

London Power Forum 2010

Review of the Middle East Power Market in the coming decade



**McLarens Young
International**

GLOBAL CLAIMS SERVICES

Introduction

- ◆ Mike Barnes - Executive Director of McLarens Young International and Regional Director for Middle East, South Asia & Africa
- ◆ McLarens Young International - Global loss adjuster focused on the commercial sector with strong emphasis on industrial infrastructure to include Power
- ◆ Major network of offices in the Middle East in Saudi Arabia, Bahrain the UAE and Lebanon

The Middle East - where is it?

- ◆ In 1957 US Secretary of State John Foster Dulles defined the Middle East as *"the area lying between and including Libya on the west and Pakistan on the east, Syria and Iraq on the North and the Arabian peninsula to the south, plus the Sudan and Ethiopia"*
- ◆ Other definitions including the G8 Greater Middle East extend to include Turkey and all of North Africa to the west and Iran, Afghanistan and Pakistan to the east

The Middle East - here it is



Gulf Cooperation Council - 1981

- ◆ Saudi Arabia
- ◆ Qatar
- ◆ Kuwait
- ◆ Bahrain
- ◆ Oman
- ◆ United Arab Emirates



Gulf Cooperation Council



Kingdom of Saudi Arabia

- ◆ Islamic Monarchy founded in 1932 by Abdul-Aziz bin Saud
- ◆ Modern history dates from 1744 when Muhammad ibn Saud and Muhammad ibn Abd-Al Wahab joined political and religious forces
- ◆ His Majesty the keeper of the Two Holy Mosques King Abdullah* has worked effectively to address challenges in respect of education, employment, infrastructure

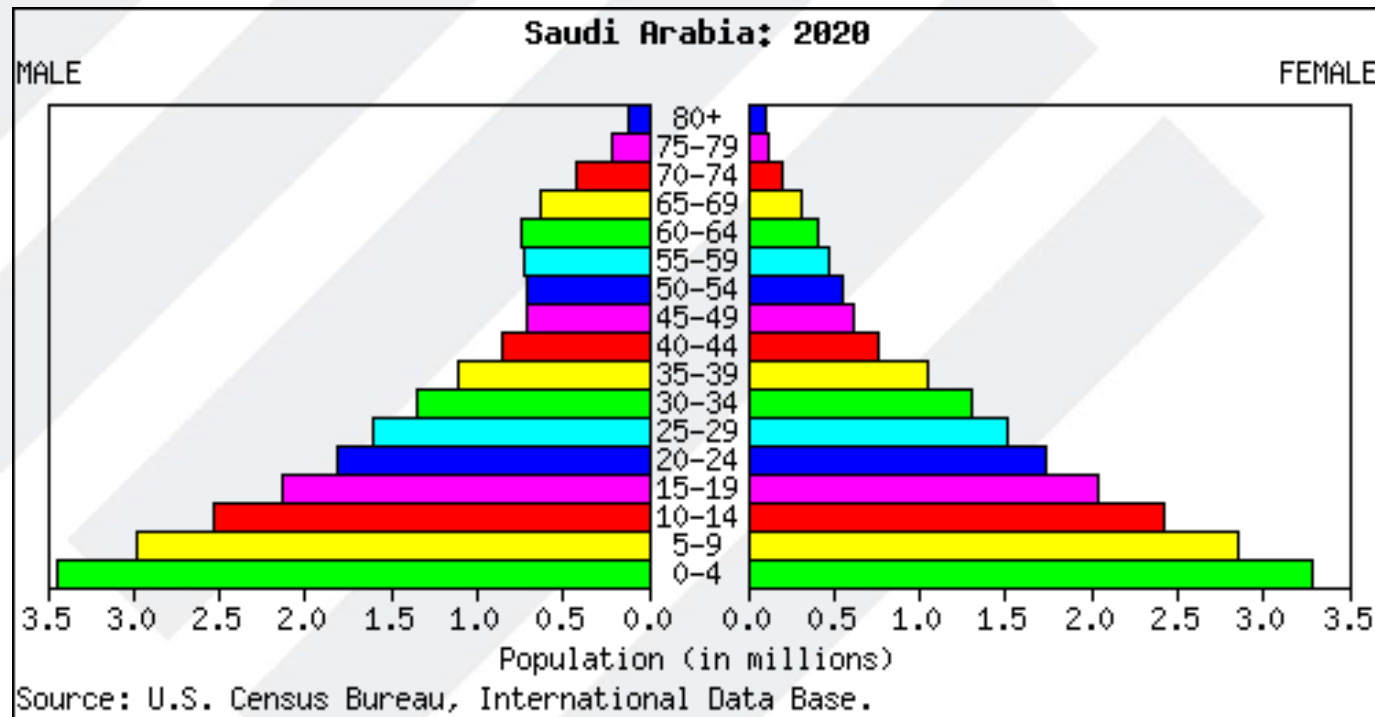
* Third Most Important World Leader - Forbes Magazine November 2010

