power generation	8,818	13,697	8,765	12,844	13,891	15,599	16,301	16,954
Gas power cost	12,250	17,489	12,634	16,875	18,147	20,114	21,019	21,860
Coal								
Coal consumption, mn toe	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
% electricity generation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
% primary energy consumption	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4
Coal consumption, mn tonnes	1.7	1.7	1.7	1.5	1.5	1.5	1.5	1.5
Coal consumption	143	247	155	198	203	215	215	215
Coal-fired generation, TWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal power cost	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil								
Oil consumption, 000b/d	1,693	1,730	1,675	1,725	1,786	1,839	1,894	1,951
Oil use in power generation, mn barrels	71.0	81.1	77.1	60.9	60.9	60.9	60.9	60.9
% total oil consumption	11.5	12.9	12.6	9.7	9.3	9.1	8.8	8.5
% electricity generation	17.9	19.4	18.0	13.6	12.9	12.3	11.7	11.2
% primary energy consumption	43.3	43.3	42.0	41.2	40.6	39.5	39.1	38.9
Oil consumption	42,692	59,390	36,068	52,265	55,399	60,418	62,230	64,097
Oil-fired generation, TWh	35.0	40.0	38.0	30.0	30.0	30.0	30.0	30.0
Oil use in power generation	4,904	7,633	4,547	5,051	5,173	5,477	5,477	5,477
Oil power cost	5,954	8,833	5,687	5,951	6,073	6,377	6,377	6,377

e/f = BMI estimate/forecast; na = not available. Source: BP Statistical Review of World Energy, June 2009; BMI

Table: Iran's Non-Thermal Power, 2007-2014

	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Nuclear power generation, TWh	0.0	0.0	0.0	5.3	6.3	6.3	8.4	10.5
Nuclear power consumption, TWh	0.0	0.0	0.0	5.0	6.0	6.0	8.0	10.0
% electricity generation	0.0	0.0	0.0	2.4	2.7	2.6	3.3	3.9
% primary energy consumption	0.0	0.0	0.0	0.6	0.6	0.6	0.8	0.9
Nuclear power cost, US$mn	0.0	0.0	0.0	162.5	194.7	194.7	259.6	324.5
Hydro-power generation, TWh	18.0	7.5	12.0	16.0	17.0	17.0	18.0	18.0
Hydro-power consumption, TWh	18.0	7.5	12.0	16.0	17.0	17.0	18.0	18.0
% electricity generation	9.2	3.6	5.7	7.3	7.3	6.9	7.0	6.7
% primary energy consumption	2.2	0.9	1.4	1.8	1.8	1.7	1.7	1.7
Hydro-power cost, US$mn	630	263	420	560	595	595	630	630
Renewable energy generation, TWh	0.0	0.0	0.4	1.0	1.5	3.0	5.0	6.0
Renewable energy consumption, TWh	0.0	0.0	0.4	1.0	1.5	3.0	5.0	6.0
% electricity generation	0.0	0.0	0.2	0.5	0.6	1.2	1.9	2.2
% primary energy consumption	0.0	0.0	0.1	0.2	0.3	0.6	1.0	1.2
Renewable energy cost, US$bn	0.1	0.1	10.1	25.1	37.6	75.1	125.1	150.1

e/f = BMI estimate/forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Assumptions And Methodology

Oil and natural gas prices are taken from the **BMI** Oil & Gas industry service. The crude oil price is based on the OPEC basket, while the gas price is based on the historic average annual European pipeline cost, linked to the crude oil price forecast. Coal prices are based on the historic average European steam coal value, linked to the crude oil price forecast. For nuclear power generation we are using World Nuclear Association (WNA) guidelines for generating costs and assume US$0.03 per kilowatt hour (kWh), rising in line with local inflation. Hydro-electric costs are calculated on the basis of US$0.035/kWh, linked to local inflation. For wind and other renewables, we have used a base price for 2006 of US$0.025/kWh, rising with inflation. Industrial and residential electricity prices are based on historic and recent industry data/indications, linked to the **BMI** forecasts for overall Iranian power generation costs.

