MENA: Fulcrum of Global Energy

IPFA-Freshfields Seminar: “The Shifting Sands of Energy in MENA”

Dr. Nasser Saidi
Chief Economist & Head External Relations
22 June 2011

DIFC Dubai International Financial Centre

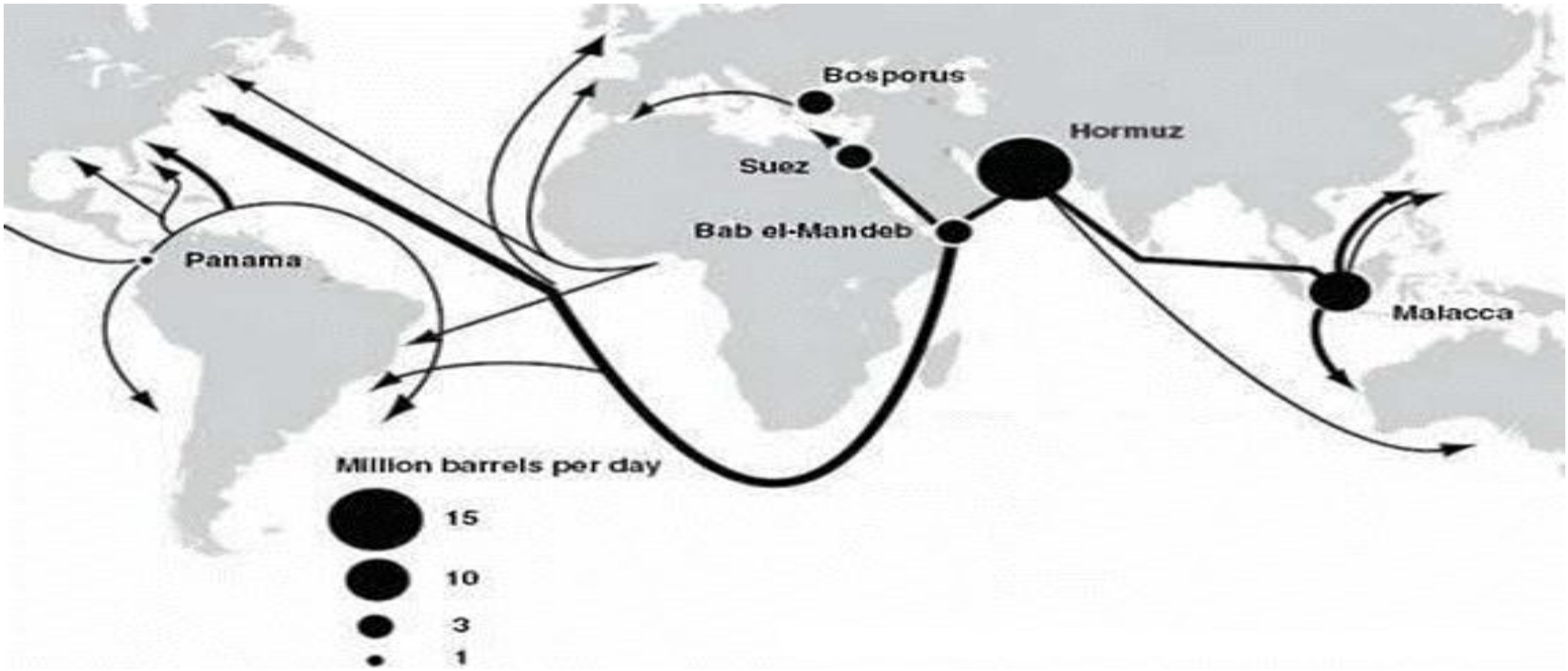
Agenda: MENA: Fulcrum of Global Energy

- Arab Firestorm, Energy Security & Changing Infrastructure
- Shifting Energy Markets and Their Consequences
- Clean Energy investment activity
- MENA Clean Energy Drivers & Policy Environment
- Clean Energy Business Council

Uncertainty & Unrest in the MENA region

- **MENA political upheaval** and associated risk premium have **pushed crude oil prices to the highest level since September 2008**. Some countries experienced disruptions in production, which could further influence the oil supply.
- Sharp volatility in oil prices has led to a substantial inflow of investment funds into the futures market. Speculators' activity on crude oil futures market led to spike in volumes traded on ICE and NYMEX.
- Impact of disruption in North African crude oil exports mainly felt by European refineries. With utilization rates currently at low levels, refiners able to run available sour crudes, while refineries based on North African crudes could look into switching to other grades if their configuration permits.
- Despite onset of low seasonal demand period, recent disruptions created some anxiety in the market, providing grounds for speculative activity. However, OPEC/KSA spare capacity, which has risen close to 6 mb/d over the last year, serves as an effective market stabilizer available to accommodate any sudden disruption.
- Additional **uncertainties** include the recessionary effects of energy prices on the world economy, higher prices for food and industrial goods that would negatively affect oil production, the **sovereign debt** crisis in the **Euro-zone** and overheating in the emerging economies.

Maritime chokepoints critical to petroleum markets



Source: EIA
Note: Circles represent millions of barrels per day transported through each chokepoint. Arrows represent common petroleum maritime routes
Maritime transit chokepoints are narrow channels along widely used global sea routes. Because about one half of the world's crude oil supply is moved by tankers on maritime shipping routes, world oil transit chokepoints are a critical part of global energy security.

Maritime chokepoints are critical to GCC Oil Exports

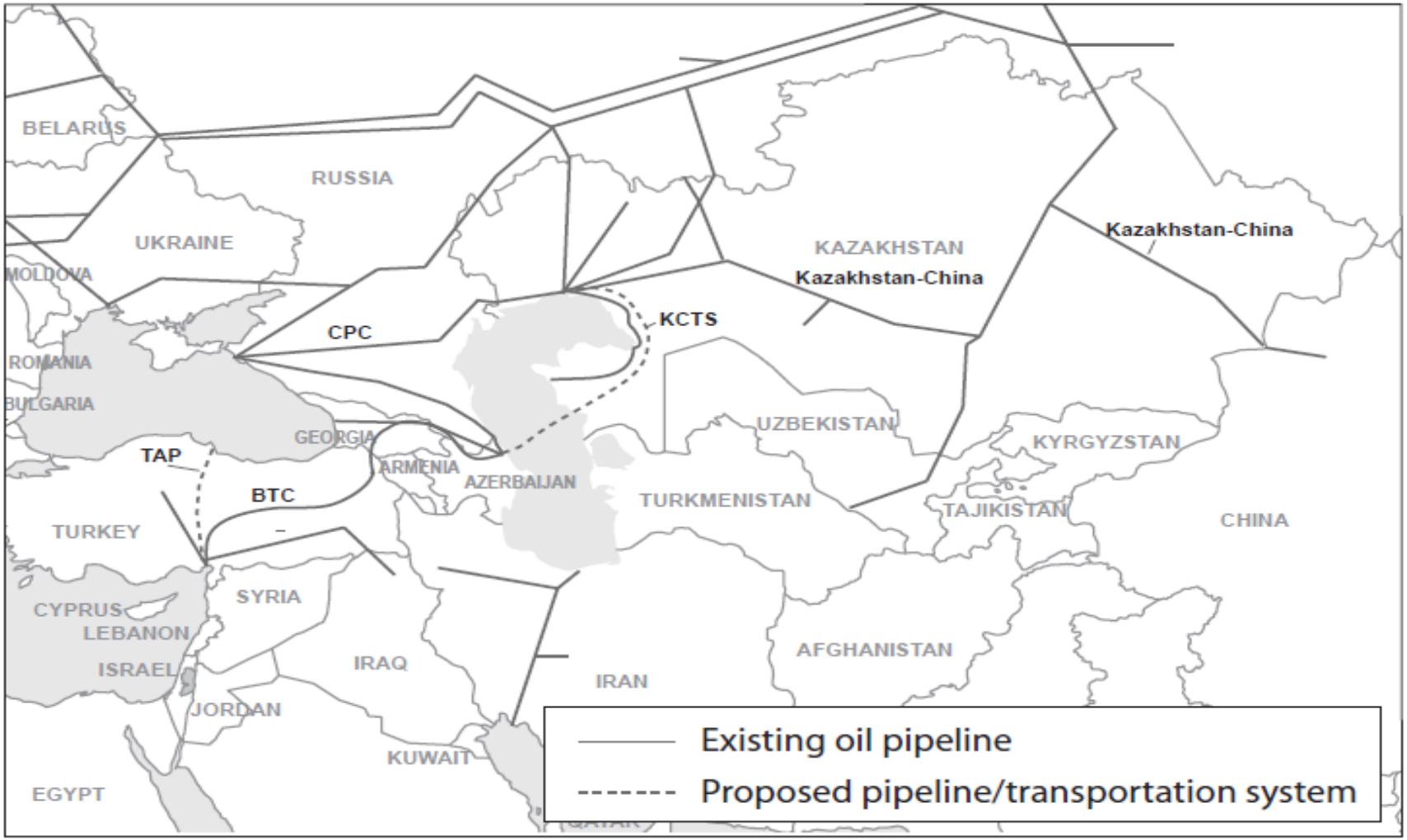
- **Blockage of a chokepoint can disrupt energy markets. Closure** of some chokepoints would require the use of longer **alternate routes**, increasing transportation costs, but for key chokepoints there are limited alternate routes.