Kingdom of Saudi Arabia

- ◆ In 2010 population now over 27,000,000 including about 9,000,000 non Saudis
- ◆ Over 50% of the population in the age bracket 0 to 24
- ◆ Presents future challenges to provide education, employment, infrastructure
- ◆ Being addressed by substantial Government sponsored investment in schools, universities and industry

Kingdom of Saudi Arabia

- ◆ One 2020 population estimate in the order of 40,000,000:



Kingdom of Saudi Arabia

- ◆ GDP per capita - USD 20,300 in 2010
- ◆ GDP per capita - USD 10,250 in 2000
- ◆ Increased wealth creates pressures for a more comfortable lifestyle
- ◆ With summer temperatures in the range 40 - 50°C you will appreciate the demand for air conditioning

Kingdom of Saudi Arabia

- ◆ Estimated total power production 200 TWhr
- ◆ Power production predicted to increase by 80% in the period 2009 - 2019
- ◆ Total investment in that period estimated at USD 80 billion for additional generation and distribution capacity
- ◆ By 2014 Saudi Arabia is expected to account for 17% of electrical generation in the Middle East and Africa

GCC Comparison Figures (2007)

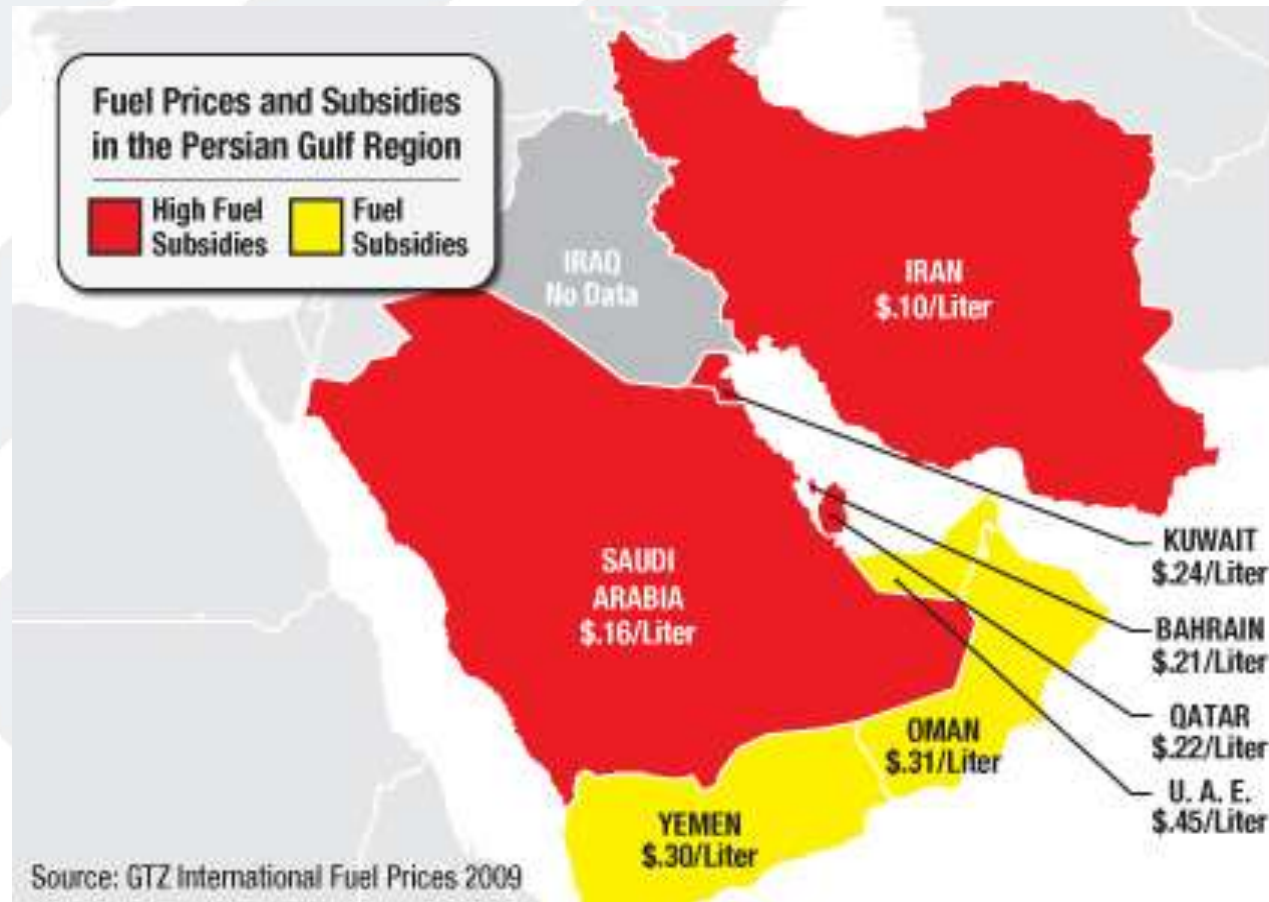
- ◆ Saudi Arabia - 37,000MW
- ◆ Qatar - 3,000MW (8,000MW by 2009)
- ◆ Kuwait - 10,900MW
- ◆ Bahrain - 2,300MW
- ◆ Oman - 3,400MW
- ◆ United Arab Emirates - 15,700MW
- ◆ GCC Total 2007 - 72,300MW
- ◆ GCC Estimate 2017 > 130,000 MW

