



The Outlook for OPEC Demand and Implications for Global Exports

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Passion to Perform

ASPO-USA

**Austin, Texas,
30 November 2012**



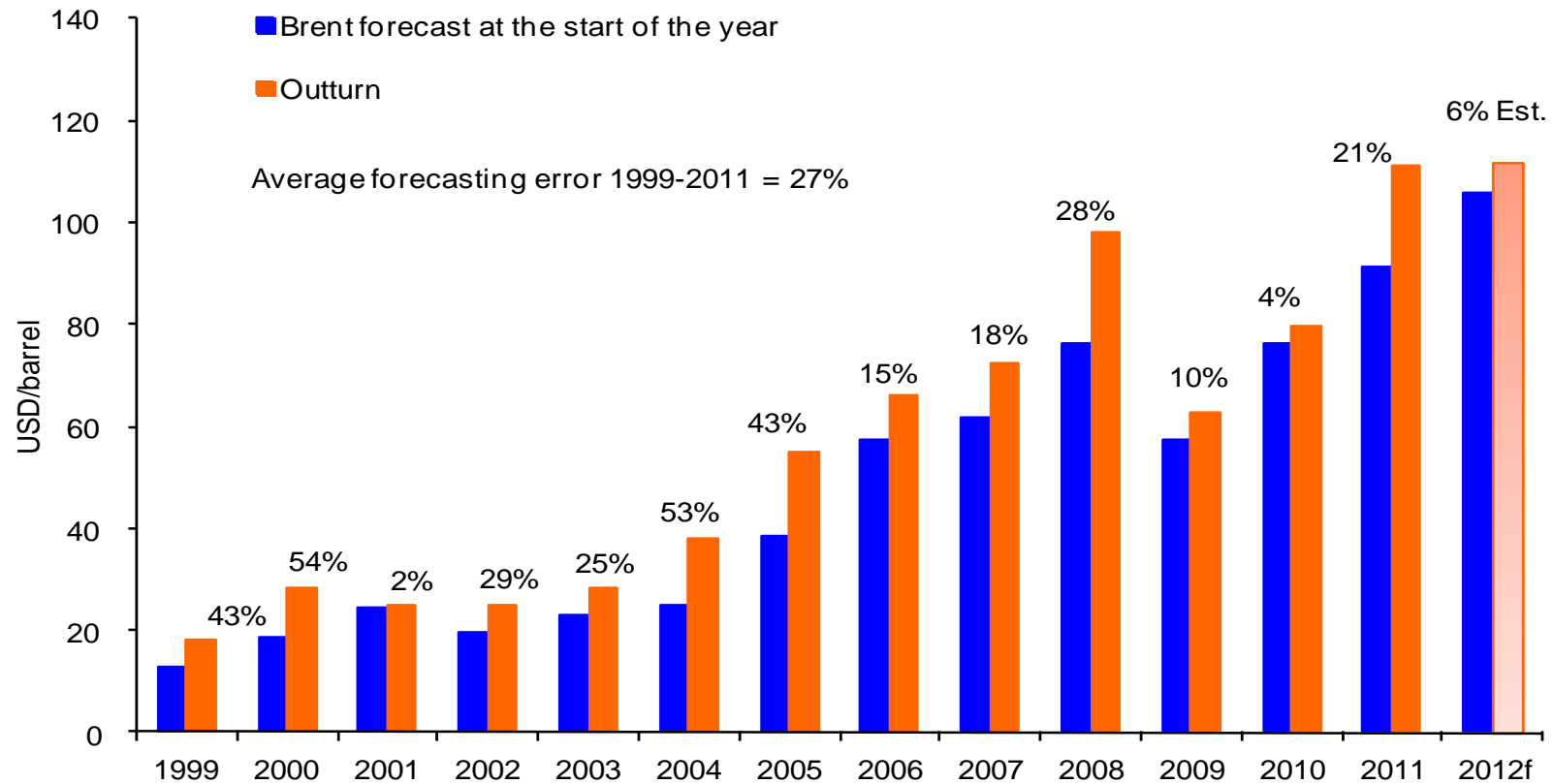
Contents

- 1) Oil-price forecasts: looking backwards and forwards
- 2) The key trends in global oil demand
- 3) Global oil subsidies
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- 5) Conclusion and Implications

Oil-price forecasts: a retrospective



Analyst Forecasts At The Start Of The Year Vs. Actual Outturn



Source: Deutsche Bank, Reuters

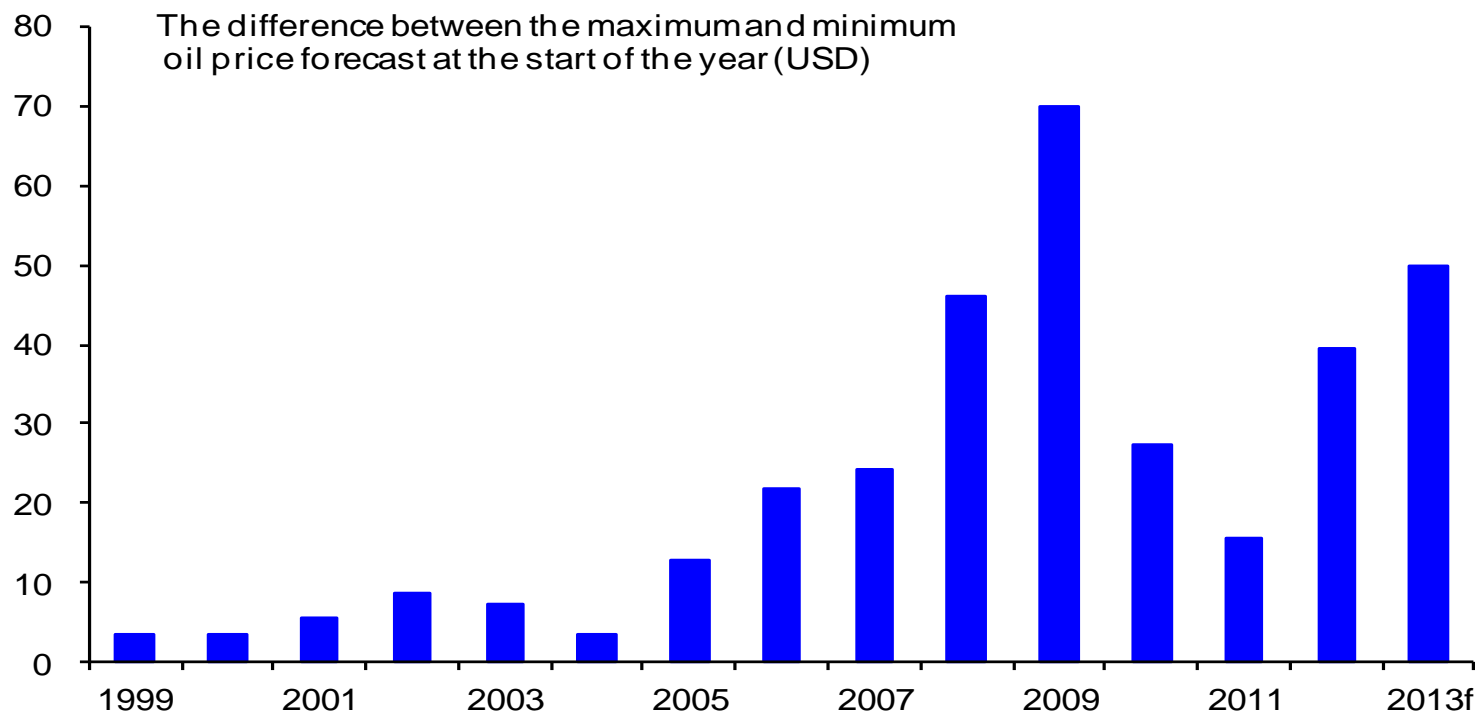
Key point

- For the past 14 years, commodity analysts have consistently under-estimated crude oil prices.