- **The Strait of Hormuz,** the world's major oil transport chokepoint, saw an oil flow of 15.5 mn barrels per day (bbl/d) in 2009, 1/3 of all seaborne traded oil, or **17% of oil traded worldwide**. Closure would require the use of longer alternate routes at increased transportation costs. Alternate routes include the East-West Pipeline across Saudi Arabia, with a nameplate capacity of 4.8 million bbl/d. The Abqaiq-Yanbu natural gas liquids pipeline, which runs parallel to the Petroline to the Red Sea, has a 290,000-bbl/d capacity.

- New bypass across the **UAE** is already in operation. The 1.5 million bbl/d **Habshan-Fujairah pipeline** crosses the Emirate of Abu Dhabi and ends at the port of Fujairah. Other alternate routes could include the deactivated 1.65-million bbl/d Iraqi Pipeline across Saudi Arabia (IPSA), and the deactivated 0.5 million-bbl/d Tapline & IPC pipelines to Lebanon. Additional oil could also be pumped north via the Iraq-Turkey pipeline to the port of Ceyhan on the Mediterranean Sea.

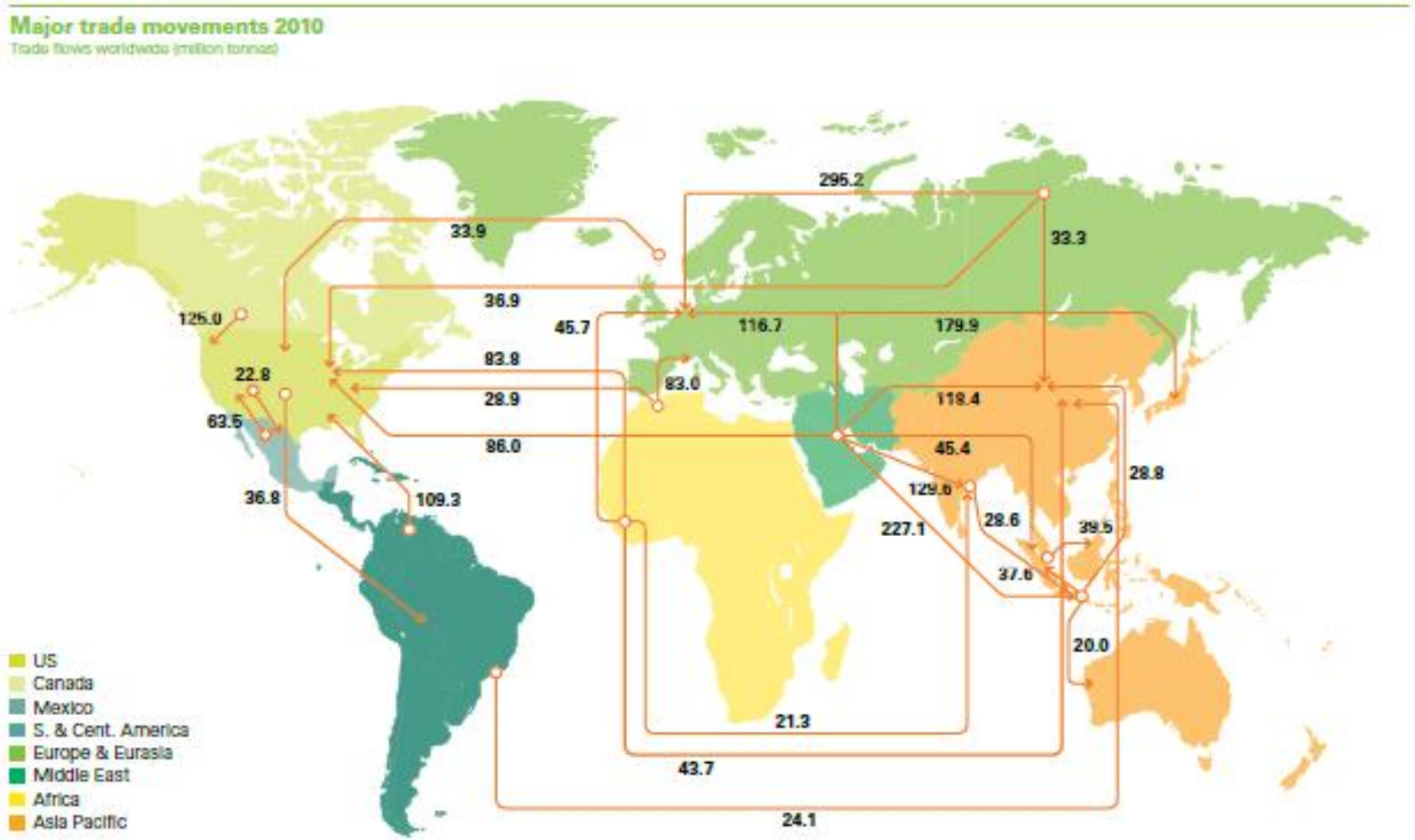
But new infrastructure is being built in Central Asia

Central Asia Oil pipelines: China's Growing Infrastructure

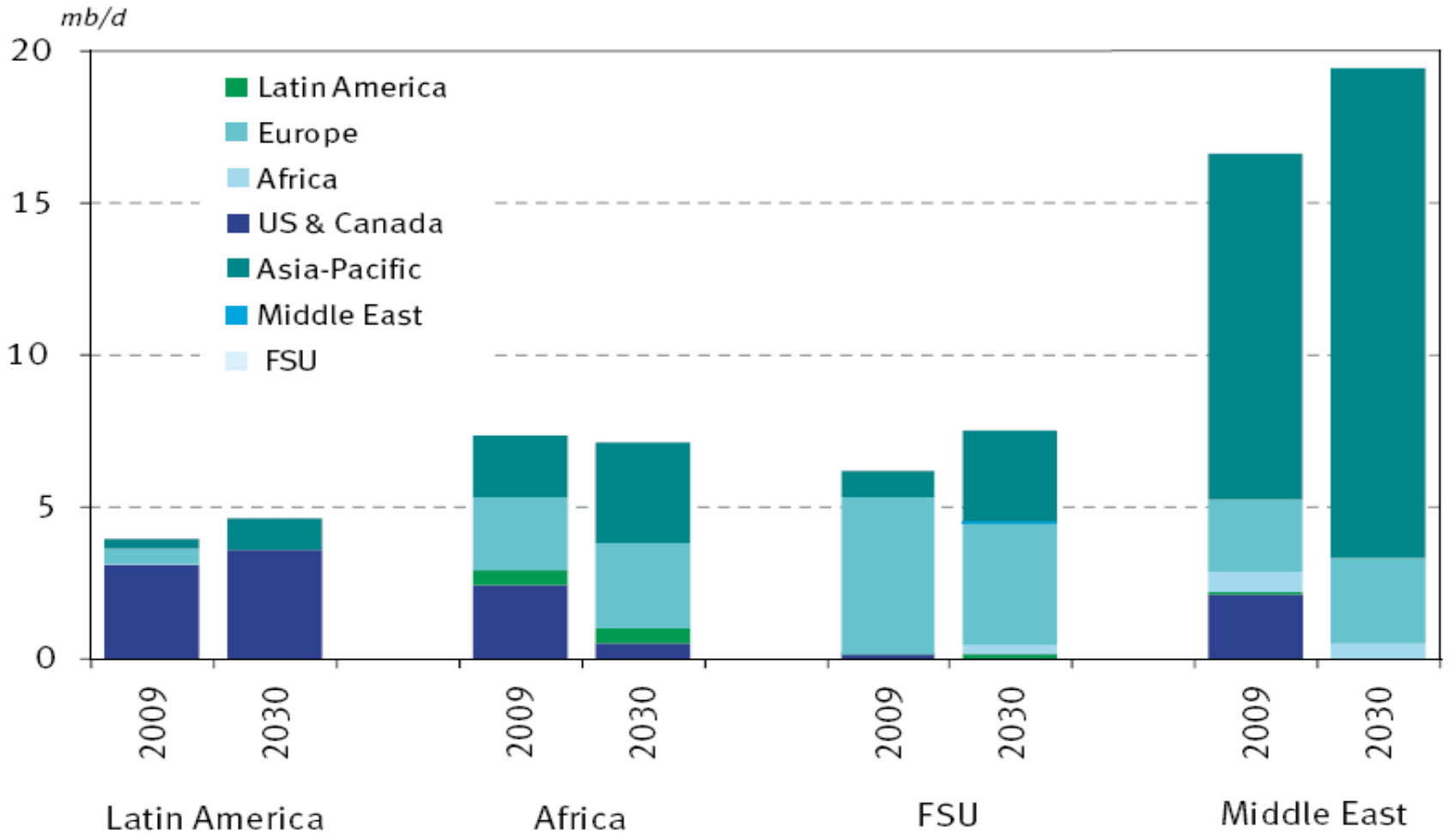


Source: Richard Jones, "The Politics of Central Asian and Caspian Energy"