Key Risks To BMI's Forecast Scenario

Heavy subsidisation of gas costs for the power sector means that electricity prices can be kept artificially low. The state power company needs government support to finance generation development, so forecasts for capacity expansion, exports and power prices are subject to revision. Given the hostile reaction of the

international community to Iran's nuclear ambitions, and the strong possibility of fresh and tougher sanctions, there is a question mark over the timing and scale of Iranian nuclear capacity introductions.

Long-Term Power Outlook

Between 2009 and 2019, we are forecasting an increase in Iranian electricity generation of 53.8%, which is near the middle of the range for the MEA region. This equates to 21.1% in the 2014-2019 period, down from 27.0% in 2009-2014. PED growth is set to decrease from 25.8% in 2009-2014 to 18.4%, representing 49.0% for the entire forecast period. The availability from 2010 of nuclear power is one key element of generation growth. Thermal power generation is forecast to rise by 38.1% between 2009 and 2019. More details of the longer-term **BMI** power forecasts can be found later in this report.

Macroeconomic Outlook

Rebounding To Lower Trend Growth

Relatively low oil prices will mean that the next five years will see lower real GDP growth rates in Iran than during the last five years. We expect the economy to expand at an annual average rate of 3.5% over the forecast period.

With little in the way of new economic data since we published our last *Business Forecast Report*, we have left our growth forecasts largely unchanged this quarter. In our view, Iran will pass through the bottom of the economic cycle in FY2009/10 (Iranian years begin in March), when we project real GDP growth to fall to just 1.4%. Thereafter, we expect the economy to embark upon a fairly tepid recovery: we forecast growth of 3.5% and 3.9% in FY2010/11 and FY2011/12, and see the economy expanding by an annual average of 3.5% over the course of our five-year forecast period (out to FY2014/15). This compares with an estimated average growth rate of 5.6% in the five-year period from FY2004/05 to FY2008/09.

Now that the global economy is looking like it is coming out of recession, the Iranian economy will in turn be lifted, hence our more bullish growth forecast for FY2010/11 than for FY2009/10. Indeed, despite the Iran's relative international isolation and the fact that it is not dependent on global capital flows or on foreign investment, the global growth story matters. This is because of Iran's one major link with the global economy: oil.

True, the hydrocarbon sector cannot be said to overwhelm the rest of the economy: it accounted for 27.0% of nominal GDP in FY2007/08, and we see its share dropping to around 15% through the course of the forecast period. So while Iran is the world's fourth largest oil producer, its economy is certainly far more diversified than many Middle Eastern oil states. Moreover, given that oil production levels have remained fairly flat since 2003, and our oil and gas team does not see them increasing much over the next five to 10 years, the sector in fact has little direct impact on real GDP growth.

The Indirect Growth Driver

However, because crude oil sales, which have typically accounted for 80% of Iran's total export revenues, are then recycled into the wider economy through the banking system and via government spending, the hydrocarbon sector is indirectly a key driver of real GDP growth. In light of our view that Iran will struggle to raise oil output levels over the coming years, the price of oil will therefore be key.

Our outlook for oil prices is informed by our expectation of a fairly weak global economic recovery. This, coupled with a growing focus on energy efficiency in the developed world, will impact demand for oil. We project the OPEC Basket to average US$60/bbl in 2010, before rising to an average of US$70/bbl in 2012, which we see as its longer-term equilibrium price. This compares with an average oil price of around US$94/bbl in 2008. Our forecast for lower trend growth in Iran over the next five years is therefore largely based on our expectations for a period of relatively subdued oil prices.

Public Sector Constrained

Looking at GDP by expenditure, fairly stagnant oil prices will curb public consumption growth over the coming years. Given that oil provides more than 50% of government fiscal revenues, rising oil prices meant that Tehran had the luxury of pursuing an expansive fiscal policy over recent years and could finance its large fiscal deficits by dipping into its rainy-day oil fund. Now that it appears that the fund is close to empty, and with oil prices well below the fiscal break-even level, Tehran will struggle to increase its spending levels in real terms.

Investment Curtailed

A subdued oil market is also likely to have a significant impact on real gross fixed capital formation (GFCF) growth over the coming years, which will in turn impact headline real GDP growth. Whereas the oil boom of recent years was characterised by an accompanying boom in domestic credit, the collapse in oil prices over the course of H208 led to a sharp slowdown in oil revenues entering the banking system as deposits – and, as a consequence, resulted in a slowdown in bank loan growth. Indeed, banking-sector data show that at the end of FY2007/08 the five-year compound annual loan growth rate came in at 35.0%. By the end of FY2008/09 (the most recent official data), loan growth had dropped to 11.1% y-o-y.