Looking into 2013



The Range In Oil Price Forecasts: Most Bearish To Most Bullish Spread



Source: Deutsche Bank, Reuters

Outlook

- The spread between the most bearish (USD80) and most bullish (USD130) price forecast stands at USD50.
- This level of uncertainty was last seen in 2009 at the depths of the financial crisis.

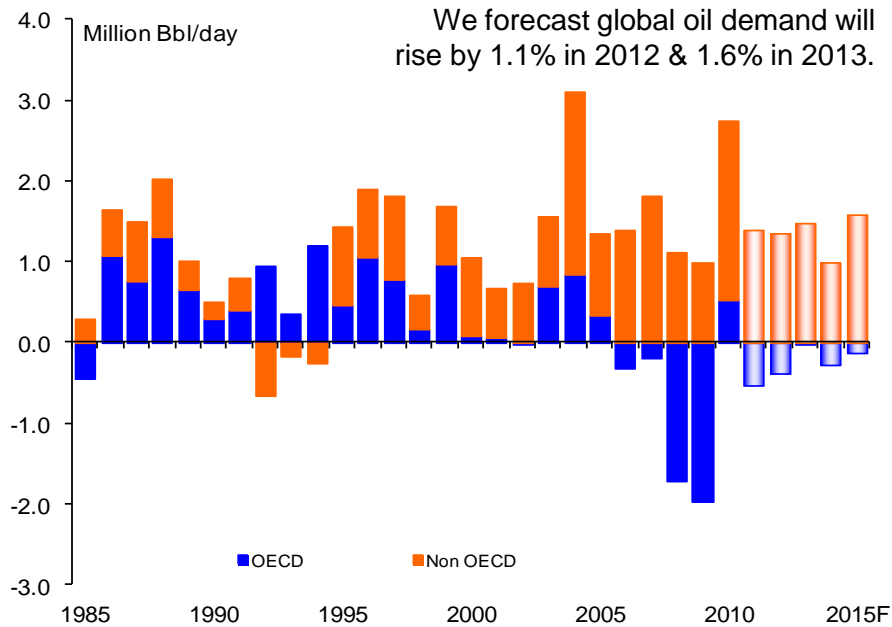


2. The outlook for global oil demand

Oil demand – driven by EM, not DM

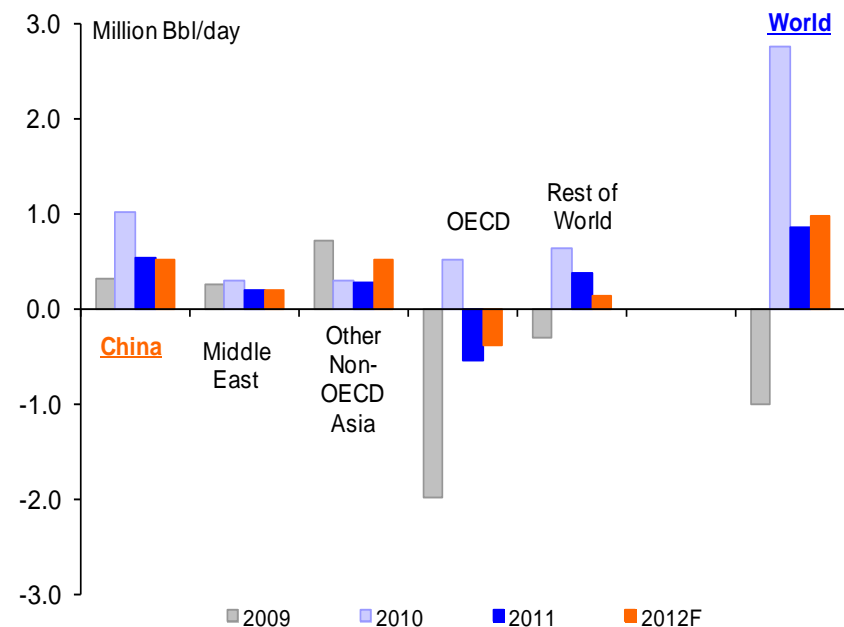


OECD vs. Non-OECD demand growth



Source: DB Commodities Research, IEA

Oil demand growth by major region



Source: DB Commodities Research, IEA

Outlook

- The EM world is the greatest contributor to oil demand growth and in our view the only positive contribution to global oil demand growth for this year and going forward. We believe that even with healthy economic growth from 2013 onwards, structural changes in consumption dynamics in the DM world will mean oil demand continues to contract or is flat at best.
- According to our forecasts, developing Asia will contribute 80% of global oil demand growth in 2012 and China alone will contribute more than half of global oil demand growth
- Latin America and the Middle East will contribute about 15% of global oil demand growth, respectively, this year.

IEA projection for global oil consumption, 2011-35



| Global oil* demand, 2011-35 (mbd) | | | | | |
|-----------------------------------|-------------|-------------|-------------|------------------|--------------|
| | 2011 | 2020 | 2035 | 2020/11 (mbd) | 2020/11 |
| OECD | 42.1 | 39.4 | 33.3 | -2.7 | -6.4% |
| Non-OECD | 38.4 | 47.1 | 57.1 | +8.7 | 22.7% |
| <i>o/w E. Europe/Eurasia</i> | <i>4.8</i> | <i>5.2</i> | <i>5.6</i> | <i>+0.4</i> | <i>8.3%</i> |
| <i>o/w Asia</i> | <i>18.3</i> | <i>23.8</i> | <i>30.9</i> | <i>+5.5</i> | <i>30.1%</i> |
| <i>o/w Middle East</i> | <i>6.8</i> | <i>8.1</i> | <i>9.4</i> | <i>+1.3</i> | <i>19.1%</i> |
| <i>o/w Africa</i> | <i>3.1</i> | <i>3.8</i> | <i>4.5</i> | <i>+0.7</i> | <i>22.6%</i> |
| <i>o/w Latin America</i> | <i>5.5</i> | <i>6.3</i> | <i>6.8</i> | <i>+0.8</i> | <i>14.5%</i> |
| Bunkers | 6.9 | 7.7 | 9.3 | +0.8 | 11.6% |
| TOTAL WORLD OIL DEMAND | 87.4 | 94.2 | 99.7 | +6.7 | 7.8% |

Source: IEA

Middle East versus OPEC, population and oil consumption 2000-10



Middle East and OPEC, population and oil consumption*, 2000 -10

| | OPEC | Middle East** |
|----------------------------|---------|---------------|
| Population 2000 (k) | 324,252 | 164,016 |
| Oil consumption 2000 (kbd) | 5,212 | 4,788 |
| Population 2010 (k) | 407,874 | 209,423 |
| Oil consumption 2010 (kbd) | 8,148 | 7,113 |

Source: United Nations, EIA, Deutsche Bank; *All petroleum liquids, unadjusted for their respective energy densities; **Middle East here is defined in accordance with the IEA's classification, comprising Bahrain, Iran, Iraq, Jordan, Kuwait, Lebanon, Palestinian Authority, Oman, Qatar, Saudi Arabia, Syria, the UAE, and Yemen.