Global Oil Trade Flows increasingly dominated by EMEs

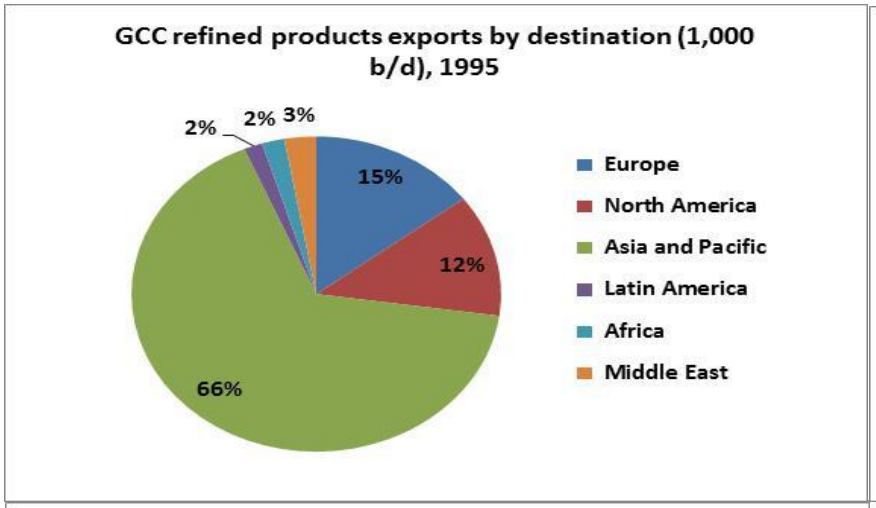


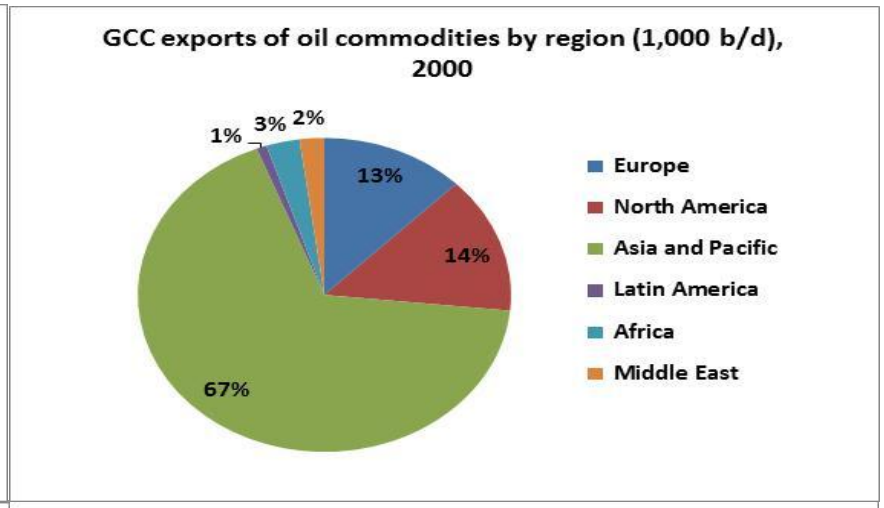
Major Crude Exports by Destination, 2009 and 2030