GCC Utilities

- ◆ Saudi Arabia - Saudi Electricity Company
- ◆ Qatar - Qatar Electricity and Water Company
- ◆ Kuwait - Ministry of Electricity and Water
- ◆ Bahrain - Electricity and Water Authority
- ◆ Oman - Oman Power and Water Procurement Company
- ◆ United Arab Emirates - Dubai Electricity & Water Authority and the Abu Dhabi National Energy Company
- ◆ Expansion increasingly supplemented by IPP and IPWP
- ◆ Connected by the GCC Interconnection Grid that now links KSA, Qatar, Bahrain and Kuwait and the Oman and UAE from 2011 - value USD 1.4bn

Fuel and Cost of Energy

- ◆ UK Comparison - USD 1.90 per litre



Fuel and Cost of Energy

- ◆ Saudi Arabia consumes 1,250,000 bpd of oil or about 10% of production for domestic power
- ◆ At USD 80pb that is potentially USD 100,000,000 in lost export revenue
- ◆ Other GCC states similarly use oil or gas as their primary energy source

Fuel and Cost of Cost of Energy

- ◆ Saudi Arabia spends USD 13.3bn on electricity subsidy and USD 20.2bn on water subsidies per annum
- ◆ Cost of Power can be in the order of USD25-40/MWh in the industrial and domestic sectors
- ◆ Comparison figures in the UK in November 2010 are in the order of USD 72/MWh
- ◆ GCC governments would like to reduce subsidies due to loss of earnings etc but face domestic market resistance

OEMs and Technology Suppliers

- ◆ Traditional OEMs such as GE, Alstom, Siemens etc still providing majority of the equipment
- ◆ Increasing appearance of other technology suppliers such as Shanghai Electric Group Co. and Dong Fang Electrical Corp of China
- ◆ Increasing appearance of Chinese and other EPC contractors such as China's Sepco III Electric Power Construction Corp for USD 2.4bn SWCC Plant at Ras Azzour and 1,200MW steam turbine IPP plant for SEC at Rabigh Western Region KSA and Doosan of Korea

Nuclear Power

- ◆ Kuwait to build four 1,000MW nuclear power stations by 2022
- ◆ Abu Dhabi to bring four nuclear power stations on stream by 2020 in a USD 20bn deal with Korean Electric Power Company
- ◆ Saudi Arabia, Bahrain and Qatar are also studying the nuclear power option
- ◆ Nuclear power is considered economically viable with oil prices in excess of USD 45 - 50 a barrel

Desalination

- ◆ Saudi Arabia as the example country:
- ◆ Currently provided by Saline Water Conversion Company (SWCC)
- ◆ A total of 17 operating plants using a mix of technologies produce approximately 1.1bn m³ per year
- ◆ Six biggest plants also export 3,400MW of power to the national grid
- ◆ Six Plants in construction/under study to add 675,000,000m³ per year of water and 4,100MW