Middle East versus OPEC consumption, 2010-20, assuming flat p/c consumption



Middle East and OPEC, population and oil consumption*, 2010 -20

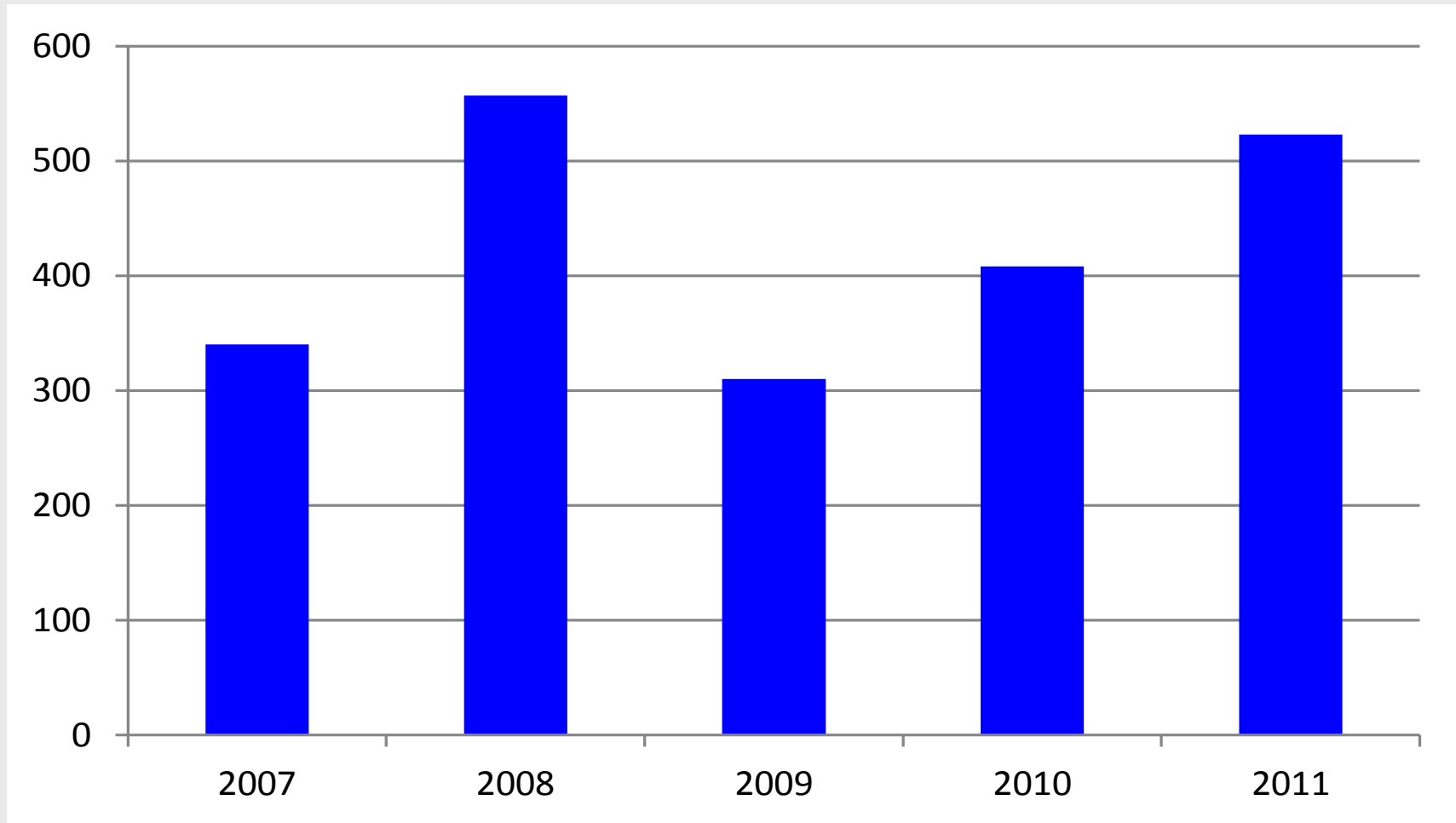
| | OPEC | Middle East** |
|-------------------------------|---------|---------------|
| Population 2010 (k) | 407,874 | 209,423 |
| Oil consumption 2010 (kbd) | 8,148 | 7,113 |
| Population 2020 (k) | 501,123 | 252,160 |
| Oil consumption 2020*** (kbd) | 9,784 | 8,565 |

Source: United Nations, EIA, Deutsche Bank; *All petroleum liquids, unadjusted for their respective energy densities; **Middle East here is defined in accordance with the IEA's classification, comprising Bahrain, Iran, Iraq, Jordan, Kuwait, Lebanon, Palestinian Authority, Oman, Qatar, Saudi Arabia, Syria, the UAE, and Yemen; ***Assumes flat per-capita consumption by 2020 versus 2010



3. Global Oil Subsidies

Global fossil-fuel subsidies, 2007-11 (\$bn)



Source: IEA

Global oil subsidies, 2010



Global fossil-fuel subsidies, 2010 (\$bn)

| | OIL | TOTAL FOSSIL FUELS |
|---------------------------------------|--------------|--------------------|
| Iran | 40.9 | 80.8 |
| Saudi Arabia | 30.6 | 43.5 |
| Russia | 0 | 39.2 |
| India | 16.2 | 22.3 |
| China | 7.8 | 21.3 |
| Egypt | 14.0 | 20.3 |
| Venezuela | 15.7 | 20.0 |
| UAE | 2.7 | 18.2 |
| Indonesia | 10.2 | 15.9 |
| Iraq | 8.9 | 11.3 |
| Algeria | 8.5 | 10.6 |
| Mexico | 9.3 | 9.5 |
| Thailand | 2.1 | 8.5 |
| Kuwait | 2.8 | 7.6 |
| Pakistan | 0.1 | 7.3 |
| Argentina | 0.8 | 6.5 |
| Malaysia | 3.9 | 5.7 |
| Kazakhstan | 2.0 | 4.3 |
| Libya | 3.2 | 4.2 |
| Qatar | 1.2 | 4.2 |
| Ecuador | 3.7 | 3.8 |
| Nigeria | 2.4 | 2.9 |
| Angola | 0.9 | 1.1 |
| TOTAL | 191.9 | 407.6 |
| o/w OPEC | 121.4 | 208.2 |
| o/w other major oil exporters* | 15.8 | 63.0 |