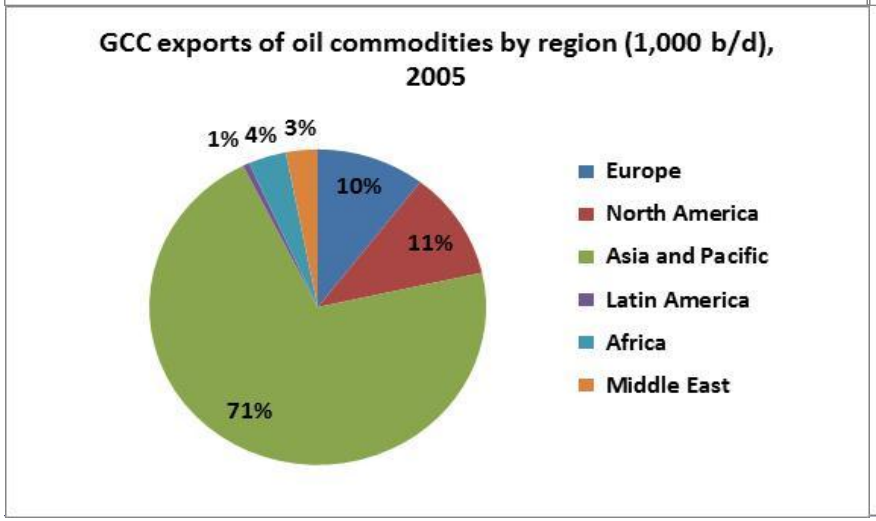


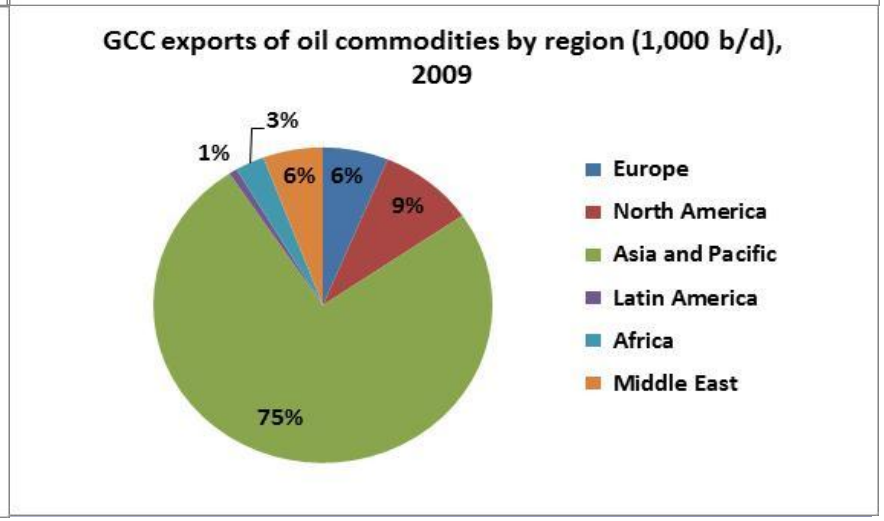
Source: World Oil Outlook 2010, OPEC

Shift in oil trade patterns in the GCC region to Asia



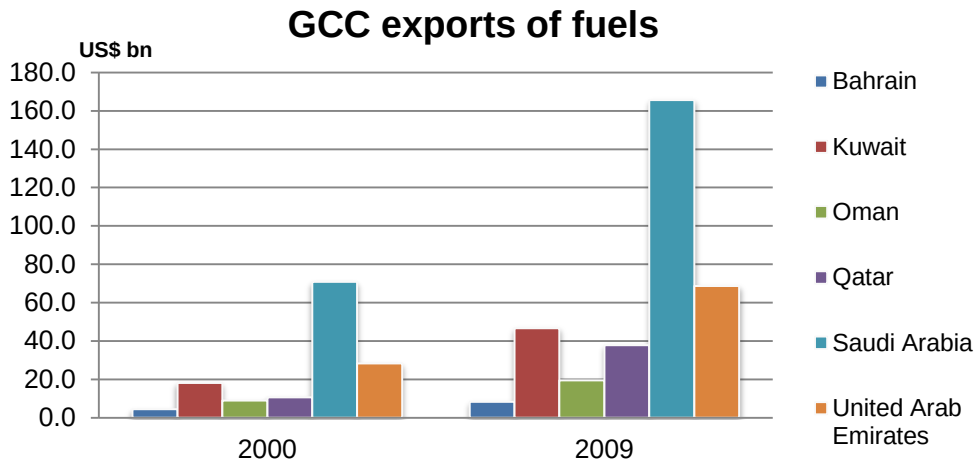






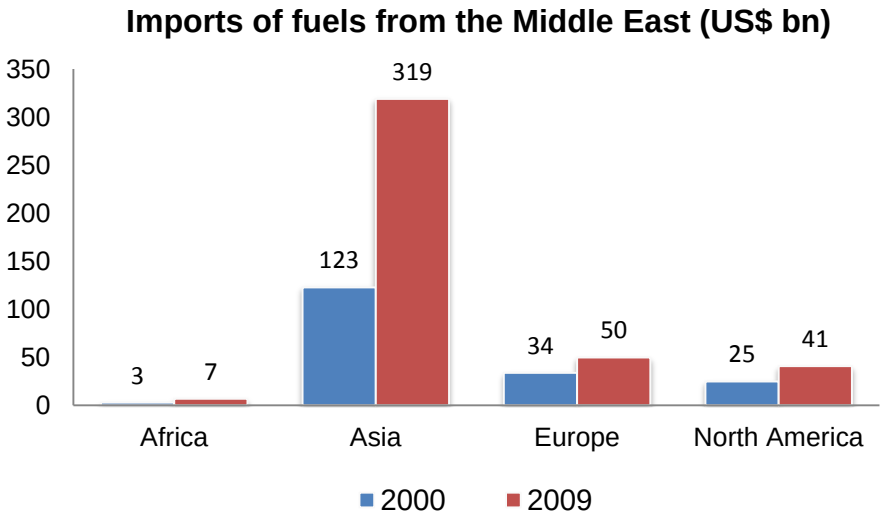
Source: OPEC

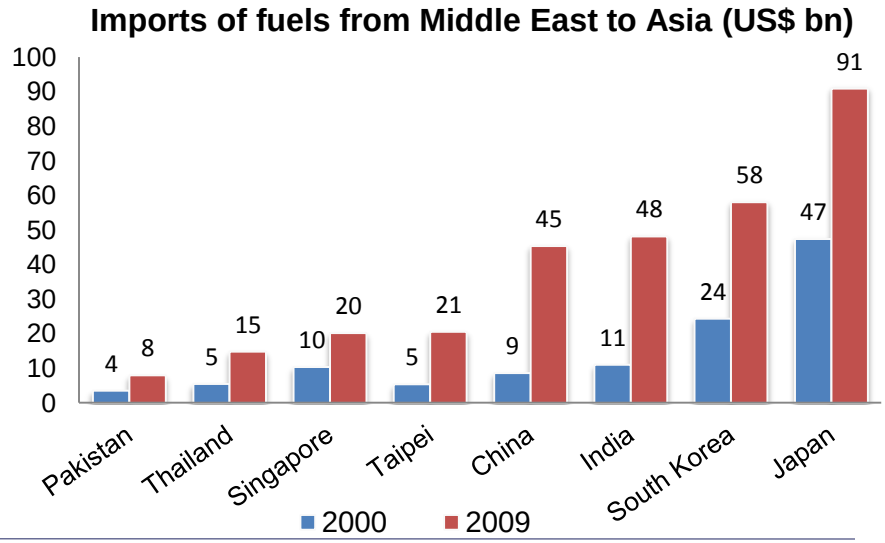
Geographical Distribution of Hydrocarbons Trade



- Saudi Arabia has reinforced its position as the region's (and world's) biggest exporter - exporting 79% of its production.

- US remains the world's largest net importer of oil (564 mn tonnes), but **China has imported more fuels from the Middle East than the whole of North America in 2009 becoming main importer from KSA in 2010**





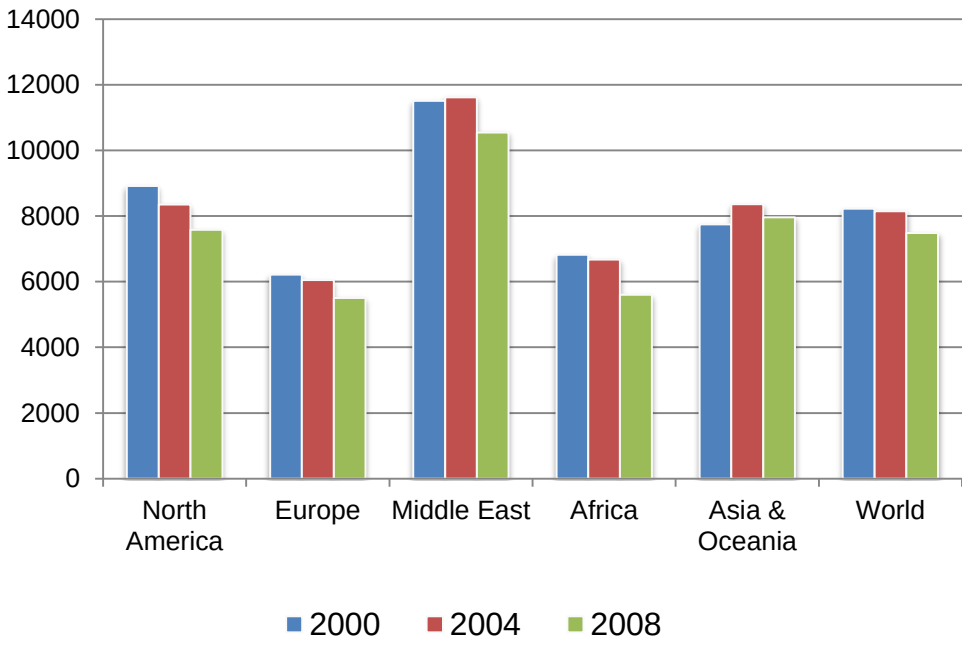
Source: WTO and IEA

Changing Global Energy Intensity

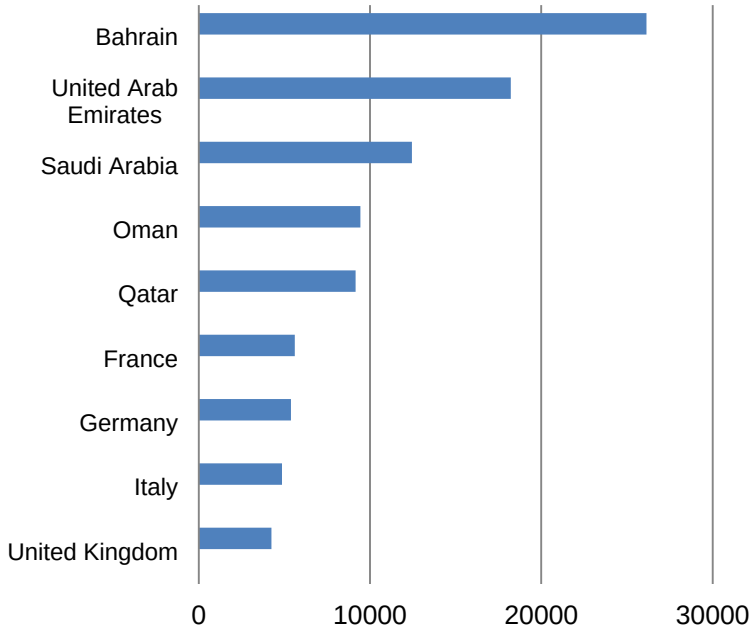
On a global level, energy intensity has been declining due to (a) technological innovation & (b) shift to less energy-intensive activities e.g. services

Europe displays almost half of the Middle East's energy intensity

Energy intensity in the World



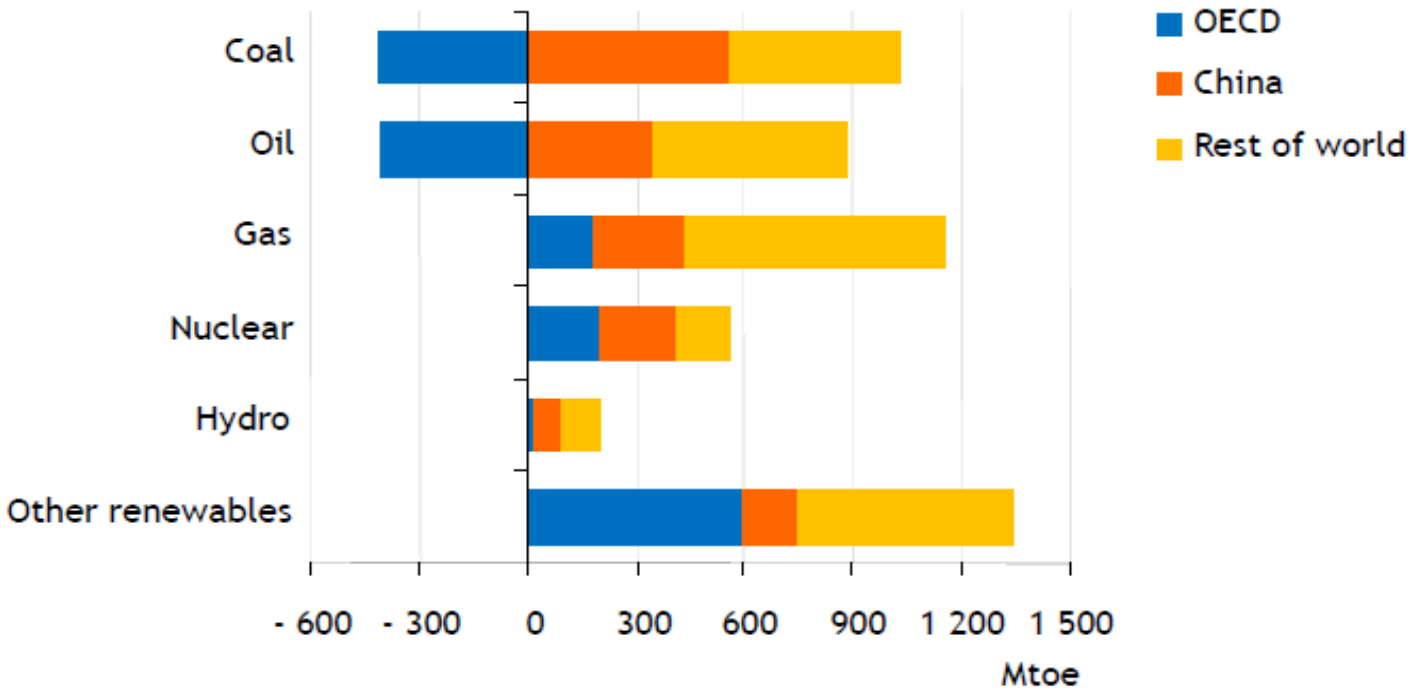
Energy Intensity - Total Primary Energy Consumption per Dollar of GDP