This slowdown in bank lending will have translated into a slowdown in real GFCF growth over the course of FY2009/10. In the future, a prospective period of subdued oil prices will constrain banks' ability to increase loan growth, hindering investment. Indeed, we forecast loan growth of 15-20% y-o-y over the next five years; in other words, significantly below the growth rates witnessed during the oil boom.

In addition, the slowdown in the domestic economy will have exposed the banking system's poor quality assets. For instance, Iranian banks have been put under considerable political pressure to lend to poor individuals at low interest rates over recent years. Many of these loans will eventually have to be (or already have been) written off. This will hamper Iranian banks' ability to lend over the coming years,

© Business Monitor International Ltd

putting a brake on real GDP growth. Of course, if oil prices exceed our expectations, banks will be able to expand their loan books more rapidly, and real GFCF growth rates could exceed our current forecasts.

Net Exports Rebalancing

We expect the net exports component of GDP by expenditure to be less of a drag on real GDP growth over the next five years than it has been over recent years. High and rising oil prices during the oil boom meant that export revenues, dominated as they were (and still are) by oil sales, skyrocketed. This supported the rial; and, as a result, Iran's real effective exchange rate (REER) strengthened considerably, appreciating by around 40% from late 2006 to late 2008. This meant that imports became relatively cheap, and that Iran's (non-oil) export competitiveness diminished.

The consequence was that real import growth outpaced real export growth as Iranian businesses and consumers substituted imports for domestically produced goods. In the future, we forecast Iran to turn out much smaller current account surpluses (*see Balance of Payments Outlook*), and we see downside pressures on the rial growing. Indeed, we expect to see gradual rial deprecation (against the dollar) over the coming years, and the REER is likely to weaken as well. This should lead to something of a rebalancing when it comes to net exports.

Private Consumption Remains Key

As trend growth settles into a more sedate trajectory, the main driver of economic expansion will remain private consumption. Since the turn of the century, private consumption has accounted for around 45% of Iran's nominal GDP, but it has accounted for nearly 70% of real GDP growth over this period. As the Iranian population continues to grow at a fairly solid rate – we forecast the population to increase by nearly 9mn over the next 10 years, from around 74mn in 2009 – we expect this component to contribute a similar proportion of headline real GDP growth through the forecast period.

Poor Business Environment

Economic growth will continue to be hindered by Iran's unfavourable business environment. The country scores a poor 40.2 (out of 100) in our proprietary business environment ratings, placing it above only Iraq, Yemen and Syria in the Middle East. Moreover, in its recently released *Doing Business 2010* report, the World Bank (WB) ranks Iran 137th out of 183 countries surveyed in terms of overall ease of doing business. This broadly aligns with our own rating: the WB places only Iraq and Syria below Iran in the Middle East. Although the WB rates Iran reasonably highly when it comes to 'starting a business' and 'enforcing contracts' (48th and 53rd, respectively), it scores particularly poorly when it comes to 'registering property' and 'protecting investors' (153rd and 165th). The latter indicator is especially significant as private-sector economic growth will be severely curtailed if investors feel insecure.

Risk to Outlook

Given the importance of oil to our assessment of Iran's economic outlook, there are both upside and

© Business Monitor International Ltd

downside risks to our real GDP projections stemming from our oil price forecasts. Moreover, if the standoff between the West and Iran over the latter's nuclear programme is resolved peacefully, the various sanctions against the country could be rescinded. This could lead to a large increase in much needed foreign investment into Iran's oil and gas sector, potentially boosting output levels – and, as a result, real GDP growth rates. For now, however, Western oil majors are staying away from Iran, and oil companies from states relatively immune from US pressure (such as China and South Korea) are the only ones increasing their investments in the country.

On the other hand, the US could attempt to impose even harsher UN sanctions on Iran, though China and Russia are likely to attempt to water down any prospective measures (if they agree to them at all). However, if tougher sanctions were inflicted (and these were adhered to), this would put downside risks on our growth forecasts. In the worst case scenario, the diplomatic standoff between Iran and the US could escalate into a military conflict, with dire consequences for the Iranian economy.

