

IEEJ(Nov14)

International Energy Symposium, IEEJ
Tokyo, 11 November 2005

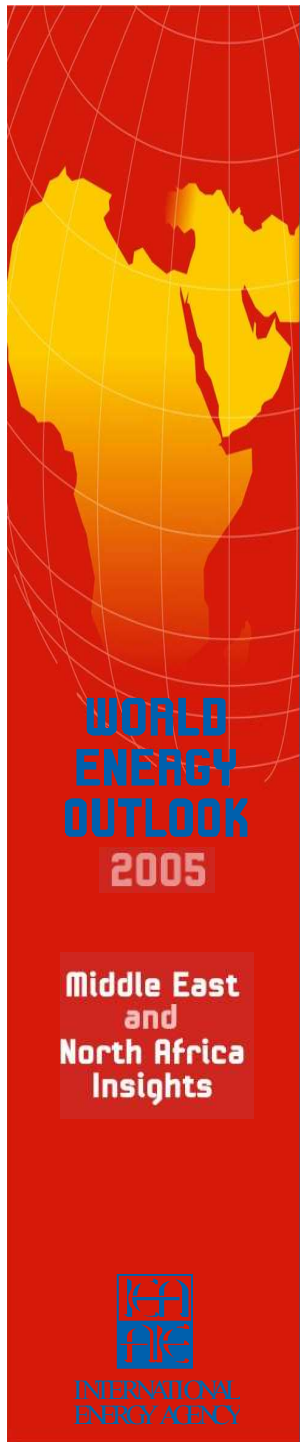
WORLD ENERGY OUTLOOK 2005
Middle East & North Africa Insights

Deputy Executive Director William C. Ramsay

Chief Economist Dr. Fatih Birol

INTERNATIONAL ENERGY AGENCY

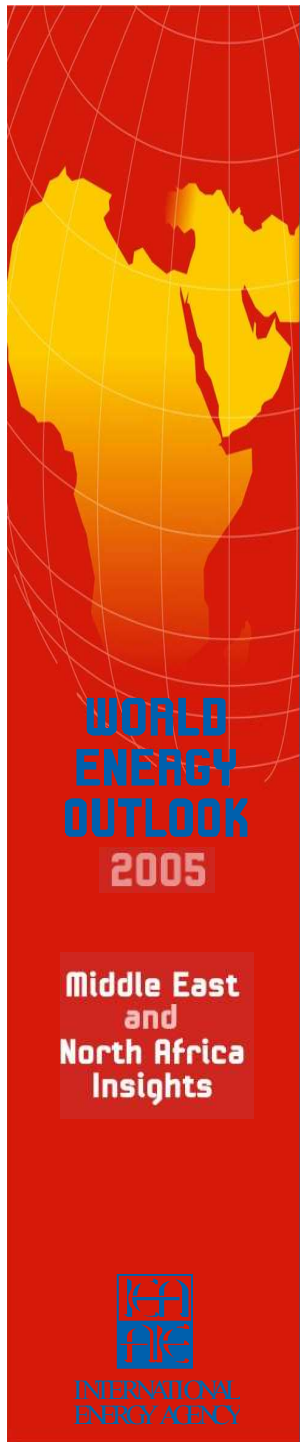
IEEJ(Nov14)



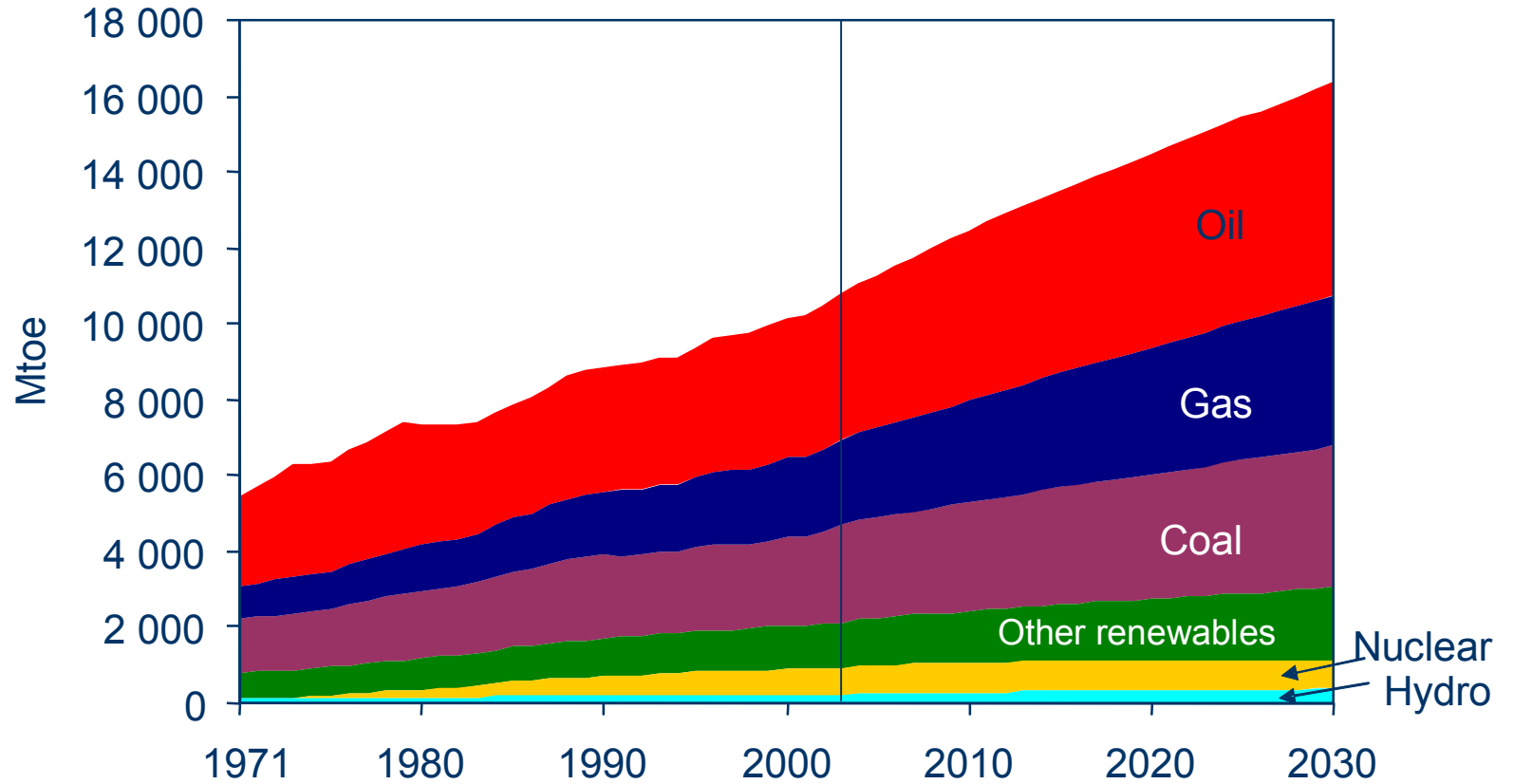
Global Energy Trends: Reference Scenario

International Energy Price Assumptions

- The assumed oil-price path in the Reference Scenario has been revised upwards from *WEO-2004*, in response to the results of detailed analysis of investment prospects:
 - Average IEA crude oil import price, which averages \$5 less than WTI, is assumed to ease from a recent peak of over \$60 to \$40 in 2010 rebounding to \$65 in 2030 in nominal terms
- In next few years, crude oil production capacity additions, new refinery investments & slower demand growth is expected to drive down prices
- But limited spare refining capacity, the rising cost of non-MENA crude projects and producer price targets/quotas could temper that decline
- Higher oil prices result in lower oil-demand, that reaches 115 mb/d in 2030 – 6 mb/d less than in *WEO-2004*



World Primary Energy Demand



Oil, gas and coal together account for 83% of the growth in energy demand between now and 2030 in the Reference Scenario