Source: EIA International energy Statistics

EMEs will dominate Demand for Energy

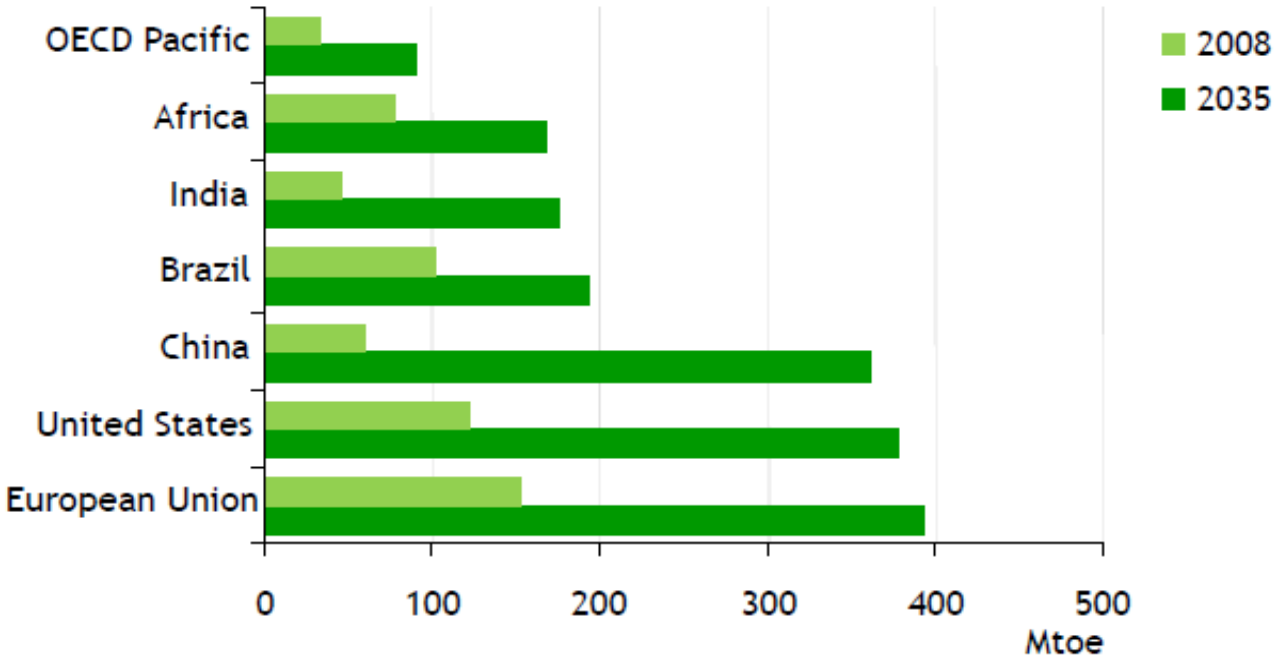
Incremental primary energy demand in the New Policies Scenario, 2008-2035



Demand for all types of energy increases in non-OECD countries, while demand for coal & oil declines in the OECD

Higher Oil Prices & New Policies: Impetus for Renewables

Renewable primary energy demand in the New Policies Scenario

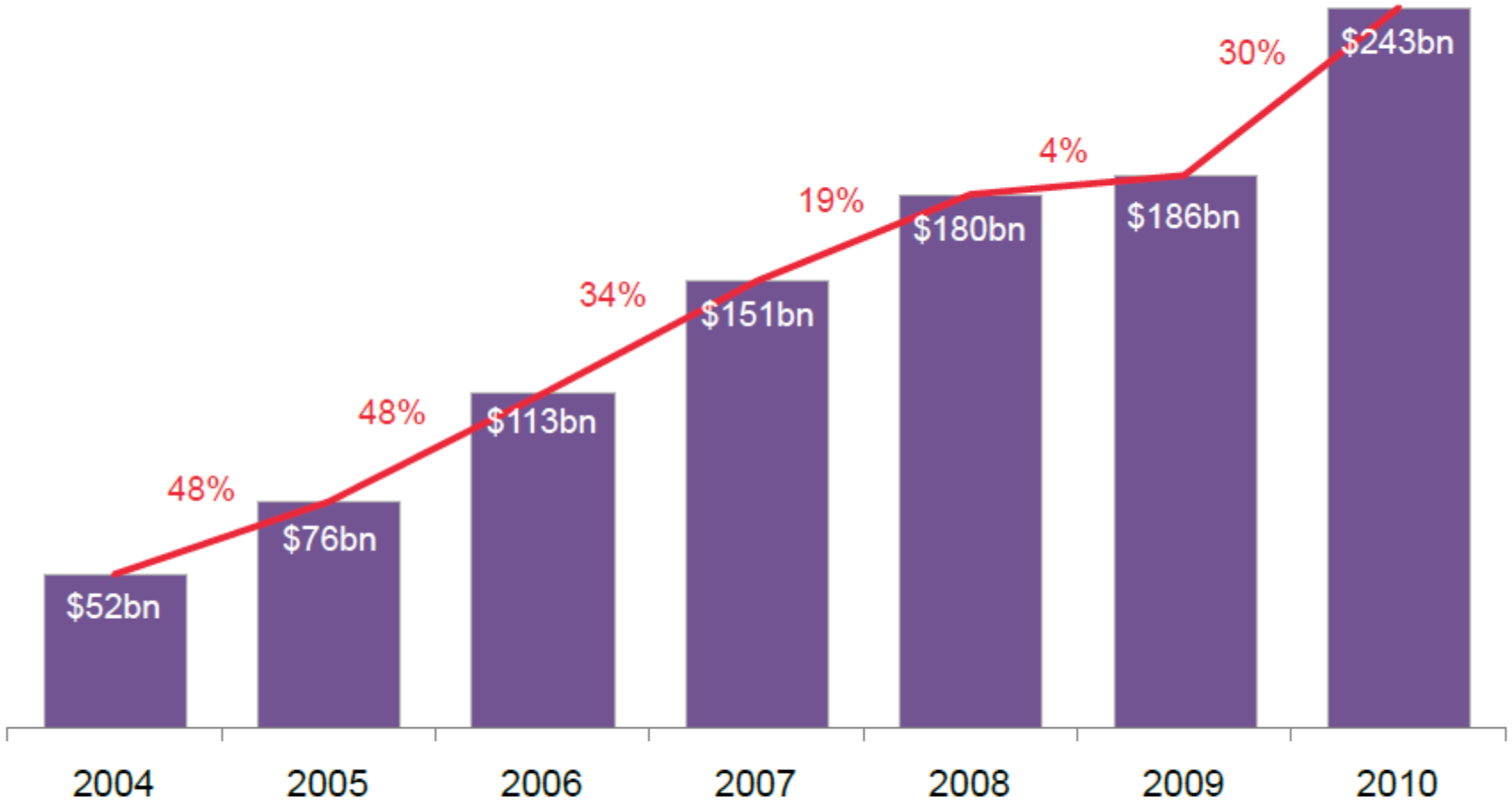


The use of renewable energy triples between 2008 & 2035, driven by the power sector where their share in electricity supply rises from 19% in 2008 to 32% in 2035

Fukushima 2011: a ‘defining moment’ for Nuclear Energy?