Table: Iran – Economic Activity, 2007-2014

	2007	2008	2009e	2010f	2011f	2012f	2013f	2014f
Nominal GDP, IRRbn [1]	2,654,948	3,320,590	3,419,152	4,067,742	4,903,667	5,835,559	6,811,822	7,844,221
– US$bn [1]	286.3	347.1	341.1	395.9	463.4	535.4	606.7	678.3
Real GDP growth, % change y-o-y [1]	7.8	4.7	1.6	3.5	3.9	3.7	3.2	3.1
GDP per capita, US$ [1]	3,952	4,735	4,593	5,264	6,085	6,945	7,778	8,595
Population, mn [2]	72.4	73.3	74.3	75.2	76.2	77.1	78.0	78.9
Unemployment, % of labour force, eop [3]	11.9	12.5	14.0	13.5	13.0	12.5	12.0	12.0

NB Year begins in March (Iranian calendar), unless otherwise stated; e/f = BMI estimate/forecast. Source: [1] Central Bank of the Islamic Republic of Iran (CBI), BMI; [2] IMF, BMI; [3] Statistical Centre of Iran, January-December

Power Outlook: Long-Term Forecasts

BMI power forecasts have been extended to cover a 10-year period, providing a guide to likely trends from 2009 to 2019. The near to medium-term projections are discussed in the body of this report, but our longer-term assumptions are discussed below.

Global Snapshot

Table: Global Summary, 2012-2019

	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Electricity generation, TWh	21,113	21,950	22,821	23,745	24,689	25,649	26,698	27,684
Primary energy demand, mn toe	11,561	11,983	12,410	12,843	13,285	13,740	14,220	14,688
Gas consumption, bcm	3,155	3,278	3,395	3,509	3,635	3,740	3,845	3,956
Thermal power generation, TWh	14,865	15,408	15,980	16,656	17,304	17,921	18,638	19,251
Coal consumption, mn toe	3,713	3,870	4,038	4,232	4,456	4,640	4,857	5,067
Hydro-electric consumption, TWh	3,168	3,325	3,490	3,615	3,780	3,962	4,153	4,342
Nuclear energy consumption, TWh	2,788	2,894	2,997	3,109	3,218	3,344	3,423	3,541

f = forecast. Source: BMI

Regional Outlook

Between 2014 and 2019, we are assuming growth in MEA regional electricity generation of 31.1%, representing a continuation of the healthy trend seen during the 2009-2014 period, which is expected to have seen 31.3% expansion. PED is set to increase by 20.0% during the latter part of the forecast period, compared with 25.1% in 2009-2014. For hydro-power generation, the growth rate in 2014-2019 is projected at 29.2%, against 42.9% in the earlier period. Thermal generation is expected to increase by 30.9% in 2014-2019, slowing from the 31.4% growth rate in 2009-2014. With some continuing emphasis on nuclear consumption, the growth rate in 2014-2019 is estimated at 61.7%, down from a forecast 80.8% in 2009-2014.

In terms of overall regional power generation, the extended 2009-2019 forecast period should see the strongest growth delivered by Angola, achieving 375%. Iraq's 228% and Nigeria's 222% make them the second and third highest in terms of generation expansion, followed by Qatar at 150%. Lagging the field, with a likely growth rate of 38%, is South Africa with its more mature energy economy.

© Business Monitor International Ltd

Table: Middle East And Africa Electricity Generation, 2012-2019 (TWh)

Country	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Algeria	70.4	70.4	55.2	57.7	60.3	70.4	70.4	70.4
Angola	5.0	6.6	7.6	8.7	10.1	11.6	13.3	6.6
Bahrain	11.6	12.6	13.1	13.6	14.2	14.7	15.3	12.6
Egypt	149.6	162.6	169.1	175.9	182.9	190.2	197.8	162.6
Iran	**244.8**	**268.6**	**279.3**	**287.7**	**299.2**	**311.2**	**325.2**	**268.6**
Iraq	115.0	145.5	163.7	184.2	207.2	233.1	262.3	145.5
Israel	70.8	75.9	78.5	81.3	84.1	87.0	90.1	75.9
Kuwait	62.0	69.7	73.8	77.5	81.0	85.1	90.2	69.7
Libya	37.7	43.1	46.2	49.4	52.9	56.6	60.5	43.1
Nigeria	55.0	66.0	72.6	79.9	87.8	96.6	106.3	66.0
Oman	14.0	15.1	15.7	16.3	17.0	17.7	18.4	15.1
Qatar	28.3	34.9	38.7	42.2	45.6	49.2	53.2	34.9
Saudi Arabia	256.2	285.0	301.0	318.0	335.0	350.0	370.0	285.0
South Africa	283.5	297.8	309.7	323.7	333.4	346.7	360.6	297.8
UAE	92.0	105.3	113.2	120.0	126.0	133.0	141.6	105.3
BMI universe	1,495.9	1,659.1	1,737.6	1,836.2	1,936.7	2,053.1	2,175.1	1,659.1