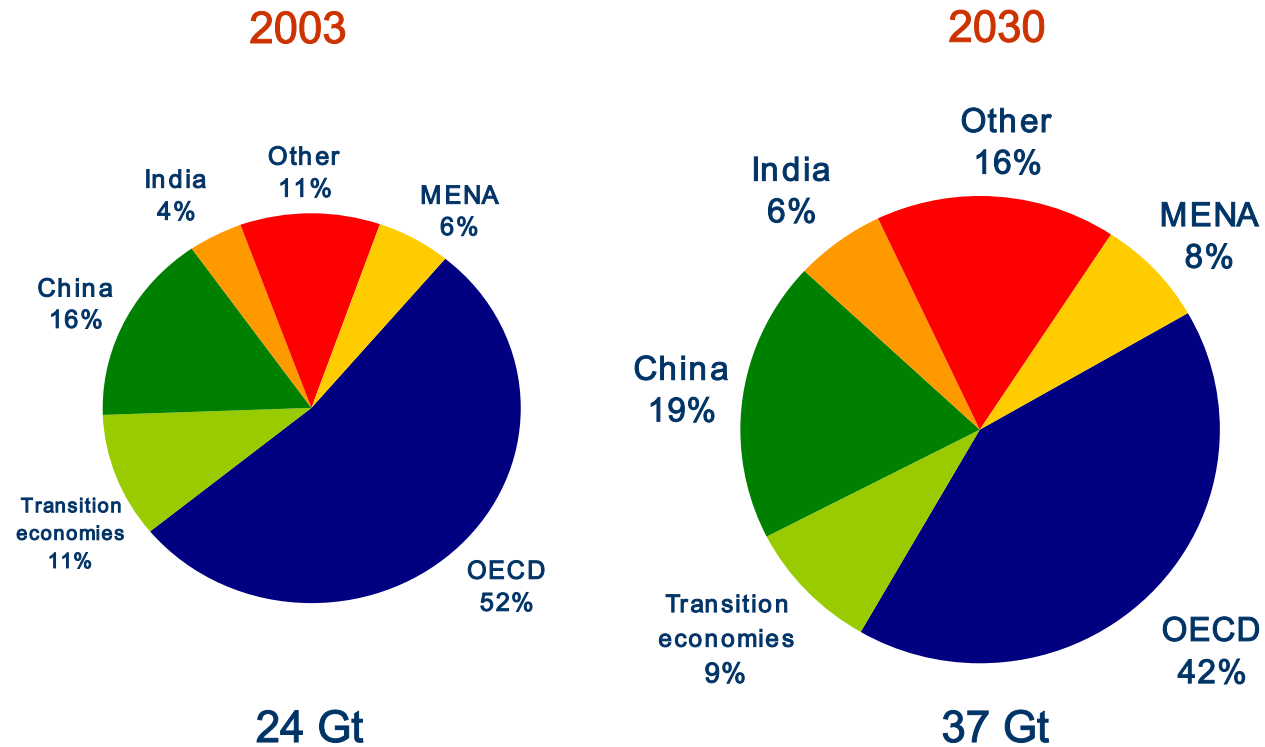
WORLD ENERGY OUTLOOK 2005

Middle East and North Africa Insights



INTERNATIONAL ENERGY AGENCY

Energy-Related CO₂ Emissions by Region



Global emissions grow by just over half between now and 2030, with the bulk of the increase coming from developing countries

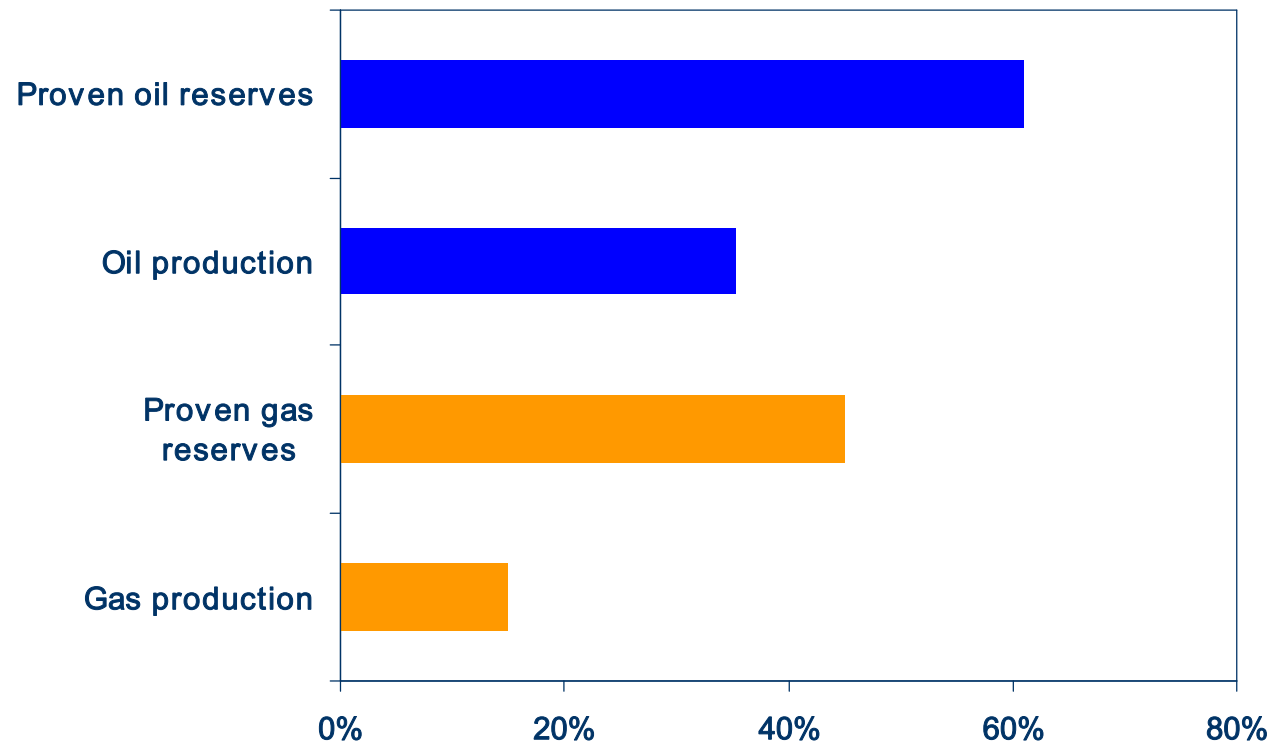
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights

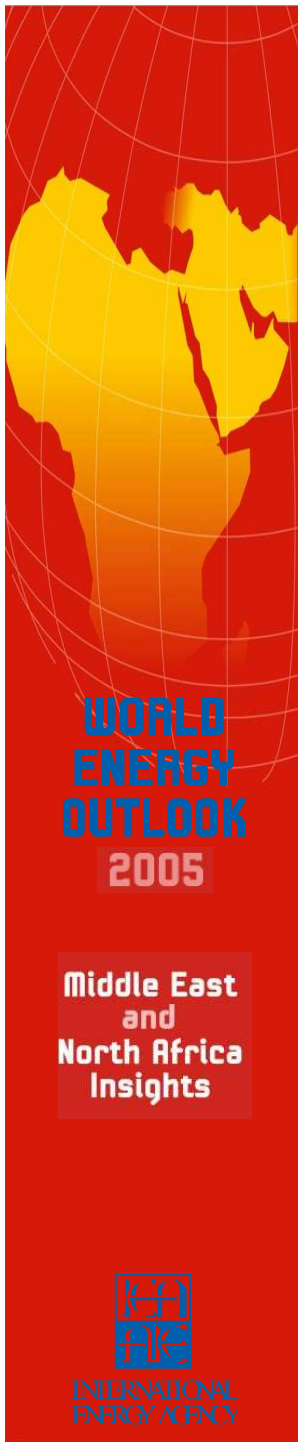


INTERNATIONAL
ENERGY AGENCY

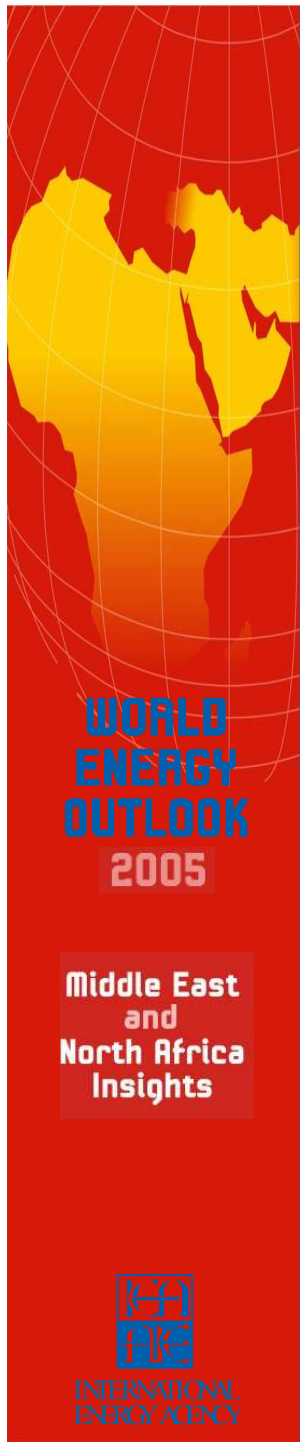
MENA Share in World Oil and Gas Reserves & Production, 2004



MENA share of global oil & gas reserves is much higher than its share of current production, suggesting strong potential for growth