GLOBAL TOTAL NEW INVESTMENT IN CLEAN ENERGY

2004–10 ($BN)

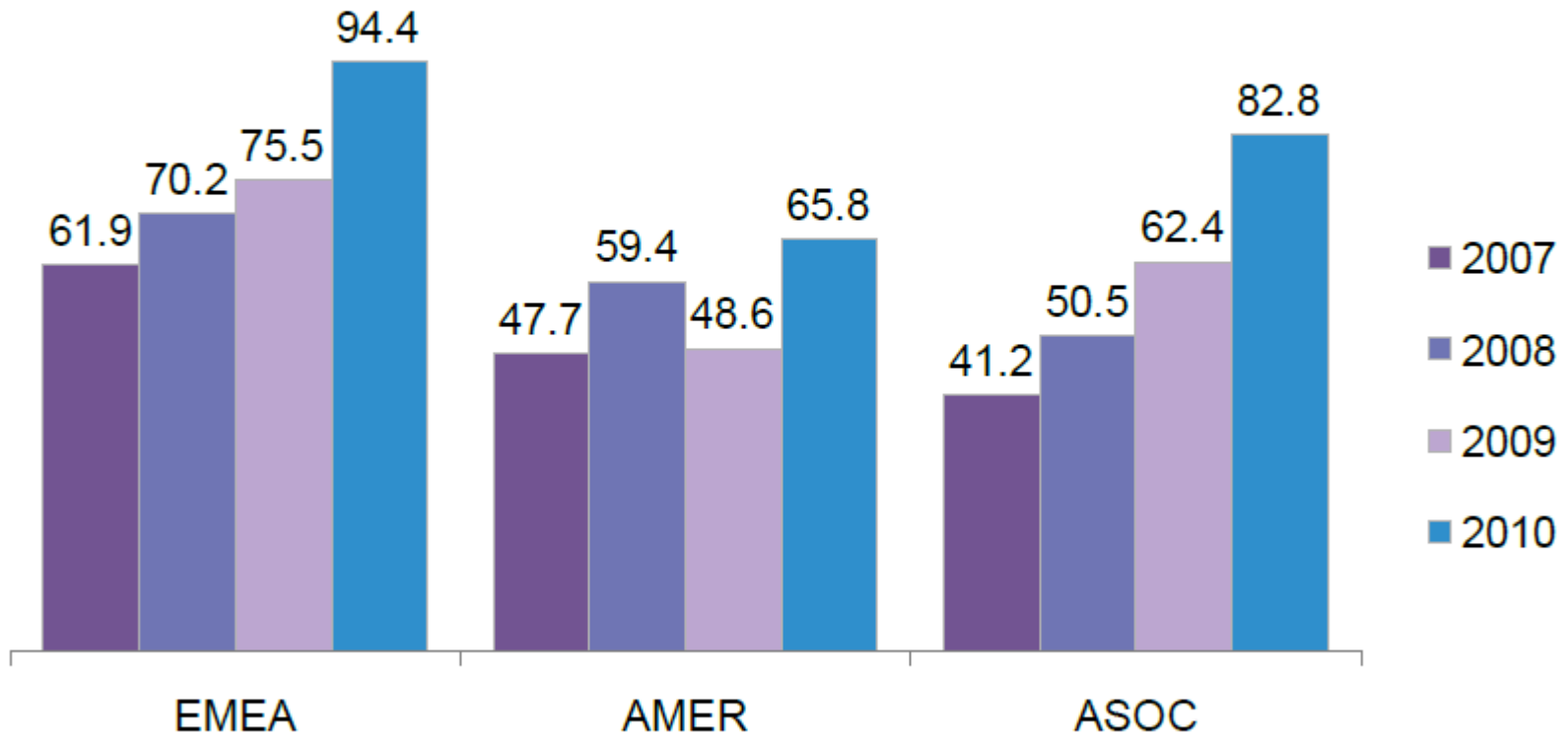


Note: Includes corporate and government R&D, and small distributed capacity. Adjusted for re-invested equity. Does not include proceeds from acquisition transactions

Source: Bloomberg New Energy Finance

TOTAL NEW INVESTMENT IN CLEAN ENERGY BY REGION

2007–10 ($BN)

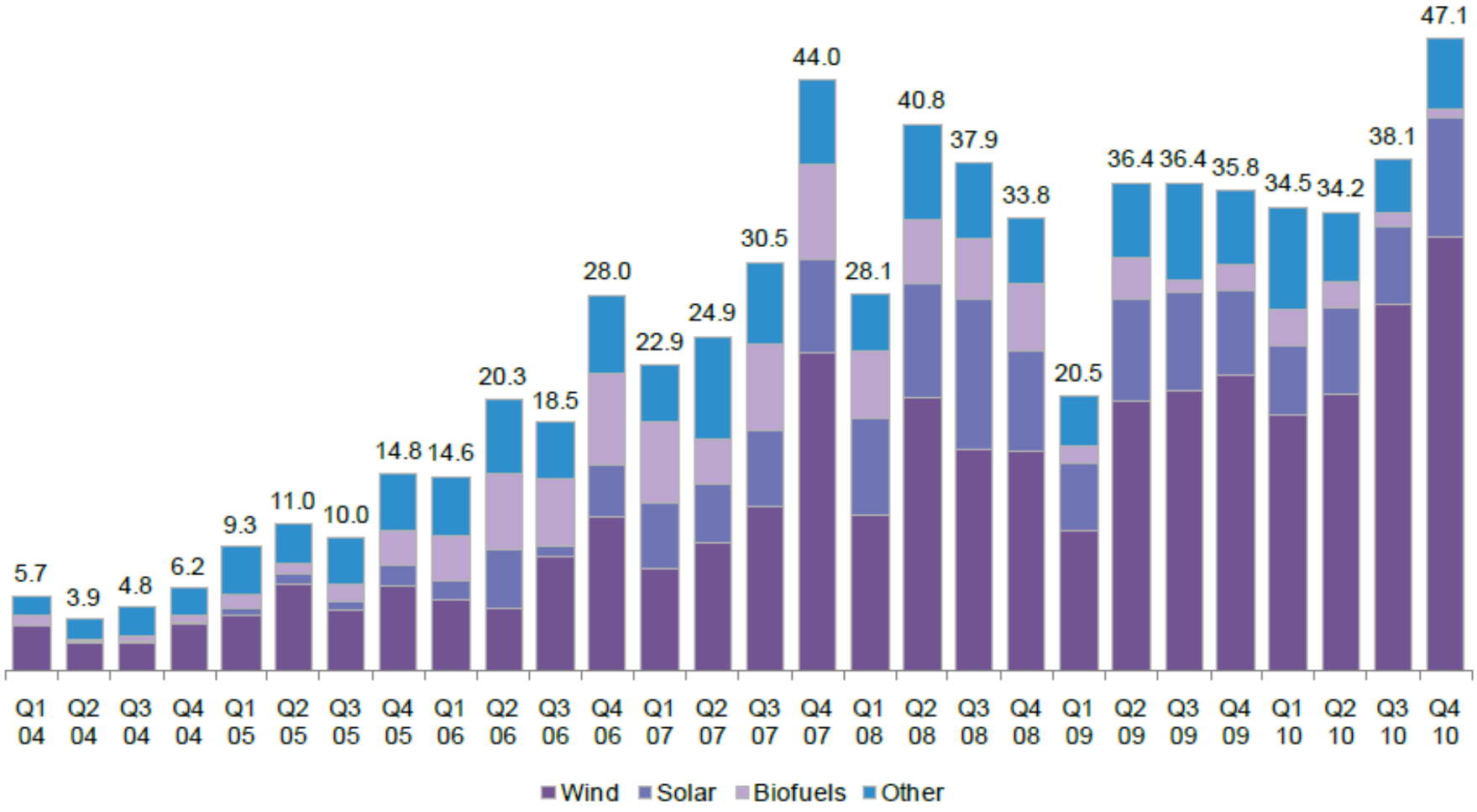


Note: Includes corporate and government R&D, and small distributed capacity. Adjusted for re-invested equity. Does not include proceeds from acquisition transactions

Source: Bloomberg New Energy Finance

NEW FINANCIAL INVESTMENT IN CLEAN ENERGY BY SECTOR

Q1 2004–Q4 2010 ($BN)



Note: Excludes corporate and government R&D, and small distributed capacity. Not adjusted for re-invested equity

Source: Bloomberg New Energy Finance

MENA: Drivers of Clean Energy Investment

•Economic case for continued growth and diversification of energy across MENA remains, especially in the context of demographic change that is driving increased demand for power generation.