Source: IEA, EIA; * countries with net crude exports of >100kbd in 2009

Economic weighting of fossil-fuel subsidies, 2010



Economic weighting of FF* subsidies, 2010

| | ASR** | Subsidies per capita | As a % of GDP |
|--------------|-------|----------------------|---------------|
| Kuwait | 85.5% | \$2 799 | 5.8% |
| Iran | 84.6% | \$1 093 | 22.6% |
| Saudi Arabia | 75.8% | \$1 587 | 9.8% |
| Qatar | 75.3% | \$2 446 | 3.2% |
| Venezuela | 75.3% | \$689 | 6.9% |
| Libya | 71.0% | \$665 | 5.7% |
| UAE | 67.8% | \$2 490 | 6.0% |
| Turkmenistan | 65.1% | \$995 | 19.3% |
| Algeria | 59.8% | \$298 | 6.6% |
| Uzbekistan | 57.1% | \$434 | 30.5% |
| Iraq | 56.7% | \$357 | 13.8% |
| Egypt | 55.6% | \$250 | 9.3% |
| Ecuador | 48.7% | \$259 | 6.4% |
| Bangladesh | 46.1% | \$34 | 4.8% |
| Angola | 31.5% | \$59 | 1.3% |
| Kazakhstan | 29.3% | \$269 | 3.1% |
| Pakistan | 28.9% | \$42 | 4.2% |
| Nigeria | 28.3% | \$18 | 1.3% |
| Ukraine | 25.7% | \$169 | 5.6% |
| Indonesia | 23.2% | \$67 | 2.3% |
| Russia | 22.6% | \$274 | 2.7% |
| Argentina | 22.0% | \$161 | 1.8% |
| Azerbaijan | 21.1% | \$90 | 1.5% |
| Thailand | 20.7% | \$123 | 2.7% |
| Malaysia | 20.0% | \$200 | 2.4% |
| Sri Lanka | 16.1% | \$24 | 1.0% |
| Vietnam | 14.4% | \$33 | 2.8% |
| India | 13.5% | \$18 | 1.4% |
| Mexico | 12.5% | \$84 | 0.9% |
| Philippines | 7.3% | \$12 | 0.6% |
| South Africa | 7.2% | \$42 | 0.6% |
| Colombia | 4.3% | \$11 | 0.2% |
| China | 3.8% | \$16 | 0.4% |
| Taiwan | 1.8% | \$25 | 0.1% |
| South Korea | 0.4% | \$4 | 0.0% |

Source: IEA; *FF = fossil fuels; **ASR = Average subsidization rate = subsidy on consumption expressed as a proportion of the full cost in a competitive market.



4. OPEC oil consumption: out of control?

The trend in OPEC and global oil consumption, 2000-10



OPEC domestic oil* consumption, 2000-10 (kbd)

| | 2000 | 2005 | 2010 | 2010/00 | 2010/00 (%) |
|--------------------|---------------|---------------|---------------|----------------|-------------|
| Saudi Arabia | 1,537 | 1,964 | 2,643 | +1,106 | 71.9 |
| Iran | 1,248 | 1,556 | 1,845 | +597 | 47.8 |
| Venezuela | 500 | 583 | 746 | +246 | 49.3 |
| Iraq | 462 | 541 | 694 | +232 | 50.1 |
| UAE | 330 | 374 | 545 | +215 | 64.9 |
| Qatar | 48 | 86 | 166 | +118 | 244.6 |
| Algeria | 206 | 255 | 312 | +106 | 51.3 |
| Kuwait | 264 | 330 | 354 | +90 | 33.9 |
| Libya | 210 | 265 | 289 | +79 | 37.4 |
| Ecuador | 131 | 159 | 201 | +70 | 54.0 |
| Angola | 29 | 50 | 74 | +45 | 142.9 |
| Nigeria | 246 | 312 | 279 | +33 | 13.6 |
| TOTAL OPEC | 5,212 | 6,475 | 8,148 | +2,936 | 56.3 |
| TOTAL WORLD | 76,781 | 84,064 | 87,043 | +10,262 | 13.4 |

Source: EIA; *All petroleum liquids, unadjusted for their respective energy densities

The trend in OPEC and world population, 2000-10



Increase in population of OPEC countries and World, 2000-10

| | Total population 2000 (k) | Total population 2010 (k) | Absolute change 2010/2000 (k) | Relative change 2010/00 |
|--------------------|------------------------------|------------------------------|----------------------------------|----------------------------|
| Qatar | 591 | 1,759 | 1,168 | 197.6% |
| UAE | 3,033 | 7,512 | 4,479 | 147.7% |
| Angola | 13,296 | 19,082 | 5,786 | 43.5% |
| Kuwait | 1,941 | 2,737 | 796 | 41.0% |
| Saudi Arabia | 20,045 | 27,448 | 7,403 | 36.9% |
| Iraq | 23,857 | 31,672 | 7,815 | 32.8% |
| Nigeria | 123,689 | 158,423 | 34,734 | 28.1% |
| Libya | 5,231 | 6,355 | 1,124 | 21.5% |
| Venezuela | 24,348 | 28,980 | 4,632 | 19.0% |
| Algeria | 12,345 | 14,465 | 2,120 | 17.2% |
| Ecuador | 30,534 | 35,468 | 4,934 | 16.2% |
| Iran | 65,342 | 73,974 | 8,632 | 13.2% |
| TOTAL OPEC | 324,252 | 407,874 | 83,622 | 25.8% |
| TOTAL WORLD | 6,122,770 | 6,895,889 | 773,119 | 12.6% |

Source: United Nations, Deutsche Bank

OPEC and World per-capita oil consumption, 2000-10



Increase in per-capita consumption of oil*, 2000-10 (barrels per capita per year)

| | Consumption in 2000 | Consumption in 2010 | Absolute change 2010/00 | Relative change (%) |
|--------------------|------------------------|------------------------|----------------------------|------------------------|
| Angola | 0.8 | 1.4 | 0.6 | 76,2% |
| Ecuador | 3.9 | 5.1 | 1.2 | 31,4% |
| Iran | 7.0 | 9.1 | 2.1 | 30,6% |
| Algeria | 2.5 | 3.2 | 0.7 | 30,3% |
| Saudi Arabia | 28.0 | 35.1 | 7.2 | 25,6% |
| Venezuela | 7.5 | 9.4 | 1.9 | 25,4% |
| Qatar | 29.8 | 34.4 | 4.7 | 15,8% |
| Libya | 14.7 | 16.6 | 1.9 | 13,1% |
| Iraq | 7.1 | 8.0 | 0.9 | 13,1% |
| Kuwait | 49.7 | 47.2 | -2.5 | -5,0% |
| Nigeria | 0.7 | 0.6 | -0.1 | -11,3% |
| UAE | 39.8 | 26.5 | -13.3 | -33,4% |
| TOTAL OPEC | 5.9 | 7.3 | 1.4 | 24,3% |
| TOTAL WORLD | 4.58 | 4.61 | 0.03 | 0,7% |

Source: United Nations, EIA, Deutsche Bank; *All petroleum liquids, unadjusted for their respective energy densities