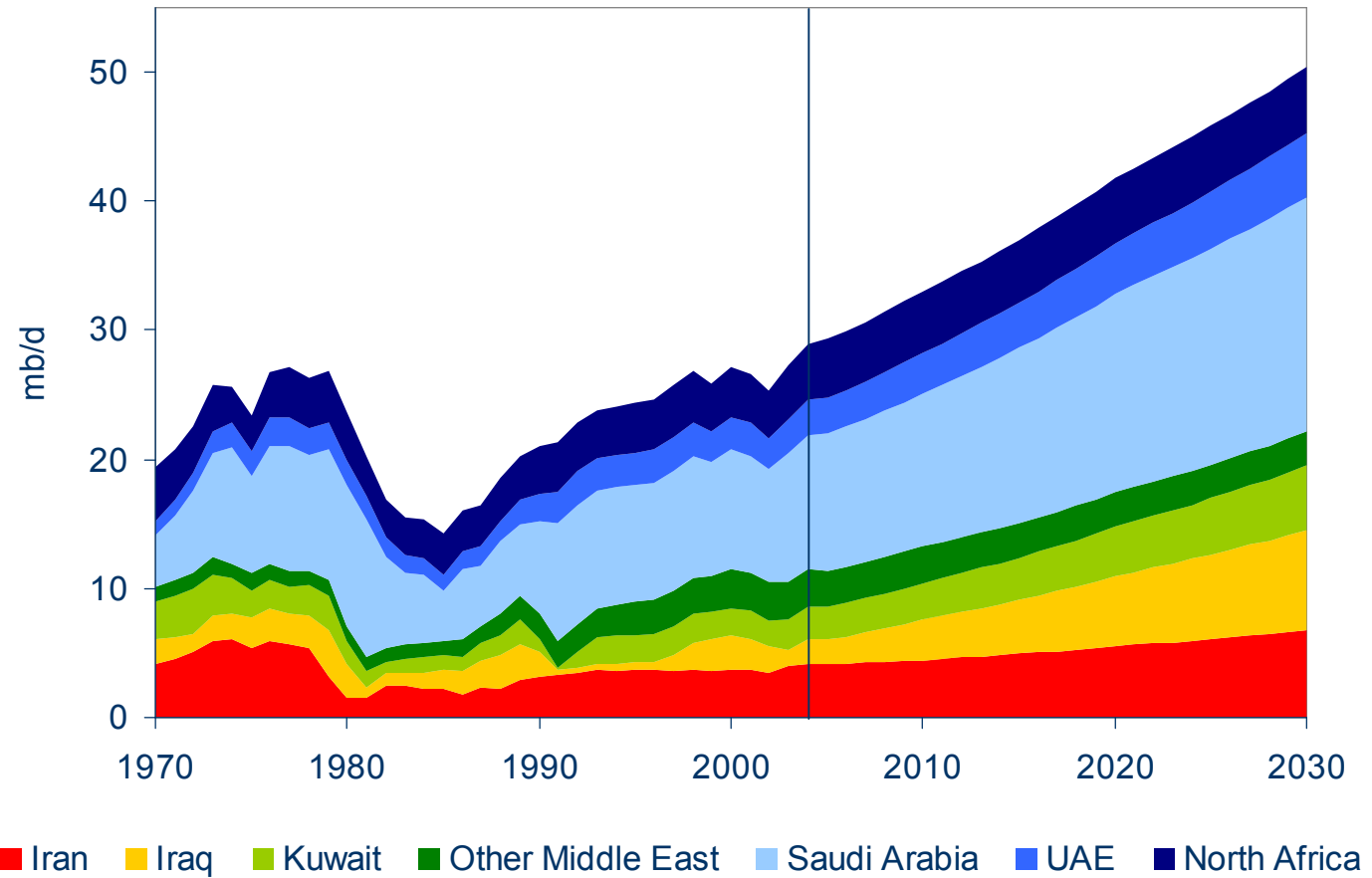


IEEJ(Nov14)



MENA Energy Trends

MENA Crude Oil & NGL Production by Country



MENA's share of world oil production rises from 35% in 2004 to 44% in 2030 in the RS, with Saudi production rising to over 18 mb/d

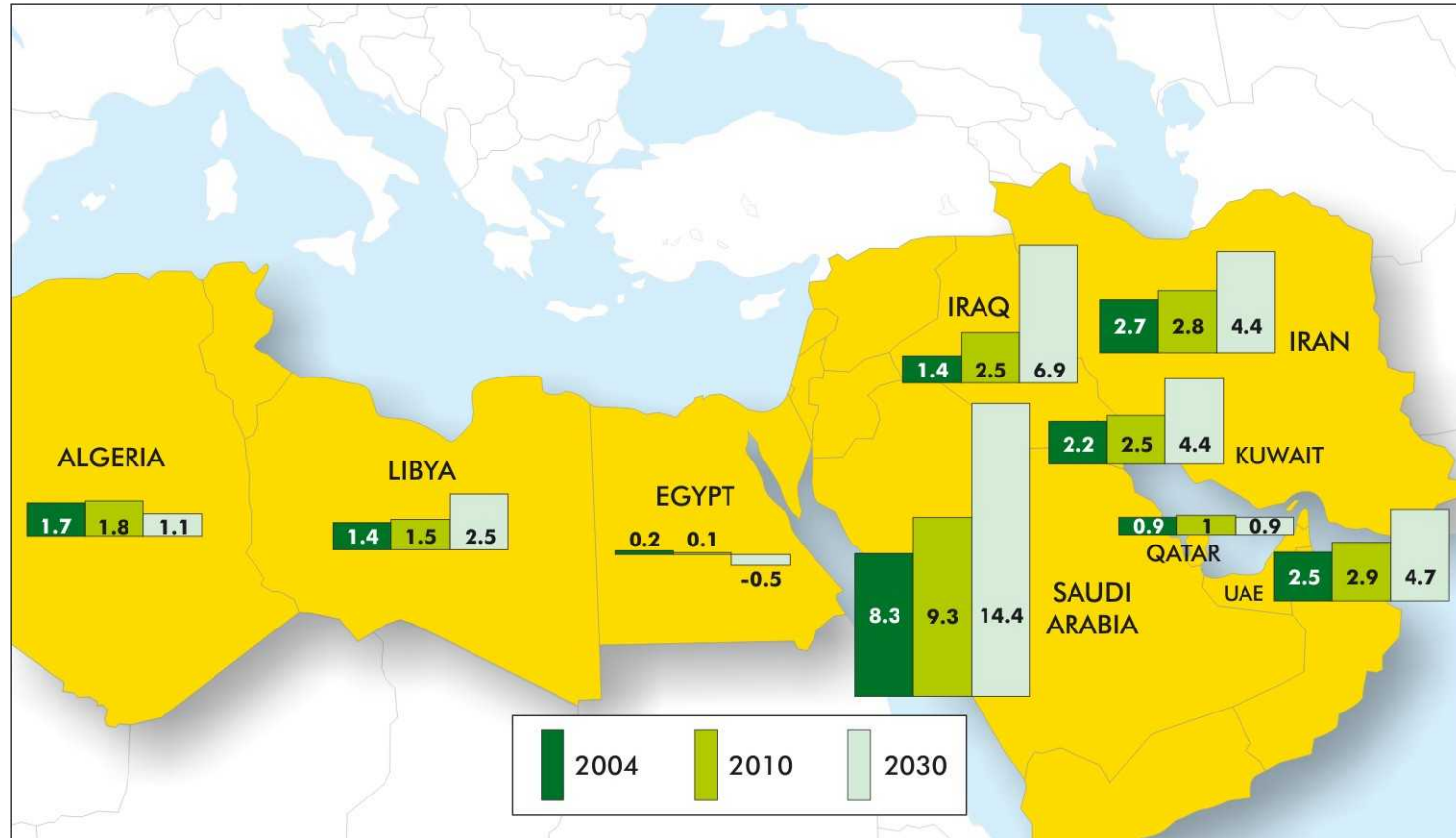
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

MENA Net Oil Exports



MENA plays an increasingly important role in international trade, its net exports surging from 22 mb/d in 2004 to 39 mb/d in 2030