•Key drivers for clean energy investment in the region (with varying degrees by country):

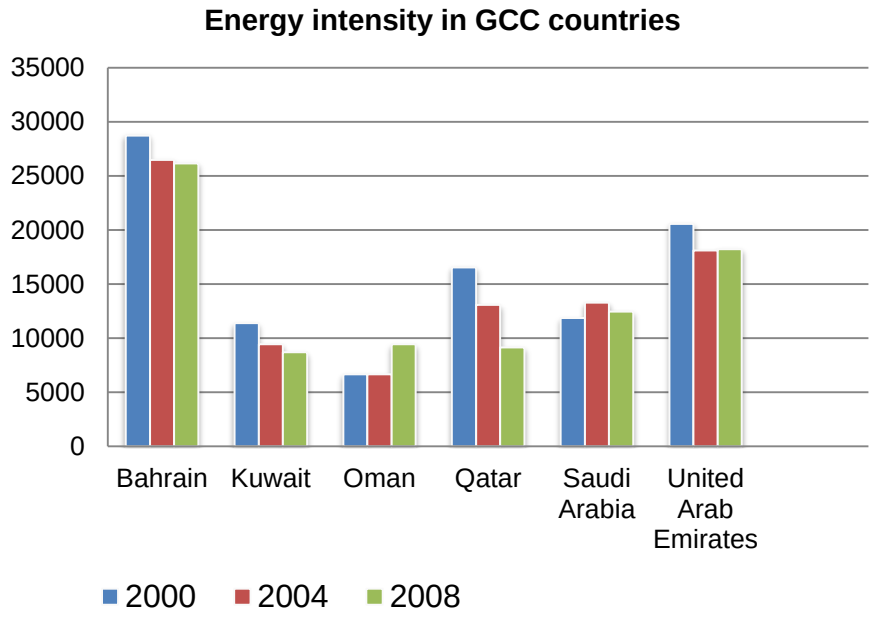
- •Growing budgetary pressures from subsidies
- •Rising energy demand
- •Energy security
- •Growing export value of hydrocarbon stocks
- •Concerns over carbon footprint and pollution levels

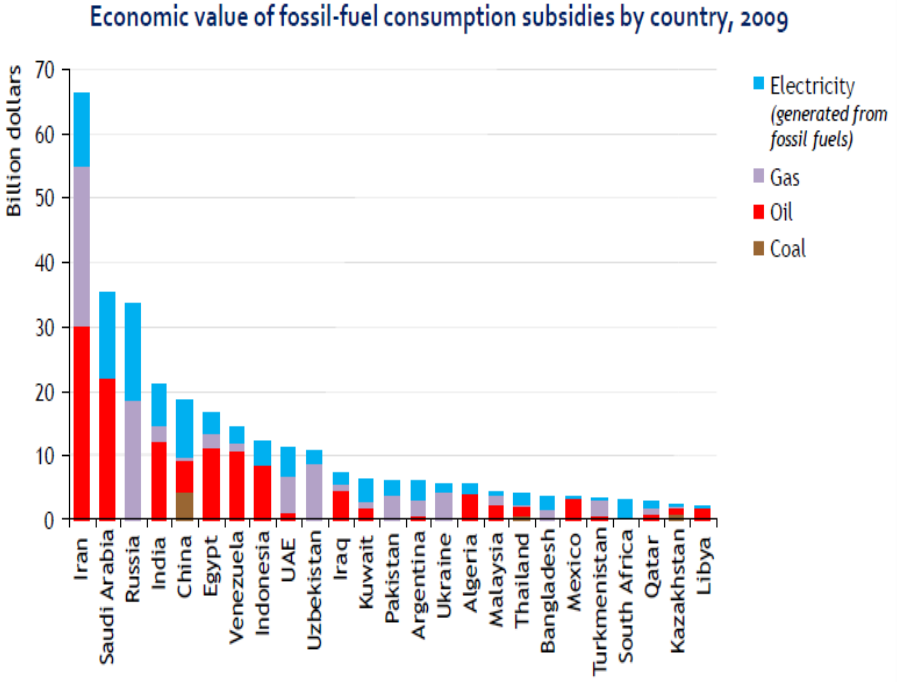
GCC : high energy demand growth

- Region's hydrocarbons producing countries have displayed some of the fastest yearly growth in energy demand in the world (KSA 5.9%, UAE 7.5%, Qatar 13.4%).
- GCC petroleum consumption grew 5% per year between 2000 & 2009, a rate exceeding the OECD average, which between 2000 to 2007 registered a 0.2% decline.
- KSA and the UAE have maintained fuel subsidies despite persistent high world oil prices of the past few years, and the subsidies have discouraged conservation or efficiency (in 2008, one gallon of gasoline cost consumers about 61 US$ cents in KSA).
- High subsidy levels have led to high energy intensive production and consumption patterns and growing budgetary burdens

Energy Utilization in the Gulf

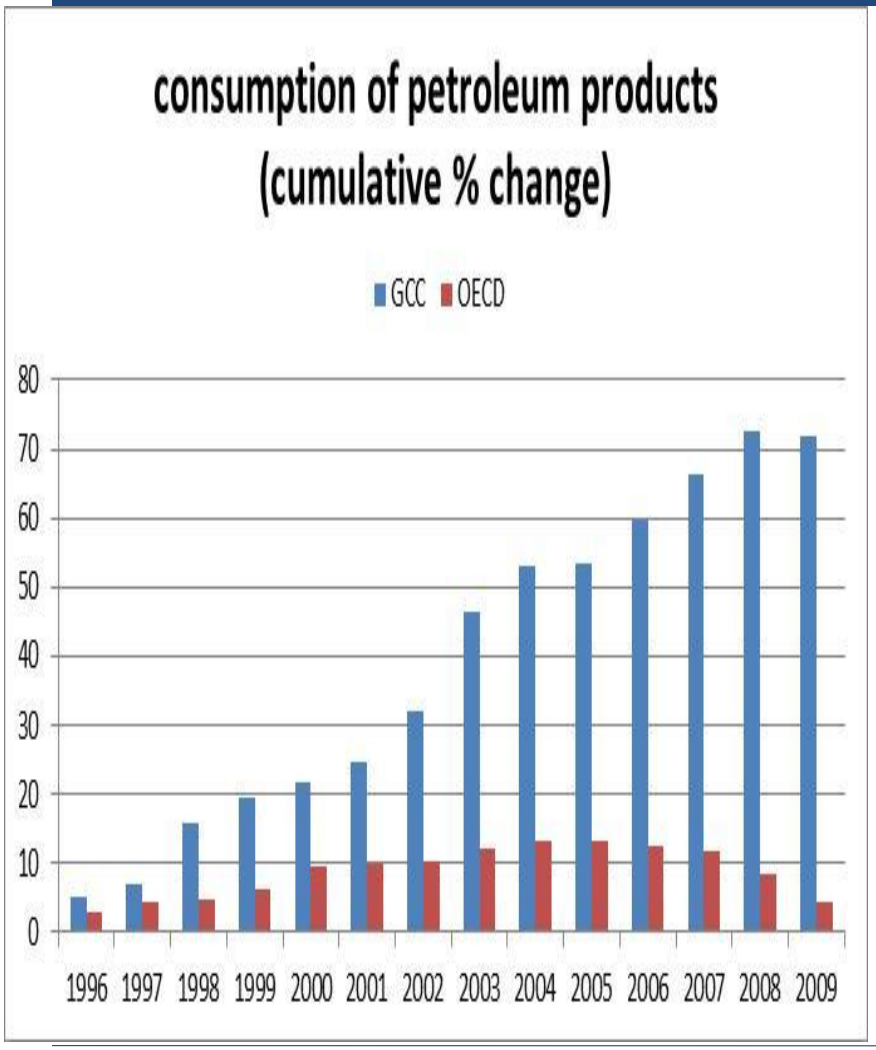
- **Energy intensity has been modestly declining in GCC**; in some countries it has increased (KSA), or remained stagnant over years (UAE)
- High energy intensity influences trade by diminishing amount of fuels available for exports*: SA uses more oil than Germany due to the high level of subsidies !*
- Industrial energy use in the GCC declined by 7% over the last ten years. GCC chemical sector is the largest in terms of energy consumption, with numerous "mega" petrochemical projects under construction