The Drivers of Oil Demand in Saudi Arabia



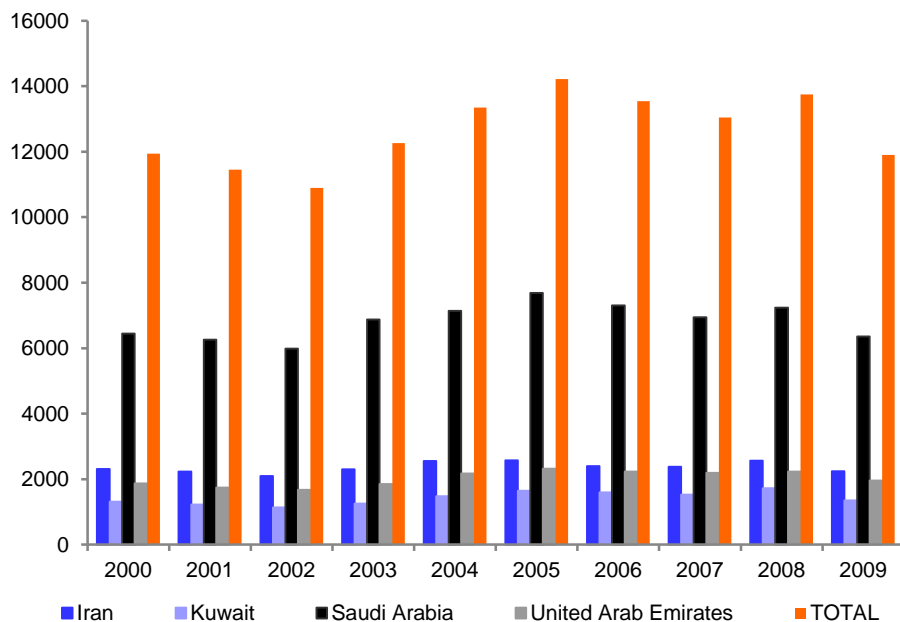
A young and fast-growing population plus very strong demand growth for electricity

- Saudi Arabia's population grew from 20m to 27m over 2000-10, and the Economist Intelligence Unit projects it to reach 33m by 2020
- More than 50% of Saudi Arabia's citizens are under 20, and this means that the country's labour force will experience one of the fastest growth rates in the world over the next decade.
- Demand growth for electricity has been very strong over the last 10 years, rising at a CAGR of 6.4% over 2001-10. Oil-fired power generation accounts for c.60% of power generated, and gas for c.40%. We estimate that oil burned for power generation reached c.800kbd in 2011, up from 431kbd in 2001.
- The relative mix of oil and gas in the power-generation mix is likely to remain broadly stable over the next few years. Assuming a slower rate of growth in electricity demand over 2011-20 of 5% per year would therefore imply daily average daily oil burn for power generation of 1,250kbd by 2020.

Global Oil Exports Have Been Declining Since 2005

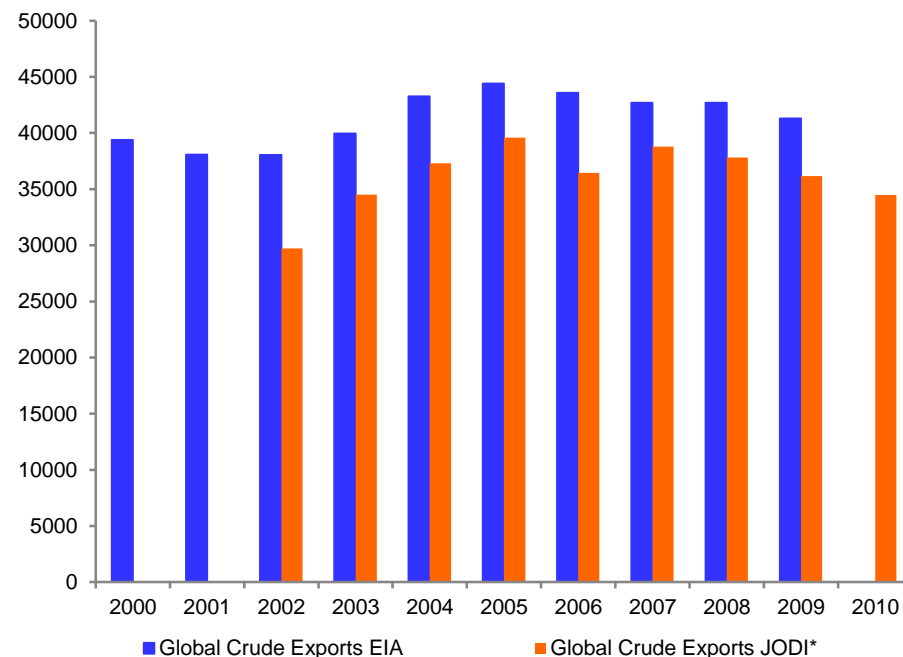


Key ME Countries Exports, 2000-10



Source: DB from EIA data

Global Exports of Crude Oil, 2000-10



Source: DB from EIA and JODI data

Outlook

- The combined exports of Saudi Arabia, Iran, Kuwait, and the UAE peaked in 2005.
- Together, these countries account for c.30% of global oil exports.
- Global exports of crude oil also peaked in 2005.

The trend in OPEC and world population, 2010-20



Increase in population of OPEC countries and World, 2010-20

| | Total population 2010 (k) | Total population 2020 (k) | Absolute change 2020/2010 (k) | Relative change 2010/00 |
|--------------------|------------------------------|------------------------------|----------------------------------|----------------------------|
| Qatar | 1,759 | 2,204 | 446 | 25.3% |
| UAE | 7,512 | 9,182 | 1,670 | 22.2% |
| Angola | 19,082 | 24,855 | 5,773 | 30.3% |
| Kuwait | 2,737 | 3,411 | 675 | 24.6% |
| Saudi Arabia | 27,448 | 33,685 | 6,237 | 22.7% |
| Iraq | 31,672 | 42,871 | 11,199 | 35.4% |
| Nigeria | 158,423 | 204,747 | 46,324 | 29.2% |
| Libya | 6,355 | 7,149 | 794 | 12.5% |
| Venezuela | 28,980 | 33,780 | 4,800 | 16.6% |
| Algeria | 14,465 | 40,561 | 5,093 | 14.4% |
| Ecuador | 35,468 | 16,639 | 2,174 | 15.0% |
| Iran | 73,974 | 82,039 | 8,065 | 10.9% |
| TOTAL OPEC | 407,874 | 501,123 | 93,250 | 22.9% |
| TOTAL WORLD | 6,895,889 | 7,796,672 | 903,783 | 13.1% |

Source: United Nations, Deutsche Bank

OPEC share of global population and oil consumption



OPEC share of world population and of total oil* consumption, 2000-10

| | OPEC | World | OPEC/World |
|----------------------------|---------|-----------|------------|
| Population 2000 (k) | 324,252 | 6,122,770 | 5.3% |
| Oil consumption 2000 (kbd) | 5,212 | 76,781 | 6.8% |
| Population 2010 (k) | 407,874 | 6,895,889 | 5.9% |
| Oil consumption 2010 (kbd) | 8,148 | 87,043 | 9.4% |

Source: United Nations, EIA, Deutsche Bank; *All petroleum liquids, unadjusted for their respective energy densities

OPEC share of global population and oil consumption, assuming flat p/c consumption 2020 versus 2010



OPEC share of world population and of total oil* consumption, 2010 -20

| | OPEC | World | OPEC/World |
|------------------------------|---------|-----------|------------|
| Population 2010 (k) | 407,874 | 6,895,889 | 5.9% |
| Oil consumption 2010 (kbd) | 8,148 | 87,043 | 9.4% |
| Population 2020 (k) | 501,123 | 7,796,672 | 6.4% |
| Oil consumption 2020** (kbd) | 9,784 | 98,451 | 9.9% |

Source: United Nations, EIA, Deutsche Bank; *All petroleum liquids, unadjusted for their respective energy densities; **Assumes flat per-capita consumption by 2020 versus 2010

Implied OPEC oil consumption, assuming continuing p/c growth in consumption over 2010-20