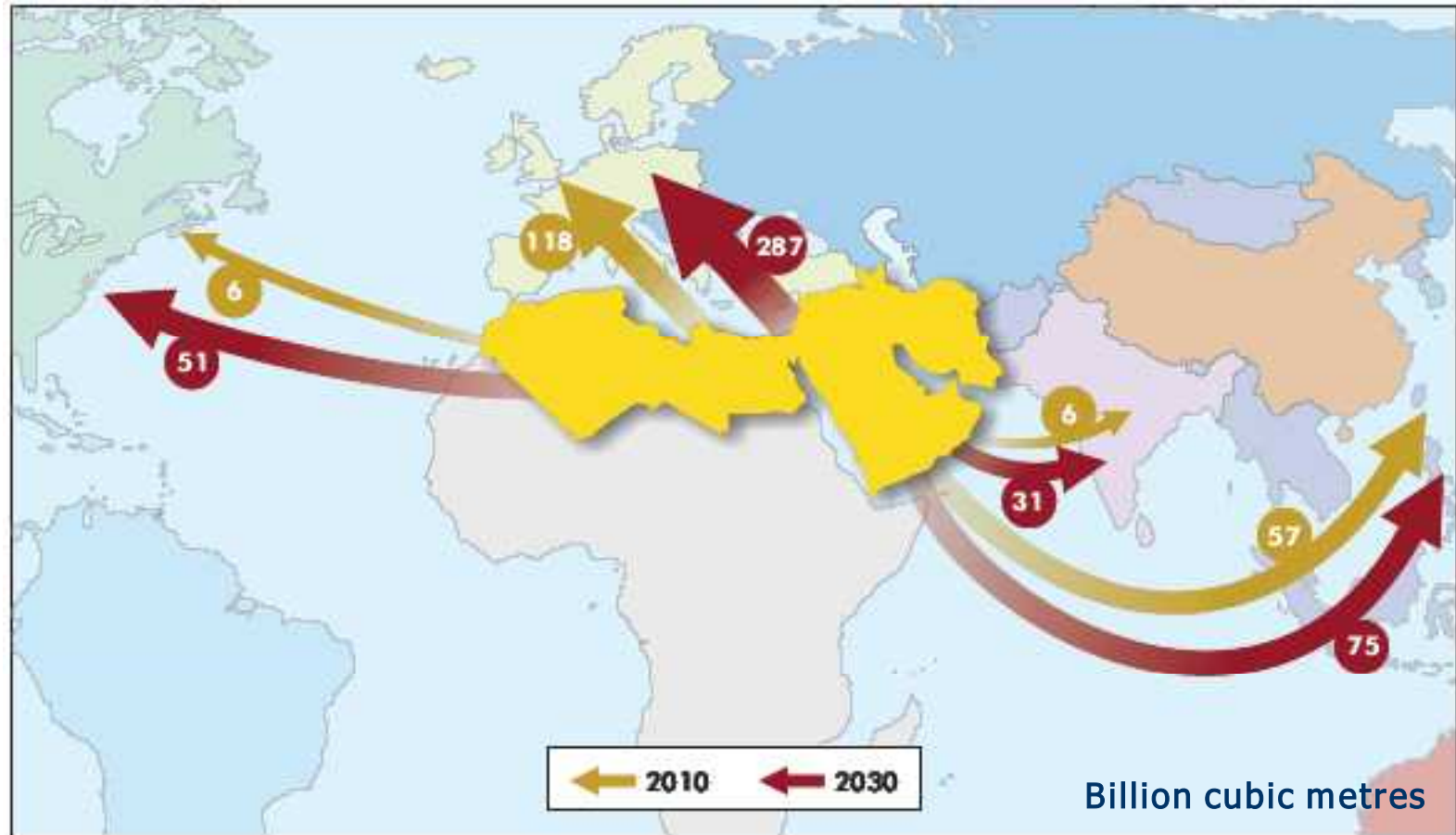
WORLD ENERGY OUTLOOK 2005

Middle East and North Africa Insights



INTERNATIONAL ENERGY AGENCY

MENA Natural Gas Exports



MENA becomes the world's leading gas exporter, with most of the increase in exports meeting surging European & US LNG demand

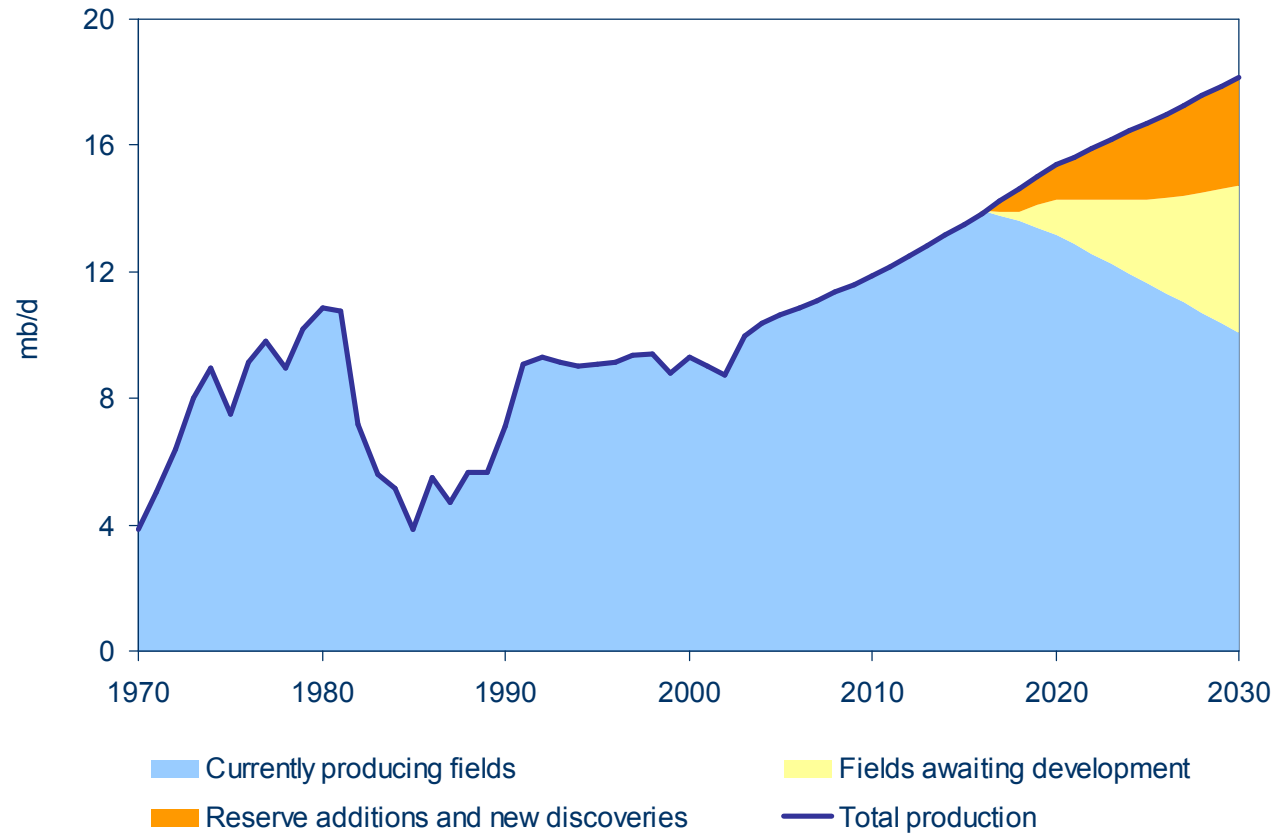
WORLD ENERGY OUTLOOK 2005

Middle East and North Africa Insights



INTERNATIONAL ENERGY AGENCY

Saudi Arabia's Oil Production by Source in the Reference Scenario



Based on its reserves and global demand trends, Saudi oil production is projected to reach 18 mb/d in 2030

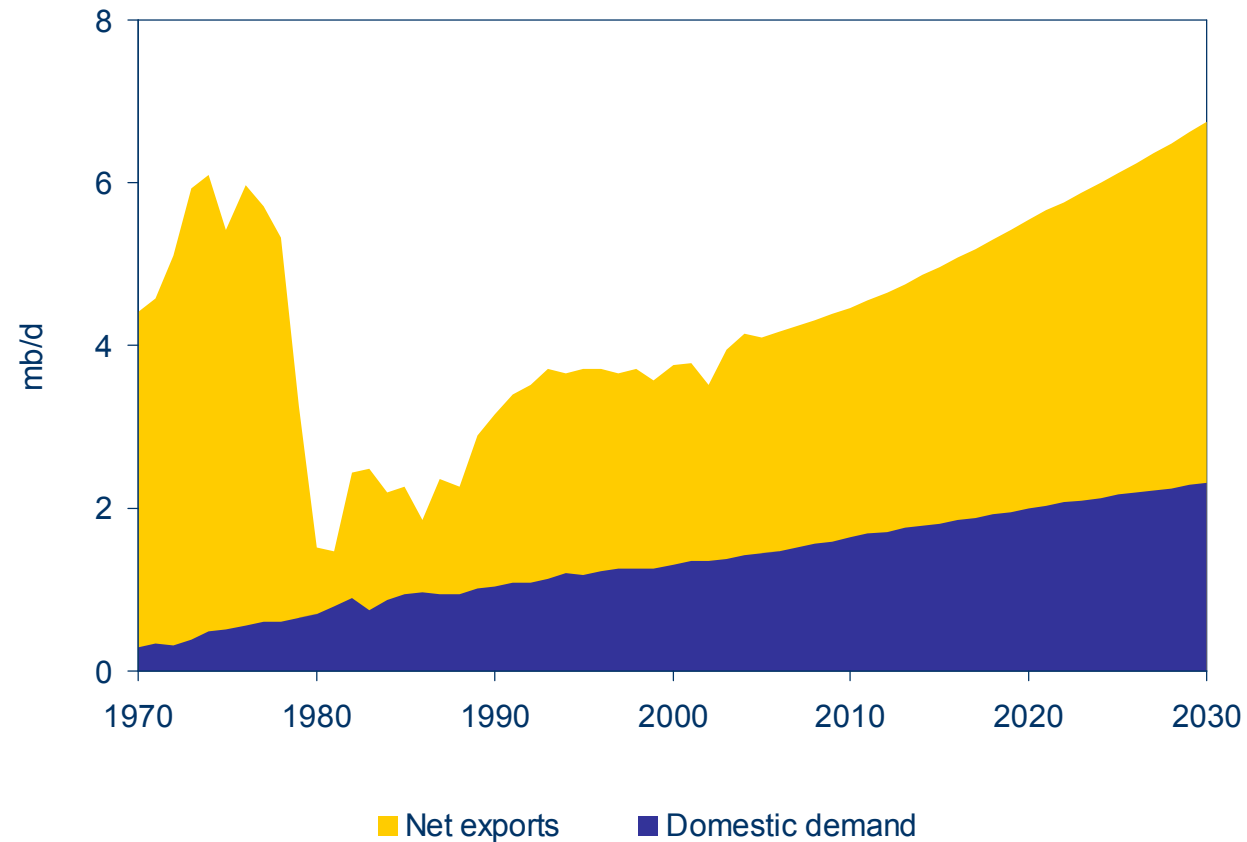
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