Desalination

- ◆ Domestic water use in the GCC increased from 2.8bn m³ to 5.1bn m³ during 1990-2000, and could reach more than 8.5bn m³ in the year 2025 if current trends continue
- ◆ Environmental concerns are emerging as the gulf's salinity levels have risen to 47,000ppm, from 32,000ppm about 30 years ago

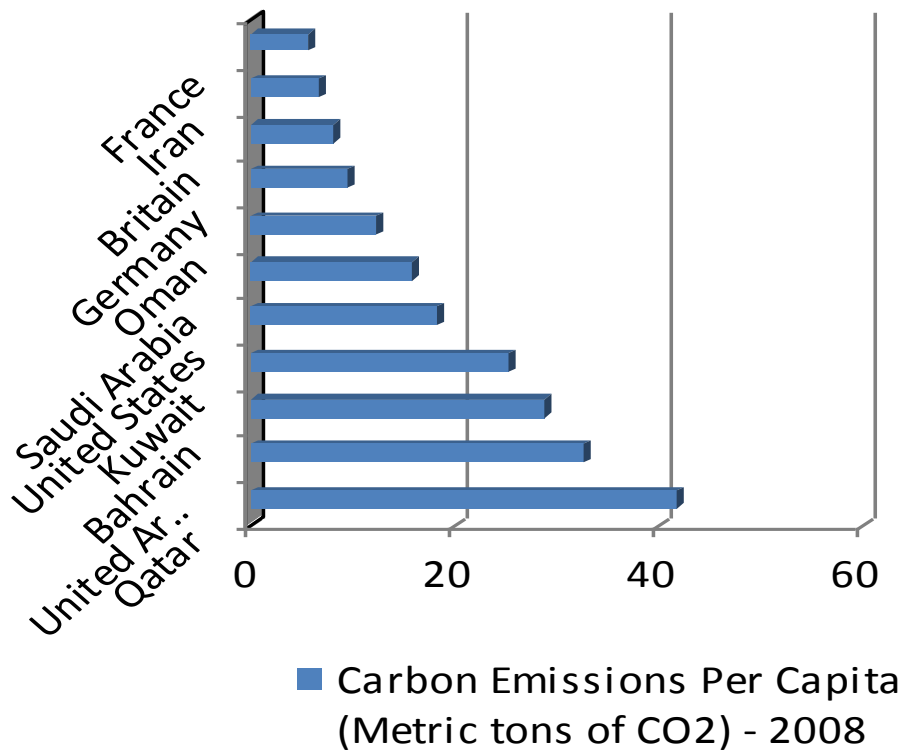
Desalination

- ◆ For Saudi Arabia alone the planned volume of desalinated water is equivalent to 2,000 Olympic sized swimming pools every day



Carbon Footprint

Carbon Emissions Per Capita (Metric tons of CO₂) - 2008



Green Alternatives

- ◆ Masdar City - Abu Dhabi UAE



Green Alternatives

- ◆ Masdar - Abu Dhabi Future Energy Company established in 2006 to advance the commercial development of renewable energy and clean technology solutions
- ◆ Masdar City - An intended USD 22 billion free zone 17km from Abu Dhabi to form a cluster for the development of green technology
- ◆ To include the Shams 1 Project, a 100MW solar energy plant scheduled for 2012

Green Alternatives

- ◆ Concentrating Solar Plants



Green Alternatives

- ◆ Shams I to utilize CSP technology that focuses sunlight concentrated by mirrors, to heat a coolant which generates high-pressure steam to drive a conventional steam turbine.
- ◆ European Commission Institute for Energy calculates the capture of just 0.3% of the light falling on the Sahara and Middle East deserts could meet all of Europe's energy needs.
- ◆ Combined with High Voltage DC supergrid for Europe could produce 100GW of power but with an investment tag of USD 60 billion for the grid alone

Conclusions

- ◆ Increasing wealth and growing populations will see increasing demand for power and water presenting genuine challenges to the region's governments
- ◆ There will be a mix of conventional and nuclear fuel powered stations demanding significant investment
- ◆ We will see the emergence of non traditional OEMs from China, India and Korea etc supplying technology and as EPC Contractors
- ◆ We should see the emergence of solar power as an energy source in the medium term

Concerns

- ◆ Sheer strain on the environment due to increasing population and demand for power and water
- ◆ Risk of regional conflict



Questions?

Thank You