f = BMI forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Table: Middle East And Africa Primary Energy Demand, 2012-2019 (mn toe)

Country	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Algeria	43.5	45.5	48.0	49.7	51.9	54.0	56.2	59.5
Angola	na	na	na	na	na	na	na	na
Bahrain	na	na	na	na	na	na	na	na
Egypt	86.5	90.8	94.0	97.8	101.2	105.2	109.4	113.8
Iran	**224.4**	**233.4**	**241.5**	**251.2**	**258.7**	**267.0**	**275.0**	**286.0**
Iraq	na	na	na	na	na	na	na	na
Israel	na	na	na	na	na	na	na	na
Kuwait	33.5	35.8	38.0	40.7	43.5	46.1	48.9	52.8
Libya	na	na	na	na	na	na	na	na
Nigeria	na	na	na	na	na	na	na	na
Oman	na	na	na	na	na	na	na	na
Qatar	31.0	33.6	37.5	41.3	44.6	48.1	52.0	56.1
Saudi Arabia	208.1	218.5	229.4	234.0	239.8	244.6	250.7	255.8
South Africa	135.0	138.4	142.6	145.4	149.8	154.3	158.1	162.9
UAE	88.0	93.3	98.9	105.3	111.6	117.2	123.1	129.2
BMI universe	850.0	889.3	929.8	965.2	1,001.1	1,036.5	1,073.4	1,116.1

f = BMI forecast; na = not available. Source:: BP Statistical Review of World Energy, June 2009; BMI

© Business Monitor International Ltd

Table: Middle East And Africa Thermal Power Generation, 2012-2019 (TWh)

Country	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Algeria	47.2	49.8	52.2	54.2	56.6	59.1	61.5	65.7
Angola	1.7	2.0	2.2	2.6	3.0	3.4	3.9	4.5
Bahrain	na	na	na	na	na	na	na	na
Egypt	126.8	131.9	136.3	140.5	145.4	150.5	155.3	161.6
Iran	**218.1**	**226.6**	**234.4**	**242.6**	**249.0**	**257.7**	**264.6**	**275.1**
Iraq	115.0	129.4	145.5	163.7	184.2	207.2	233.1	262.3
Israel	70.8	73.3	75.9	78.5	81.3	84.1	87.0	90.1
Kuwait	62.0	65.7	69.7	73.8	77.5	81.0	85.1	90.2
Libya	37.7	40.3	43.1	46.2	49.4	52.9	56.6	60.5
Nigeria	50.0	55.0	61.0	67.6	74.9	82.8	91.6	101.3
Oman	na	na	na	na	na	na	na	na
Qatar	28.3	31.1	34.9	38.7	42.2	45.6	49.2	53.2
Saudi Arabia	256.2	270.0	285.0	301.0	318.0	335.0	350.0	370.0
South Africa	261.5	269.3	276.9	285.4	293.8	297.9	307.3	316.3
UAE	92.0	98.9	105.3	113.2	120.0	126.0	133.0	141.6
BMI universe	1,367.4	1,443.3	1,522.5	1,608.1	1,695.2	1,783.3	1,878.2	1,992.4

f = BMI forecast; na = not available. Source: BP Statistical Review of World Energy, June 2009; BMI

Table: Middle East And Africa Hydro-Electric Generation, 2012-2019 (TWh)