2020 OPEC oil* consumption at different rates of per-capita consumption growth

| | OPEC | World | OPEC/World |
|--|--------|--------|------------|
| OPEC oil consumption 2020 assuming flat p/c consumption versus 2010 (kbd) | 9,784 | 98,451 | 9.9% |
| OPEC oil consumption 2020 assuming p/c consumption growth against 2010 of 50% of the 2000-10 p/c growth rate (kbd) | 10,849 | 98,451 | 11.0% |
| OPEC oil consumption 2020 assuming the same rate of p/c consumption growth over 2010-20 as achieved over 2000-2010 (kbd) | 11,914 | 98,451 | 12.1% |

Source: United Nations, EIA, Deutsche Bank; *All petroleum liquids, unadjusted for their respective energy densities;

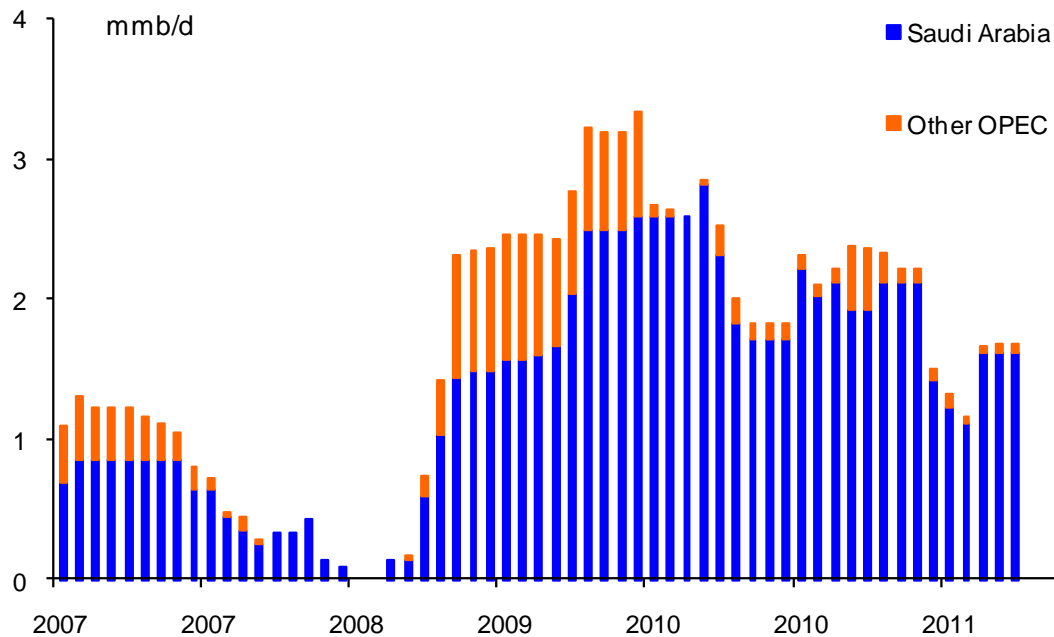


5. Conclusion and Implications

OPEC Spare Capacity Trends



Falling OPEC Spare Capacity Over Time



Source: Deutsche Bank

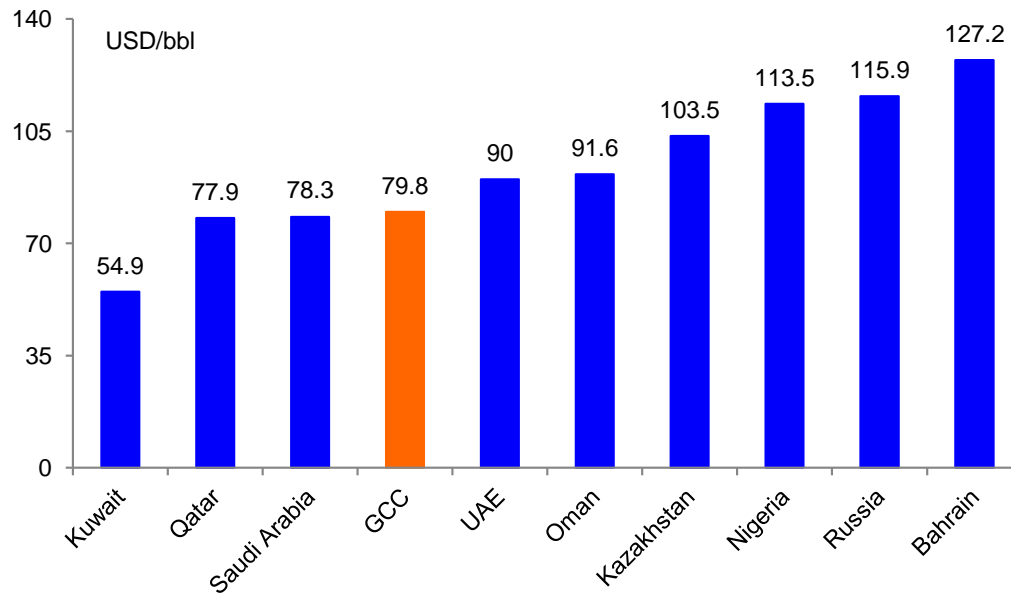
Outlook

- We believe there will be a rapid erosion in OPEC spare capacity over time.
- This will be driven by a lack of investment in new productive capacity across the OPEC countries.
- Indeed the Arab Spring has increased social spending and reduced efforts to end fuel subsidies for domestic consumers.

Revised Breakeven Oil Prices For Key Producers



Budget Breakeven Estimates



Source: Deutsche Bank (Brent equivalent)

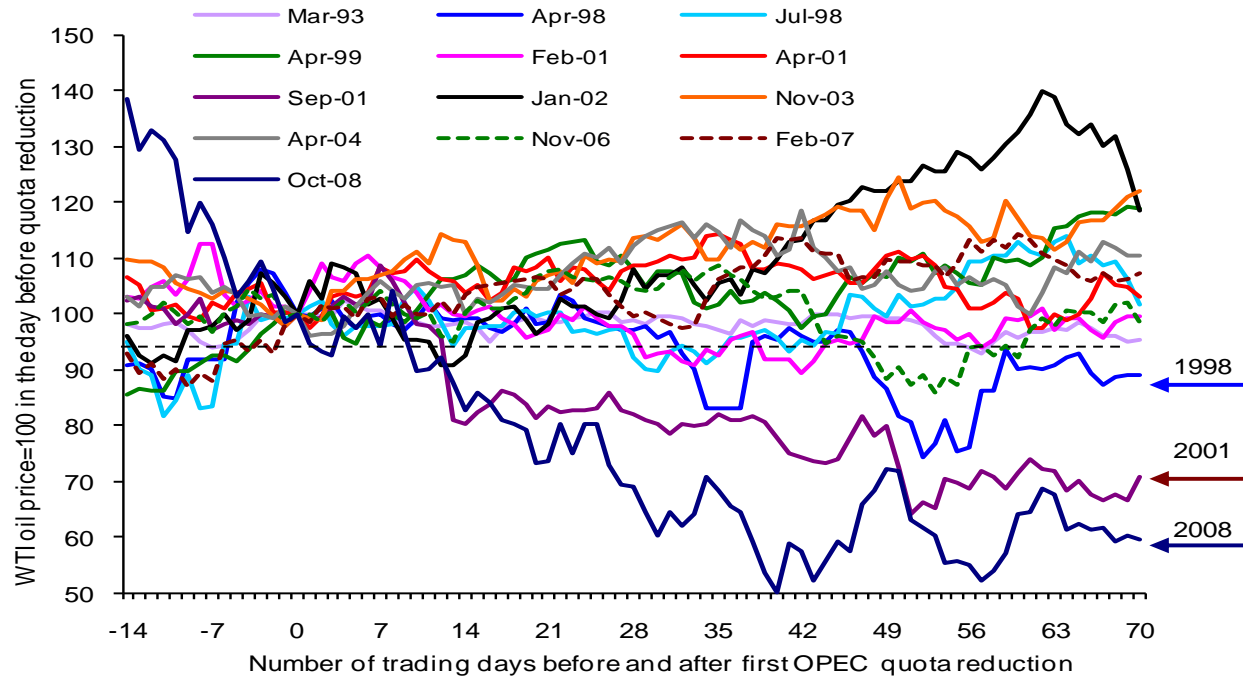
Outlook

- Beyond the long-term supply-side challenges, the oil price needed by major oil-producing countries in the Middle East to balance their budgets has increased sharply over recent years due to increases in spending programmes.
- OPEC will have to balance a falling oil price and the benefits for the world economy with the negative implications falling oil revenues pose for the region's budgetary positions.