Iran's Oil Balance in the Reference Scenario



Iran oil production reaches 6.8 mb/d in 2030, but exports increase less rapidly due to strong growth in domestic demand

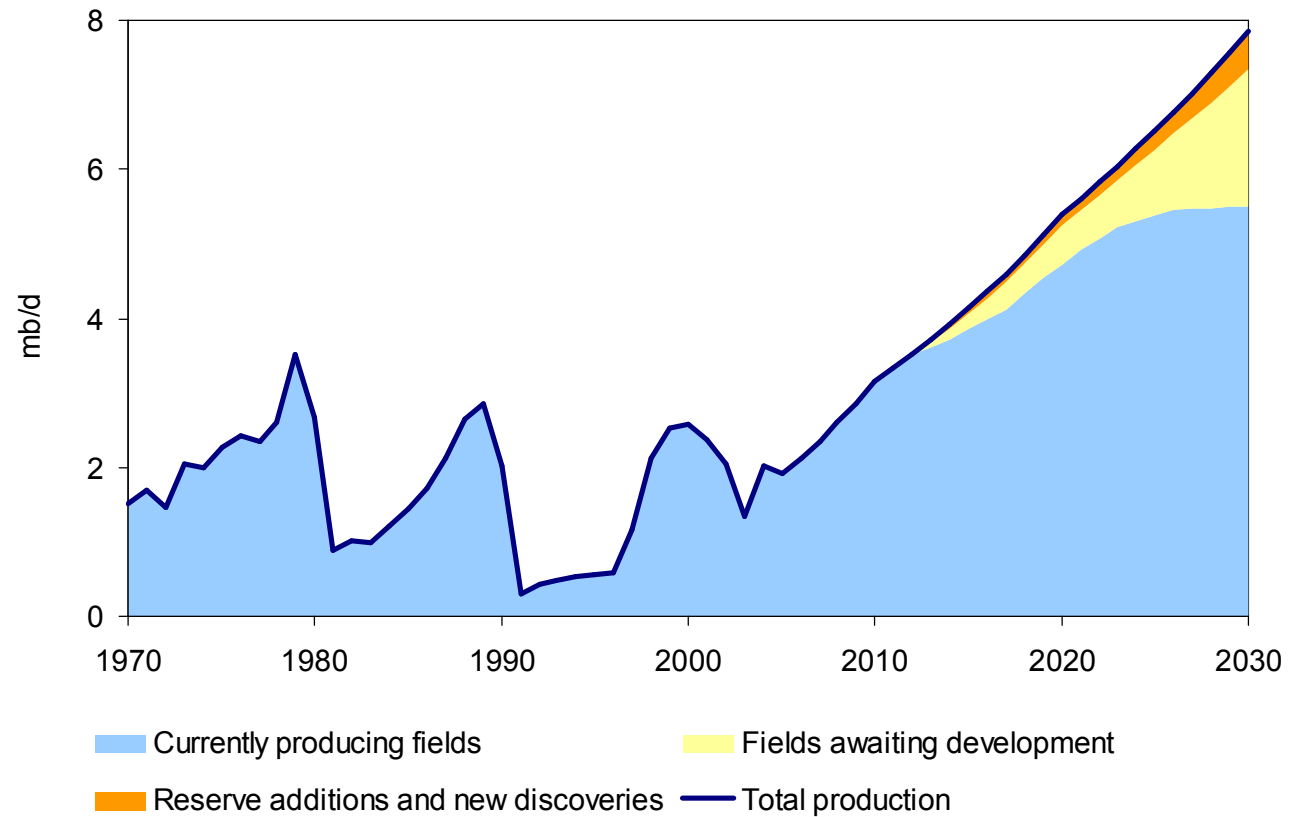
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

Oil Production Outlook in Iraq in the Reference Scenario



Oil production in Iraq is expected to reach around 3 mb/d in 2010 and 8 mb/d in 2030, provided that stability and security are restored

WORLD
ENERGY
OUTLOOK
2005

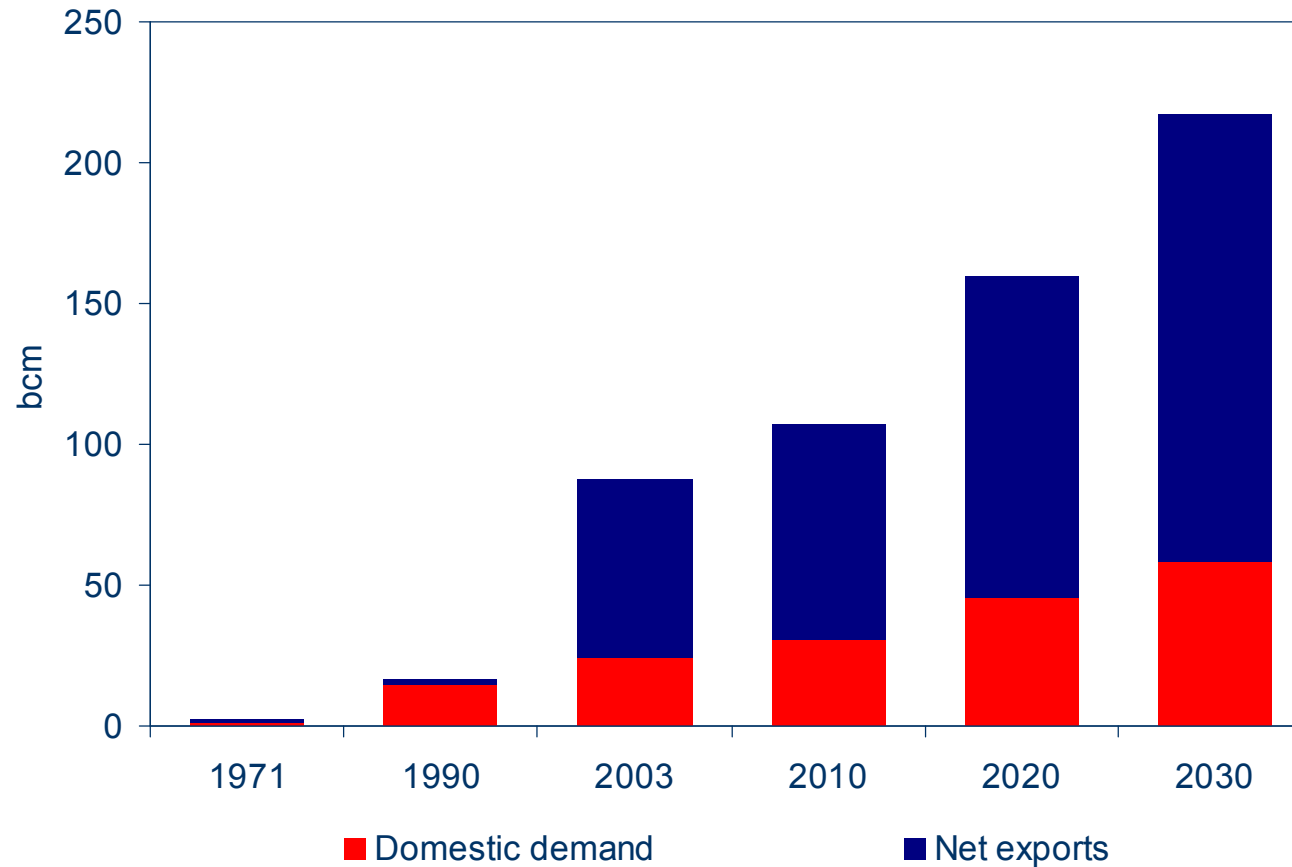
Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

IEEJ(Nov14)

Algeria's Natural Gas Balance in the Reference Scenario



Gas exports, mainly to Europe, are set to reach 144 bcm in 2030, more than double the current level – both via LNG and via pipelines