Country	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Algeria	0.6	0.7	0.8	1.0	1.1	1.2	1.4	2.0
Angola	3.3	3.8	4.4	5.0	5.8	6.6	7.6	8.8
Bahrain	na	na	na	na	na	na	na	na
Egypt	19.0	21.0	22.1	23.0	24.2	25.4	26.6	28.0
Iran	**17.0**	**18.0**	**18.0**	**18.0**	**19.0**	**19.0**	**19.0**	**19.0**
Iraq	na	na	na	na	na	na	na	na
Israel	na	na	na	na	na	na	na	na
Kuwait	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	na	na	na	na	na	na	na	na
Nigeria	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Oman	na	na	na	na	na	na	na	na
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	na	na	na	na	na	na	na	na
South Africa	2.5	3.0	3.0	4.0	4.0	6.0	6.0	6.0
UAE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BMI universe	47.4	51.5	53.2	56.0	59.0	63.2	65.7	68.7

f = BMI forecast; na = not available. Source: BP Statistical Review of World Energy, June 2009; BMI

Table: Middle East And Africa Nuclear Generation, 2012-2019 (TWh)

Country	2012f	2013f	2014f	2015f	2016f	2017f	2018f	2019f
Algeria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Angola	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahrain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Egypt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iran	**6.0**	**8.0**	**10.0**	**10.0**	**10.0**	**10.0**	**12.0**	**14.0**
Iraq	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Israel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kuwait	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Libya	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nigeria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oman	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Qatar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Saudi Arabia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	13.5	13.5	13.5	13.5	15.0	18.0	20.0	24.0
UAE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BMI universe	19.5	21.5	23.5	23.5	25.0	28.0	32.0	38.0

f = BMI forecast. Source: BP Statistical Review of World Energy, June 2009; BMI

Iran Overview

Between 2009 and 2019, we are forecasting an increase in Iranian electricity generation of 53.8%, which is near the middle of the range for the MEA region. This equates to 21.1% in the 2014-2019 period, down from 27.0% in 2009-2014. PED growth is set to decrease from 25.8% in 2009-2014 to 18.4%, representing 49.0% for the entire forecast period. The availability from 2010 of nuclear power is one key element of generation growth. Thermal power generation is forecast to rise by 38.1% between 2009 and 2019.

Methodology And Risks to Forecasts

In terms of power generation, wherever possible the projections are based on known development projects, committed investment plans or stated government/company intentions. A significant element of risk is clearly associated with these forecasts, as project timing is critical to volume delivery. Our assumptions also take into account some third-party estimates, such as those provided by the US-based Energy Information Administration (EIA) and certain consultants' reports that are in the public domain.

We have assumed flat oil and gas prices throughout the extended forecast period. Power consumption and overall energy demand have proved to be less sensitive to pricing than expected, but will still have some bearing on consumption trends. Otherwise, we have assumed a slowing of GDP growth for all countries beyond our core forecast period (to 2012) and a further easing of demand trends to reflect energy-saving efforts. Where available, government and third-party projections have been used to crosscheck our own assumptions.

Competitive Landscape

Iran’s power sector is controlled by state-owned utility Tavanir. Power plant construction is handled by the IPDC, a wholly owned subsidiary of Tavanir. Eventually, Tavanir may be broken up as part of a privatisation package. In addition to power generation, Tavanir is also responsible for electrical transmission.

In June 2009, Iran’s first BOT power plant became fully operational, when the last of six 159MW open-cycle gas turbine generating sets in the Chehelsotun power plant in South Isfahan were brought online. The 950MW gas-fired plant, the first to be completed in Iran under a BOT agreement, was developed by a 50:50 JV between Iranian investment house **IHAG** and local power contractor **Mapna**. The first unit at the Chehelsotun plant was brought online in 2005.