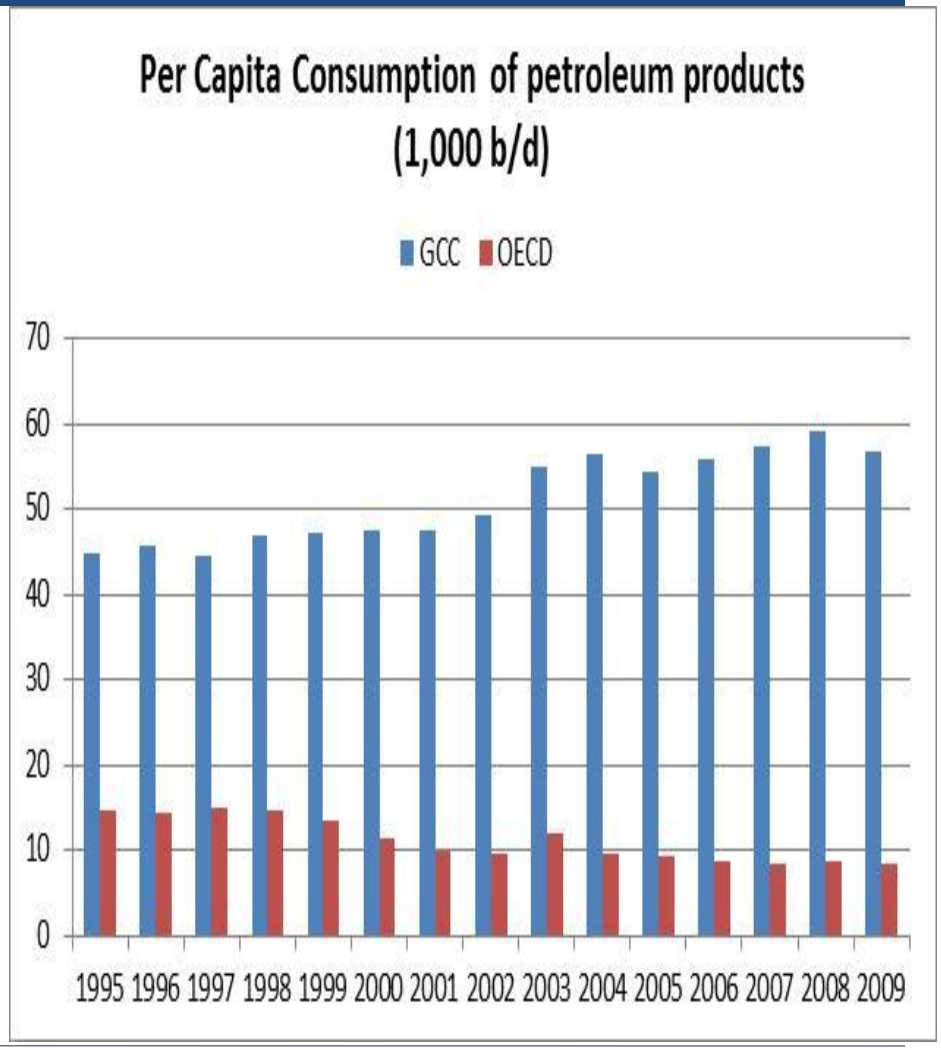




Source: EIA International Energy Statistics

High Subsidy Levels encourage High & Growing GCC Petroleum Consumption





MENA Region Energy Policy Challenges

•Governments across the region are under growing pressure to meet the energy demands of young & growing populations and industrial expansion and development whilst at the same time balancing environmental and pollution concerns.

•MENA region is particularly vulnerable to climate change, especially in areas such as global warming, reduced precipitation and rise in sea levels. Water supply sources in the Arab world, 2/3 of which originate outside the region, are being stretched to their limits.

•The economic costs of environmental degradation are high in the region, varying from 2.1% of GDP in Tunisia, to as high as 7.1% of GDP in Iran. "This high cost of environmental degradation spills into public finances, household budgets, the competitiveness of the economy, and inter-generational equity." (World Bank)

MENA: Environmental Challenges

•MENA region is becoming a significant contributor in terms of greenhouse emissions. Currently it represents about 6% of global greenhouse gas emissions, but we have the fastest rising regional per capita emissions in the world. The region's emissions grew 5 times faster than the global average from 1990-2005.

•Increasing awareness of the region's potential in this field and investment has increased considerably within the last five years in recognition of this. Total new investment in the MENA region in 2010 rising to $1.28bn. Despite the investment growth, it remains marginal in terms of global investment, with total new global investment in renewable energy investment rising to $243bn in 2010.

MENA Clean Energy: absence of comprehensive policies

•Policy remains the single most important driver for clean energy investments.

International experience suggests that critical factors for building a new industry sector include the development of a comprehensive policy and regulatory framework to support clean energy sector

•No country in the region has a clear policy base comparable to more developed markets. However, a large proportion of the expected capacity will be commissioned via a combination of auctions and tenders, and renewable energy targets. Currently these targets are the only clear indication as to each country's intent

•Clean Energy sector development and growth requires creation of a critical mass of industry participants committed to working together in a coordinated way.

MENA CE Policy Environment: Morocco, Tunisia, Egypt

- **Morocco** has a renewable energy target of 42% of total electricity capacity by 2020. This equates to roughly 2GW of solar, 2GW of wind, and 2GW of hydropower capacity. It is understood that the target will be met using the auctions and tenders mechanism. Prices will vary depending on each specific project.
- **Tunisia's** strategy is outlined in the Tunisian Solar Plan which is an initiative to commission 110MW of Solar Thermal Electricity Generation (STEG), 20MW of PV, 280MW of wind capacity by 2016, to be developed and financed by a combination of the private and public sectors. It also details a number of other initiatives including the construction of a PV manufacturing plant and a training and administrative centre.
- **Egypt** has a renewable energy target of 20% of electricity consumption to be developed from clean energy sources by 2020, of which 12% is to be from wind. This equates to around 7.2GW of wind energy – the government has also announced plans to develop 100MW PV project to add to the recently constructed Kuraymat STEG hybrid project.

MENA CE Policy Environment: UAE, KSA

•**United Arab Emirates** has a renewable energy target of 7% by 2020. The majority of this capacity is likely to be solar although there are also plans to develop some wind capacity as well. The country has also established a renewable energy agency **Masdar** which is responsible for encouraging and developing projects within the country as well as oversees investments in clean energy.

•**Saudi Arabia** has not yet established a renewable energy target although a target of 10% of electricity consumption by 2020 has been provisionally mentioned by officials from Saudi Aramco. The government established the King Abdullah City for Atomic and Renewable Energy (KA-CARE) in 2010 to oversee all clean energy development in the country and it is expected to unveil a clean energy strategy before the close of 2011. Size of Saudi Arabia's energy market means that even a relatively low renewable energy target will result in considerable deployment of clean energy. Saudi Arabia also has the clearest fiscal incentives of the aforementioned countries to satisfy domestic energy consumption with sources other than its oil resources

Clean Energy Business Council

- An association of leading local and international organisations participating in MENA's emerging low carbon energy sector.
- Unique in the region as a peak industry body for the clean energy sector and in its reach across the MENA region.
- An inclusive forum

As developers, investors, and governments in MENA increasingly focus on low carbon energy solutions, an inclusive forum will help businesses and the public sector share ideas to promote effective policies and best practices.

Why CEBC..

- MENA has significant clean energy resources in solar, wind and CCS
- Growing populations and industry create significant demand for power generation
- Governments in the region are under pressure to meet that demand without increasing pollution or environment impacts
- Clean Energy sector is in the very early stages but is growing fast
- Region is becoming a centre for CE investment and trade, research and development
- It's also an emerging centre for international policy with the **IRENA HQ and the UAE's MASDAR**
- R&D and investment opportunities abound

In this rapidly developing market, the private sector, through CEBC can help the governments of the region create a thriving sector.

CEBC is a non-profit organisation with a mission to …

- Establish a leading forum for companies and government entities focused on the development and deployment of clean energy in the MENA region
- Promote the clean energy industry beginning to flourish in the region and inform the wider community of the benefits of the sector
- Collaborate with government agencies and other stakeholders in policy development and regulation of this rapidly developing and exciting sector
- Develop a series of strategic alliances with research institutions, international associations, media and others to drive the delivery of clean energy solutions for MENA
- Coordinate the gathering of data and information on the sector to ensure relevant benchmarking and transparency in the sectors development
- Support and assist governments, industry and the community in the region to meet low carbon targets and sustainability goals

CEBC Membership

- CEBC is a membership based non-profit organization registered in the Masdar Free Zone in Abu Dhabi
- Membership is currently 10,000 USD for Founding Members
- Members have access to technology based sub-committees, research and media networks, access to government and ability to influence government and policy development through a neutral forum
- Companies can register their interest in becoming a Member of CEBC by visiting our website at www.cleanenergybusinesscouncil.com
- For more information email: info@cleanenergybusinesscouncil.com

Some Concluding Observations

- Energy market dynamics has shifted towards Emerging Market Economies: China & other EMEs are shaping future of global energy
- New Energy Transport Infrastructure is changing Energy Geography & Geo-Strategic importance of Marine Chokepoints
- End of Cheap Oil & perceived higher Nuclear Energy Risk will give impetus to CE
- Energy intensity & Subsidies very high in GCC and oil exporters: leading to fiscal vulnerability & need to diversify energy sources
- MENA/GCC will increasingly focus investments in Renewable Energy & Technology


Thank you
nasser.saidi@difc.ae