Oil Prices & OPEC Action



OPEC Quota Reductions & The Oil Price



Source: DB Global Markets Research, OPEC, Bloomberg

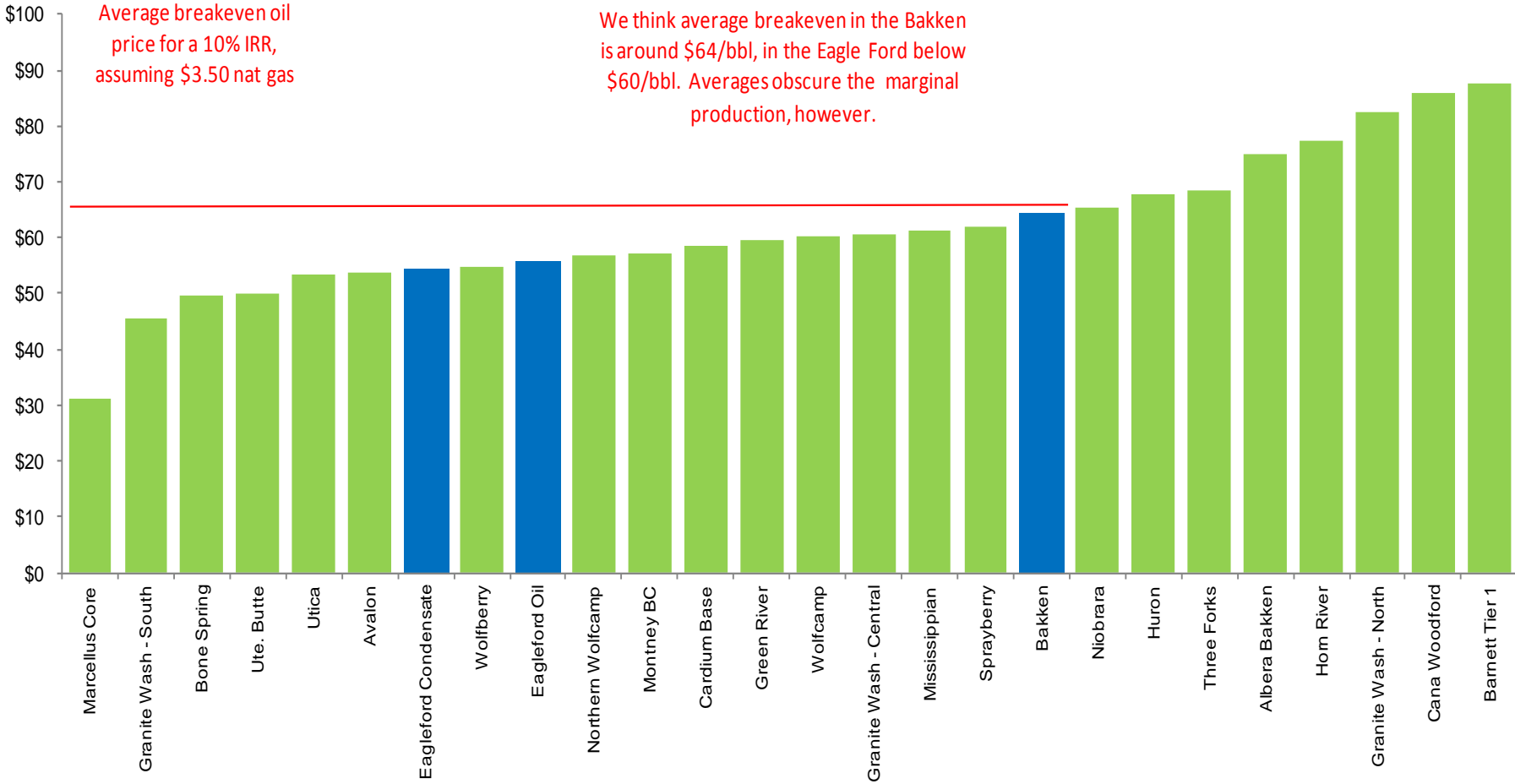
Outlook

- The chart examines the performance of oil prices in the two weeks before and the three months after OPEC take action and cut production to defend oil prices.
- We find that OPEC has a good track record in defending oil prices. However, their success evaporates when global growth falls below 2.5% as occurred in 1998, 2001 and 2008/9.
- On our assumptions world GDP growth will rise 3.5% in 2012.

US Shale-Oil Breakevens



Average Breakevens For The Major North American Liquids-Rich Unconventional Plays



Source: Wood MacKenzie, company data, Deutsche Bank estimates



Appendix

SRMC of Power From Different Primary-Energy Sources



| Cost per MWh | KSA price | International price |
|------------------------------|-----------|---------------------|
| Oil @35% thermal efficiency | \$25 | \$168 |
| Gas @ 50% thermal efficiency | \$5 | \$15 (US) |
| Gas @ 50% thermal efficiency | \$5 | \$68 (EU) |
| Gas @ 50% thermal efficiency | \$5 | \$122 (Japan) |