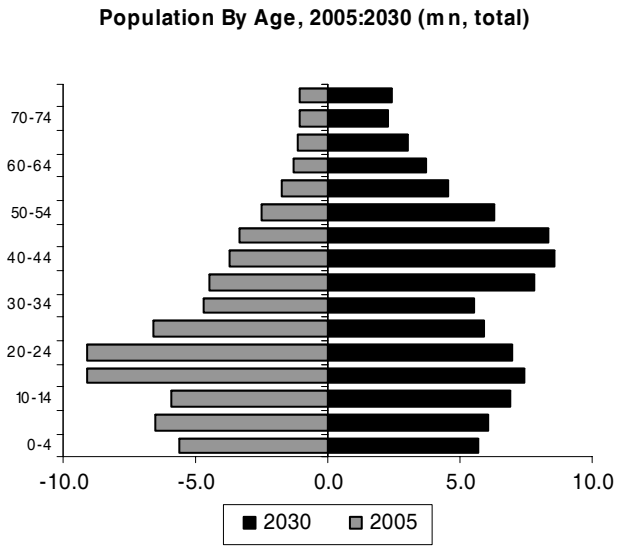
In addition to BOT plants, Iran has attempted to promote a BOO model for the 2GW Zanjan 1-4 IPP. In September 2004, the BOO plan was dealt a setback due to a lack of bidders. Overall, Iran is planning 5.8GW of BOT projects and 7GW of BOO projects.

Iran's Minister of Energy in July 2008 announced that it is in the final stages of privatising 10 power plants. In 2009, the ministry aimed to have handed 80 plants over to the private sector as it seeks to reform the power industry and increase capacity. It is hoped that privatisation will help attract investment, increase efficiency and encourage the sector to compete in international markets.

© Business Monitor International Ltd

Country Snapshot: Iran Demographic Data

Section 1: Population



Source: UN Population Division

Table: Demographic Indicators, 2005-2030

	2005	2010f	2020f	2030f
Dependent population, % of total	31.3	30.4	31.0	28.9
Dependent population, total, '000	21,133	21,985	26,185	26,373
Active population, % of total	68.6	69.5	68.9	71
Active population, total, '000	46,336	50,311	58,060	64,778
Youth population*, % of total	26.6	25.8	25.2	20.4
Youth population*, total, '000	17,948	18,658	21,283	18,611
Pensionable population, % of total	4.7	4.6	5.8	8.5
Pensionable population, total, '000	3,185	3,327	4,902	7,762

*f = forecast. * Youth = under 15. Source: UN Population Division*

Table: Rural/Urban Breakdown, 2005-2030

	2005	2010f	2020f	2030f
Urban population, % of total	68.1	71.2	74.0	77.9
Rural population, % of total	31.9	28.8	26.0	22.1
Urban population, total, '000	47,315	52,891	62,376	70,972
Rural population, total, '000	22,200	21,392	21,868	20,183
Total population, '000	69,515	74,283	84,244	91,155

f = forecast. Source: UN Population Division

Section 2: Education And Healthcare

Table: Education, 2002-2005

	2002/03	2004/05
Gross enrolment, primary	103	111
Gross enrolment, secondary	82	81
Gross enrolment, tertiary	22	24
Adult literacy, male, %	na	83.5
Adult literacy, female, %	na	70.4

Gross enrolment is the number of pupils enrolled in a given level of education regardless of age expressed as a percentage of the population in the theoretical age group for that level of education. na = not available. Source: UNESCO

Table: Vital Statistics, 2005-2030

	2005	2010f	2020f	2030f
Life expectancy at birth, males (years)	68.8	70.1	71.6	73.4
Life expectancy at birth, females (years)	71.7	73.4	75.3	77.4

f = forecast. Life expectancy estimated at 2005. Source: UNESCO

© Business Monitor International Ltd

Section 3: Labour Market And Spending Power

Table: Employment Indicators, 1996-2005

	1996	1997	1998	1999	2000	2005
Economically active population, '000	16,027	na	na	na	na	22,317
– % change y-o-y	na	na	na	na	na	na
– % of total population	25.3	na	na	na	na	32.1
Employment, '000	14,572	na	na	na	na	19,760
– % change y-o-y	na	na	na	na	na	na
– male	12,806	na	na	na	na	15,959
– female	1,765	na	na	na	na	3,801
– female, % of total	12.1	na	na	na	na	19.2
Total employment, % of labour force	90.9	na	na	na	na	88.5
Unemployment, '000	na	na	na	na	na	2,556
– male	na	na	na	na	na	1,780
– female	na	na	na	na	na	776
– unemployment rate, %	na	na	na	na	na	11.5

na = not available. Source: ILO

Table: Consumer Expenditure, 2000-2012 (US$)

	2000	2007	2008e	2009e	2010f	2012f
Consumer expenditure per capita	2,362	2,162	2,658	3,224	3,818	5,202
Poorest 20%, expenditure per capita	602	551	678	822	974	1,327
Richest 20%, expenditure per capita	5,894	5,394	6,631	8,043	9,526	12,979
Richest 10%, expenditure per capita	7,961	7,286	8,957	10,864	12,866	17,531
Middle 60%, expenditure per capita	1,772	1,622	1,993	2,418	2,863	3,902
Purchasing power parity						
Consumer expenditure per capita	2,669	4,948	5,694	na	na	na
Poorest 20%, expenditure per capita	681	1,262	1,452	na	na	na
Richest 20%, expenditure per capita	6,660	12,344	14,207	na	na	na
Richest 10%, expenditure per capita	8,996	16,673	19,190	na	na	na
Middle 60%, expenditure per capita	2,002	3,711	4,271	na	na	na

e/f = estimate/forecast, na = not available. Source: World Bank, Country data; BMI

Table: Average Annual Manufacturing Wages, 2000-2012

	2000	2006	2007	2008e	2009e	2010f	2012f
IRR	10,410,312	24,342,505	29,240,218	35,708,738	42,178,448	48,975,926	64,895,361
Wage growth, % y-o-y	24.1	13.8	20.1	22.1	18.1	16.1	14.1
US$	5,900	2,654	3,170	3,767	4,312	4,871	6,159

e/f = BMI estimate/forecast. Source: ILO, BMI

BMI Methodology

How We Generate Our Industry Forecasts

BMI's industry forecasts are generated using the best-practice techniques of time-series modelling. The precise form of time-series model we use varies from industry to industry, in each case determined, as per standard practice, by the prevailing features of the industry data being examined. For example, data for some industries may be particularly prone to seasonality, meaning seasonal trends. In other industries, there may be pronounced non-linearity, whereby large recessions, for example, may occur more frequently than cyclical booms.

Our approach varies from industry to industry. Common to our analysis of every industry, however, is the use of vector autoregressions. Vector autoregressions allow us to forecast a variable using more than the variable's own history as explanatory information. For example, when forecasting oil prices, we can include information about oil consumption, supply and capacity.

When forecasting for some of our industry sub-component variables, however, using a variable's own history is often the most desirable method of analysis. Such single-variable analysis is called univariate modelling. We use the most common and versatile form of univariate models: the autoregressive moving average model (ARMA).

In some cases, ARMA techniques are inappropriate because there is insufficient historic data or data quality is poor. In such cases, we use either traditional decomposition methods or smoothing methods as a basis for analysis and forecasting.

It must be remembered that human intervention plays a necessary and desirable part of all our industry forecasting techniques. Intimate knowledge of the data and industry ensures we spot structural breaks, anomalous data, turning points and seasonal features where a purely mechanical forecasting process would not.

Power Industry

There are a number of principal criteria that drive our forecasts for each Power indicator.

Electricity Supply

Development of generating capacity is determined largely by investment levels, with generation levels dictated by available capacity, plant utilisation rates and national policy. We therefore examine:

- National energy policy, stated output goals and investment levels;

- Company-specific capacity data, output targets and capital expenditures, using national, regional and multinational company sources;

- International guidelines and projections, such as the International Energy Agency (IEA) and the US Energy Information Administration (EIA).

Energy Consumption

A mixture of methods is used to generate demand forecasts, applied as appropriate to each individual country:

- Underlying economic (GDP) growth for individual countries/regions, sourced from **BMI** published estimates. Historic relationships between GDP growth and energy demand growth at an individual country are analysed and used as the basis for predicting levels of consumption;

- Government projections for electricity demand;

- Third-party agency projections for regional demand, such as the IEA and the EIA;

- Extrapolation of capacity expansion forecasts, based on company- or state-specific investment levels.

Cross Checks

Whenever possible, we compare government and/or third-party agency projections with the declared spending and capacity expansion plans of the companies operating in each country. Where there are discrepancies, we use company-specific data such as physical spending patterns ultimately to determine capacity and supply capability. Similarly, we compare capacity expansion plans and demand projections to check the energy balance of each country. Where the data suggest imports or exports, we check that necessary capacity exists or that the required investment in infrastructure is taking place.

Sources

Sources include those international bodies mentioned above, such as the IEA, and EIA, as well as local energy ministries, official company information, and international and national news agencies.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.