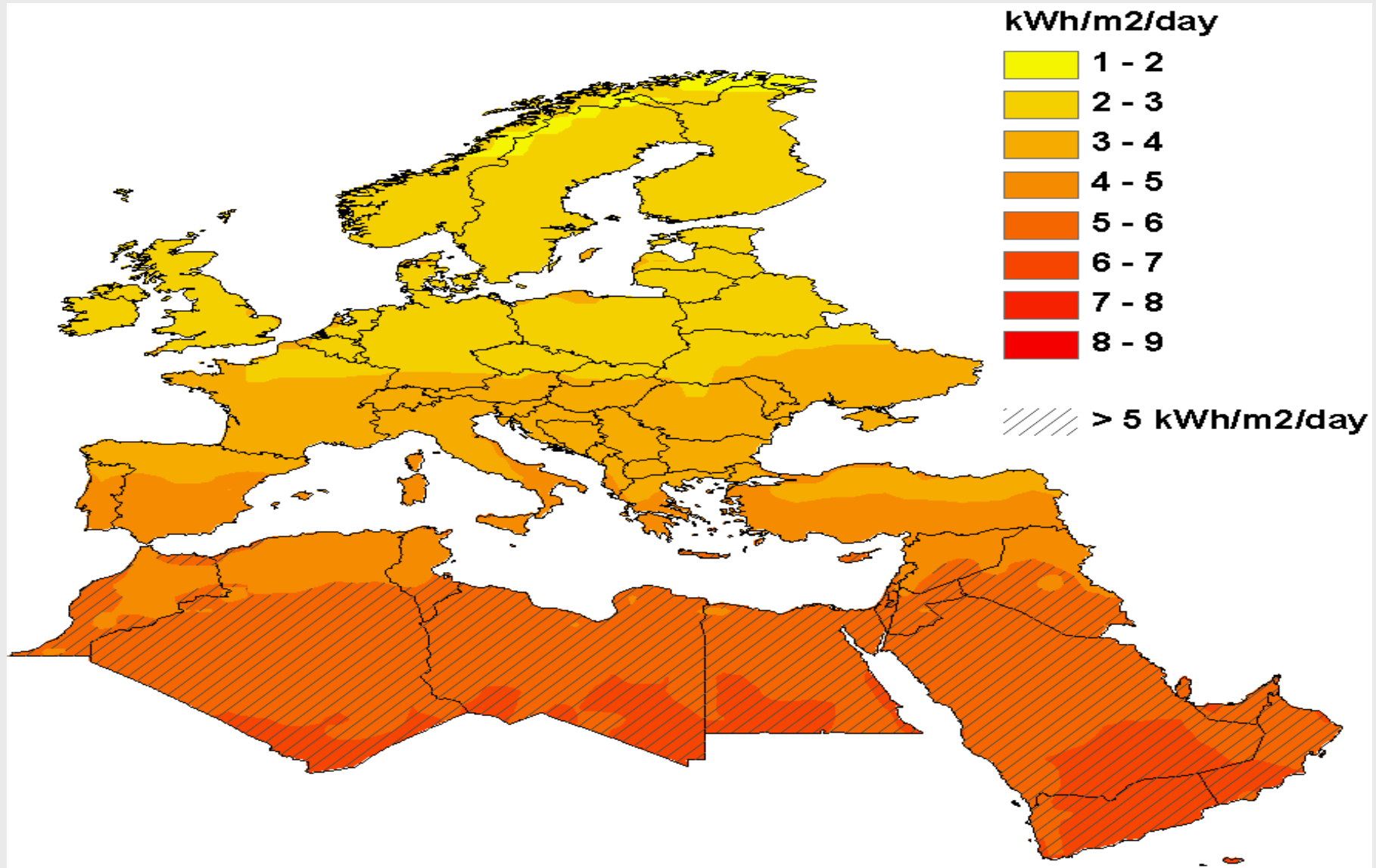
FX rates:

€= \$1.3

Assumed prices:

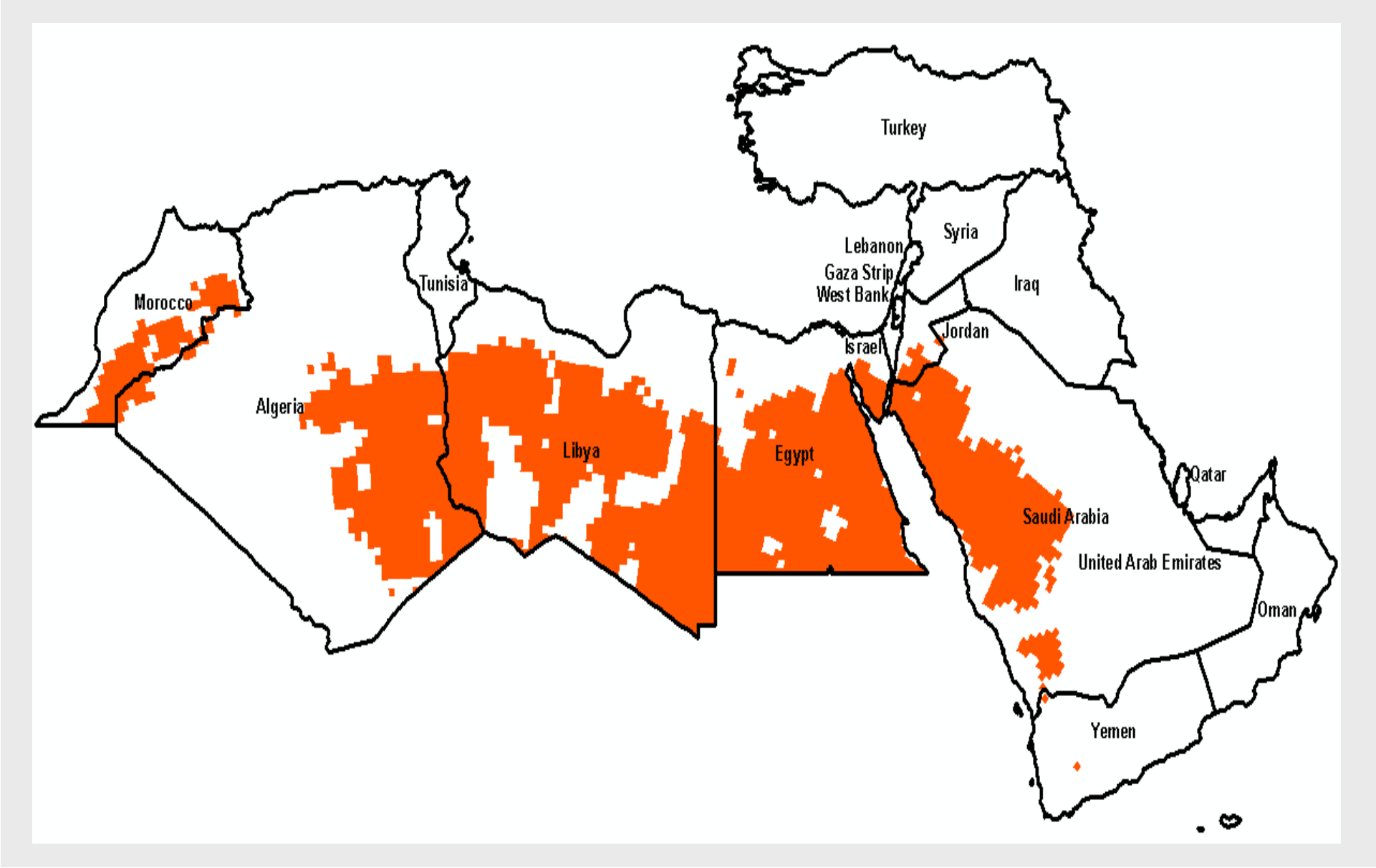
Oil = \$15/bbl in KSA, \$100/bbl internationally
Gas = \$0.75/mmbtu in KSA, \$2.25/mmbtu in US
Gas = \$10/mmbtu in EU
Gas = \$18/mmbtu in Japan

The Average Annual DNI in Europe and the MENA



Source: Centre for Global Development

Minimum Monthly DNI Greater than 5kWh/m2/day



Source: Centre for Global Development

Cost of Power Generation from Nuclear and Solar



| Electricity (MWh) | LRMC | SRMC |
|-------------------|-------|------|
| Nuclear | \$110 | \$20 |
| CSP Solar (KSA) | \$200 | \$0 |

Key assumptions for CSP:

No storage

Capacity utilization of 25-30% in KSA

Capital cost of \$4m/MW

Source: Deutsche Bank



Appendix 1: Certification and Disclaimer

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report. Mark C. Lewis



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Appendix 1: Disclaimer



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