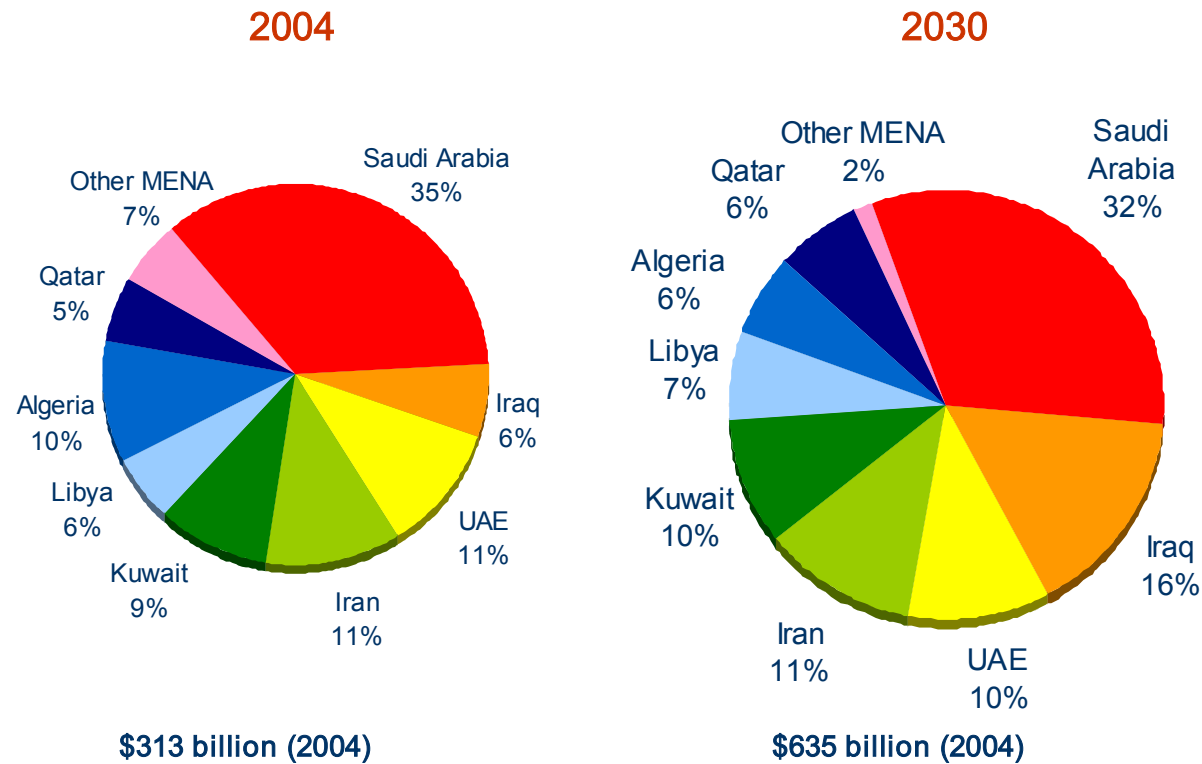
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

MENA Oil & Gas Export Revenues



MENA hydrocarbon revenues double by 2030 - the share from gas almost triples to 13%

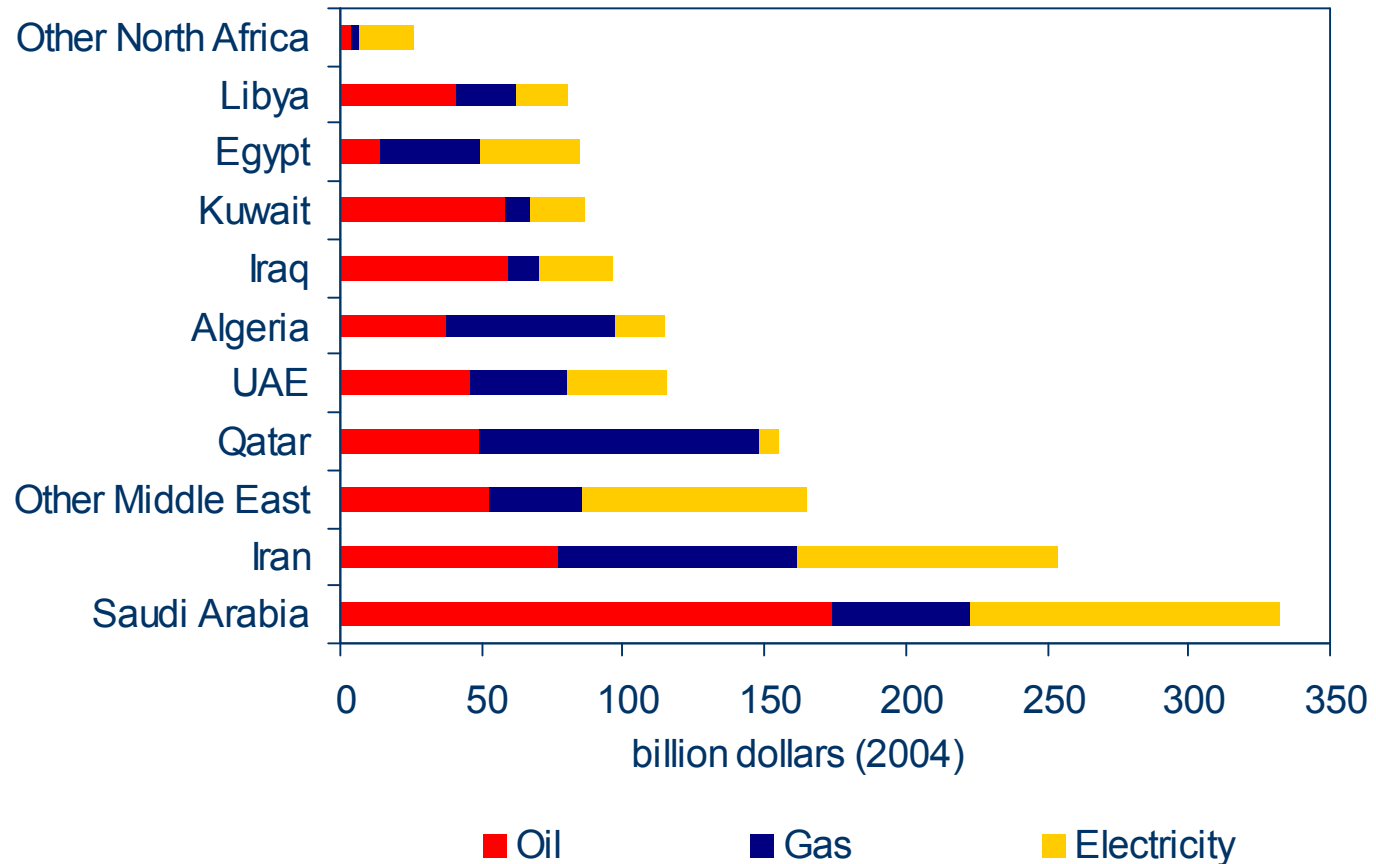
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

Total MENA Energy Investment, 2004-2030



About \$1.5 trillion, or \$56 billion per year, of investment are needed to expand capacity & replace facilities that are retired

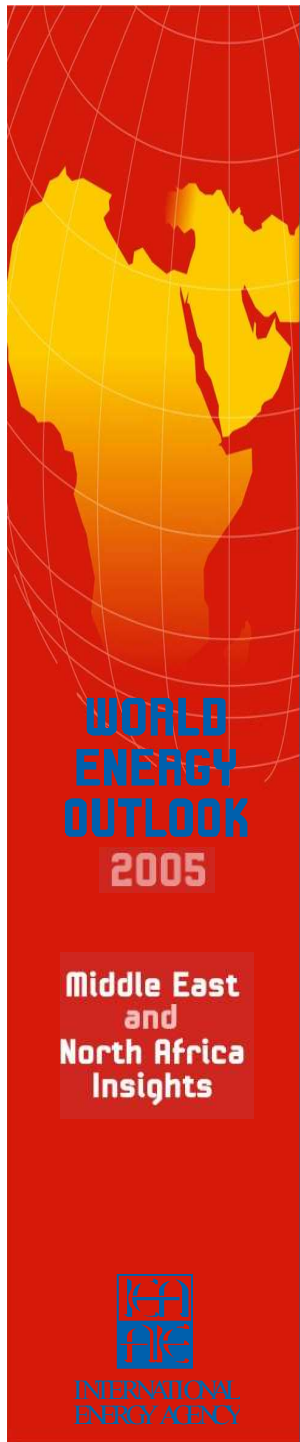
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights



INTERNATIONAL
ENERGY AGENCY

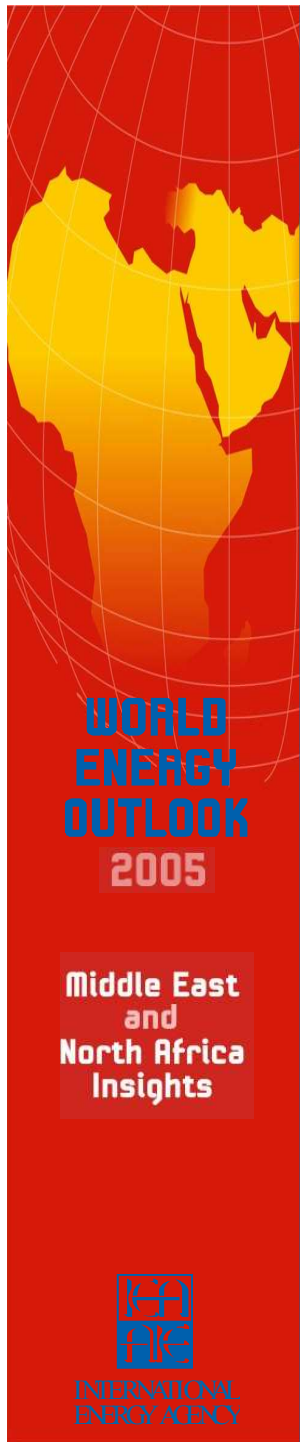
IEEJ(Nov14)



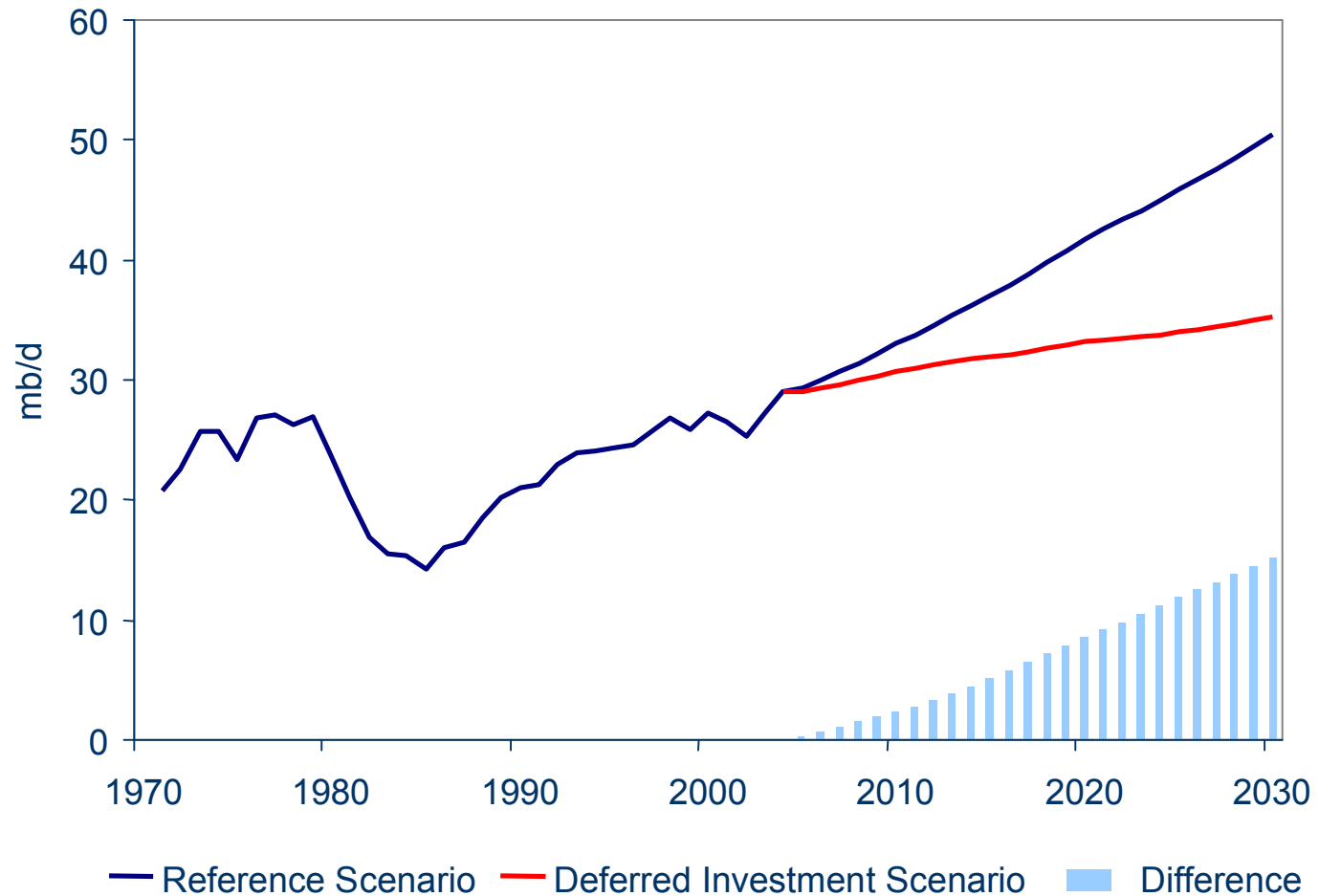
Implications of Deferred Investment

Deferred Investment Scenario

- How would global energy markets evolve if investment MENA upstream oil industry grew slower than in the Reference Scenario?
- Investment is assumed to remain constant at its share of historical GDP in each country
- MENA oil production is lower compared to the Reference Scenario, and the gap is widening over time
- Oil prices are driven higher - an increase of 32% over the Reference Scenario in 2030 - dragging up gas, coal and electricity prices
- MENA gas production is also lower compared to the Reference Scenario due to
 - ❑ Reduced global gas demand & call on MENA gas
 - ❑ Lower associated oil/gas output



MENA Crude Oil Production (including NGLs)



MENA's share of global oil production falls from 35% in 2004 to 33% in the DIS. Saudi production reaches 14 mb/d in 2030

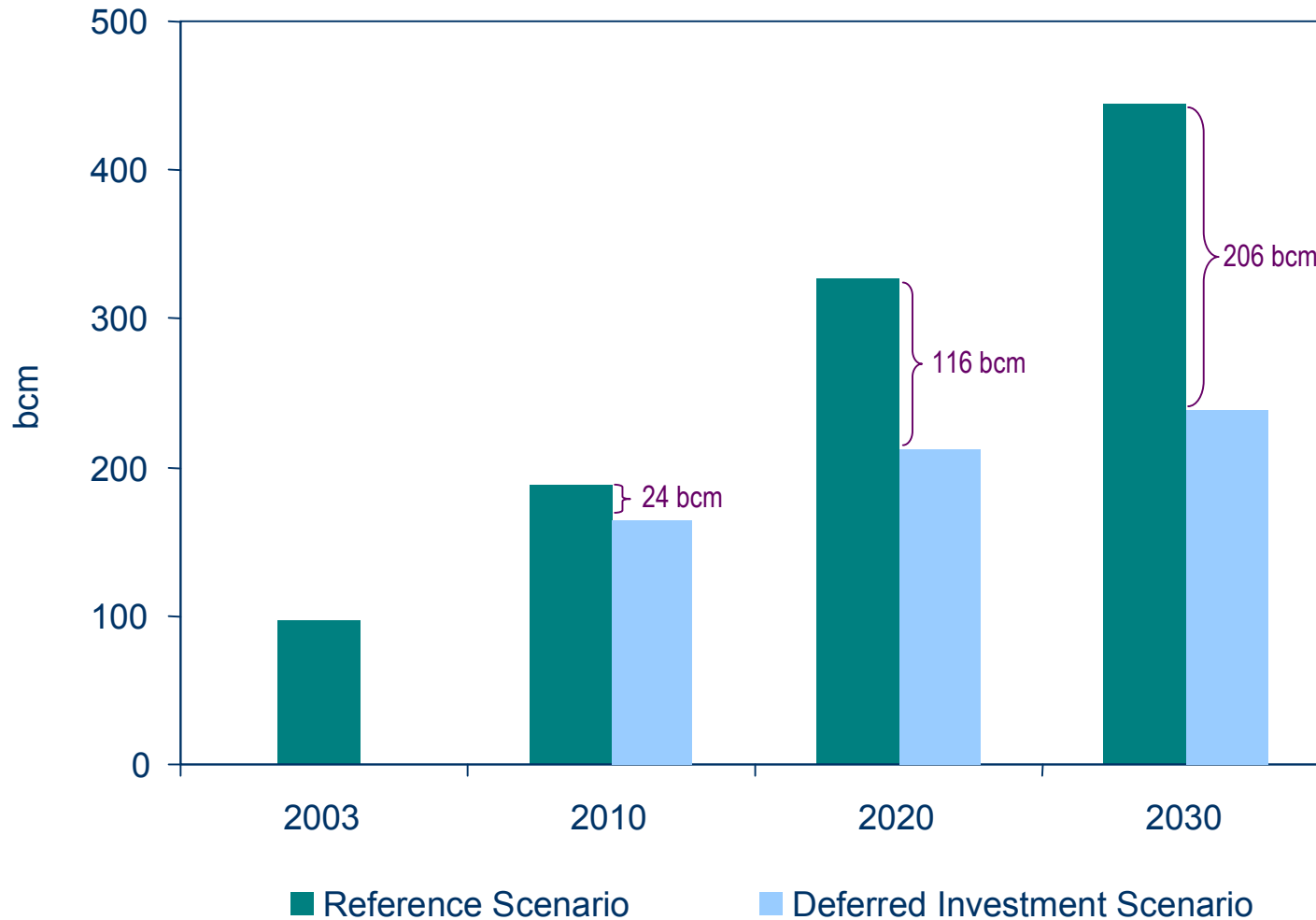
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights

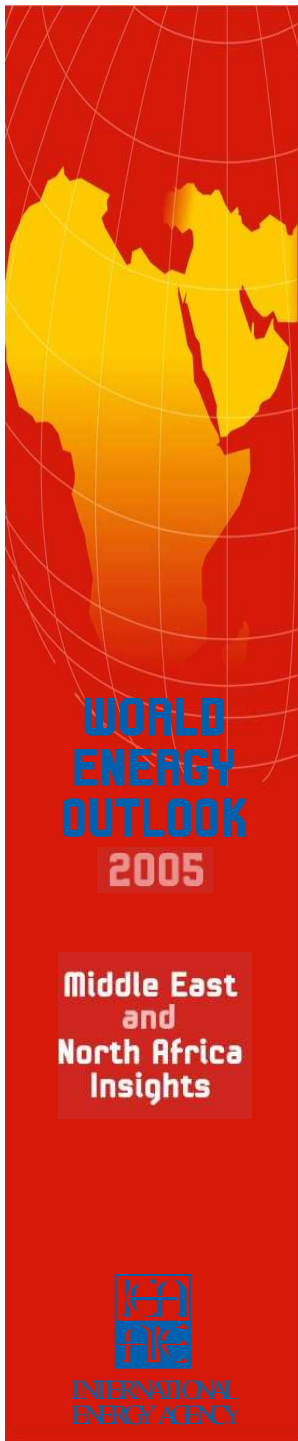


INTERNATIONAL
ENERGY AGENCY

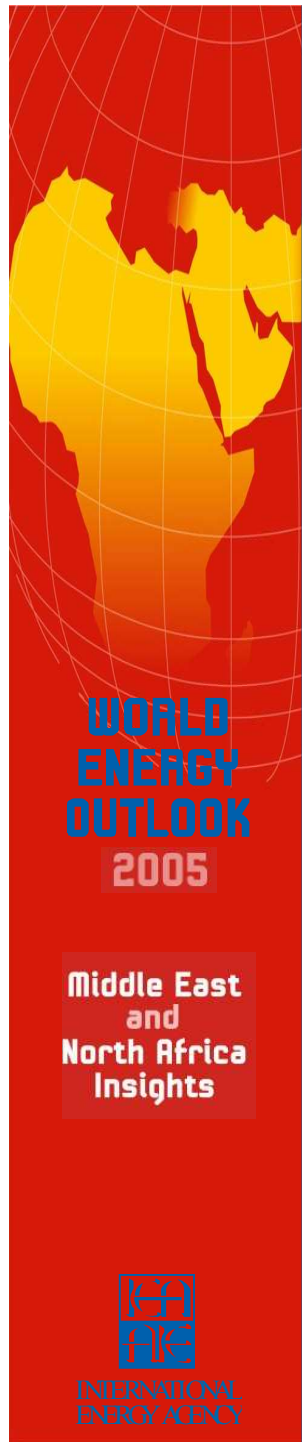
MENA Net Natural Gas Exports



MENA gas exports are much lower in the DIS, as higher gas prices & lower GDP choke off demand in the main importing regions

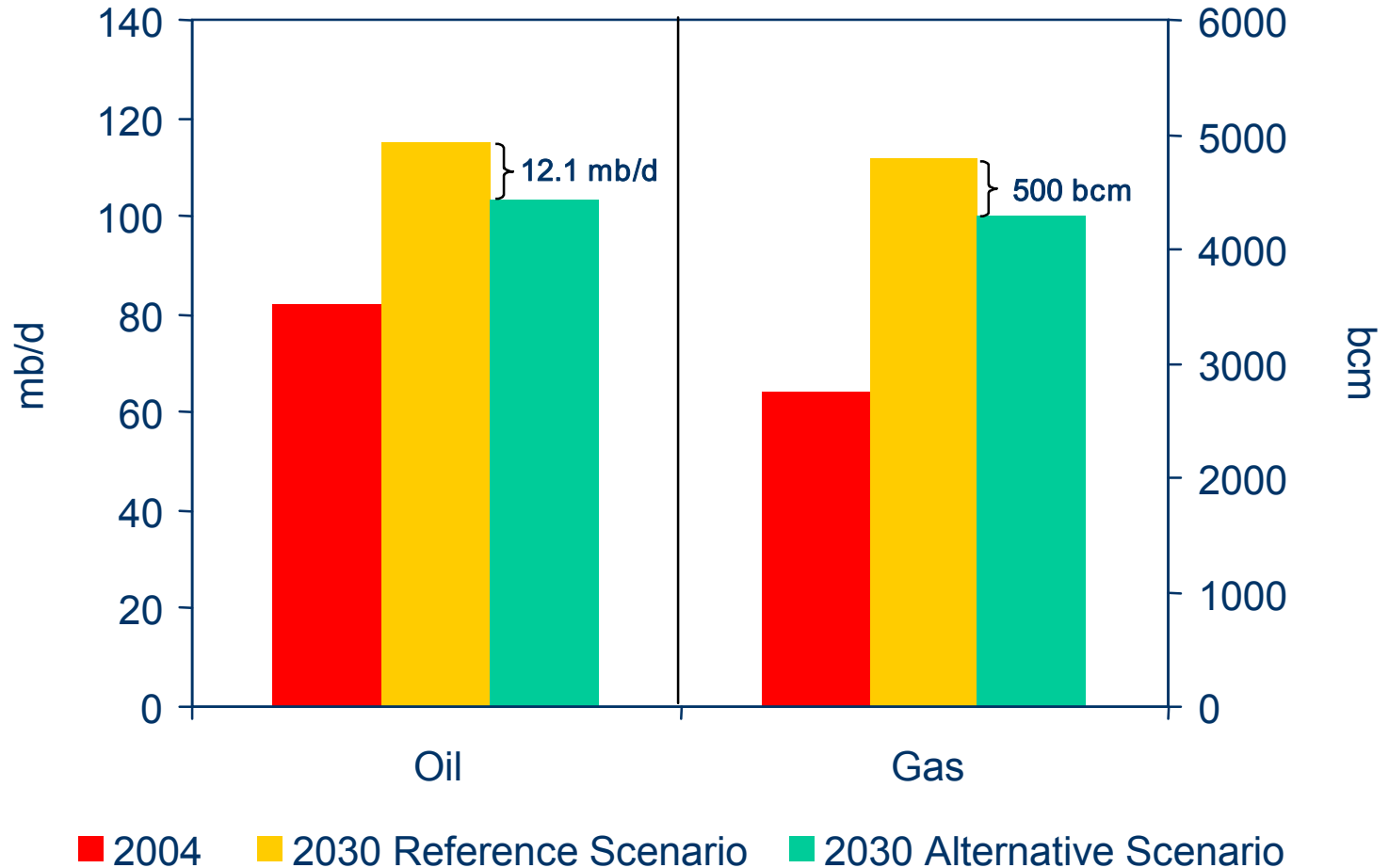


IEEJ(Nov14)

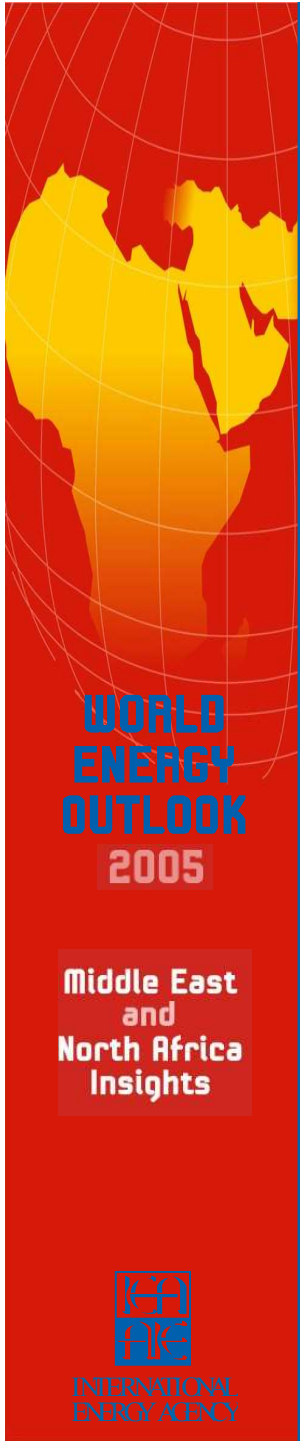


World Alternative Policy Scenario

Oil/ Gas Demand in the Reference and Alternative Policy Scenarios

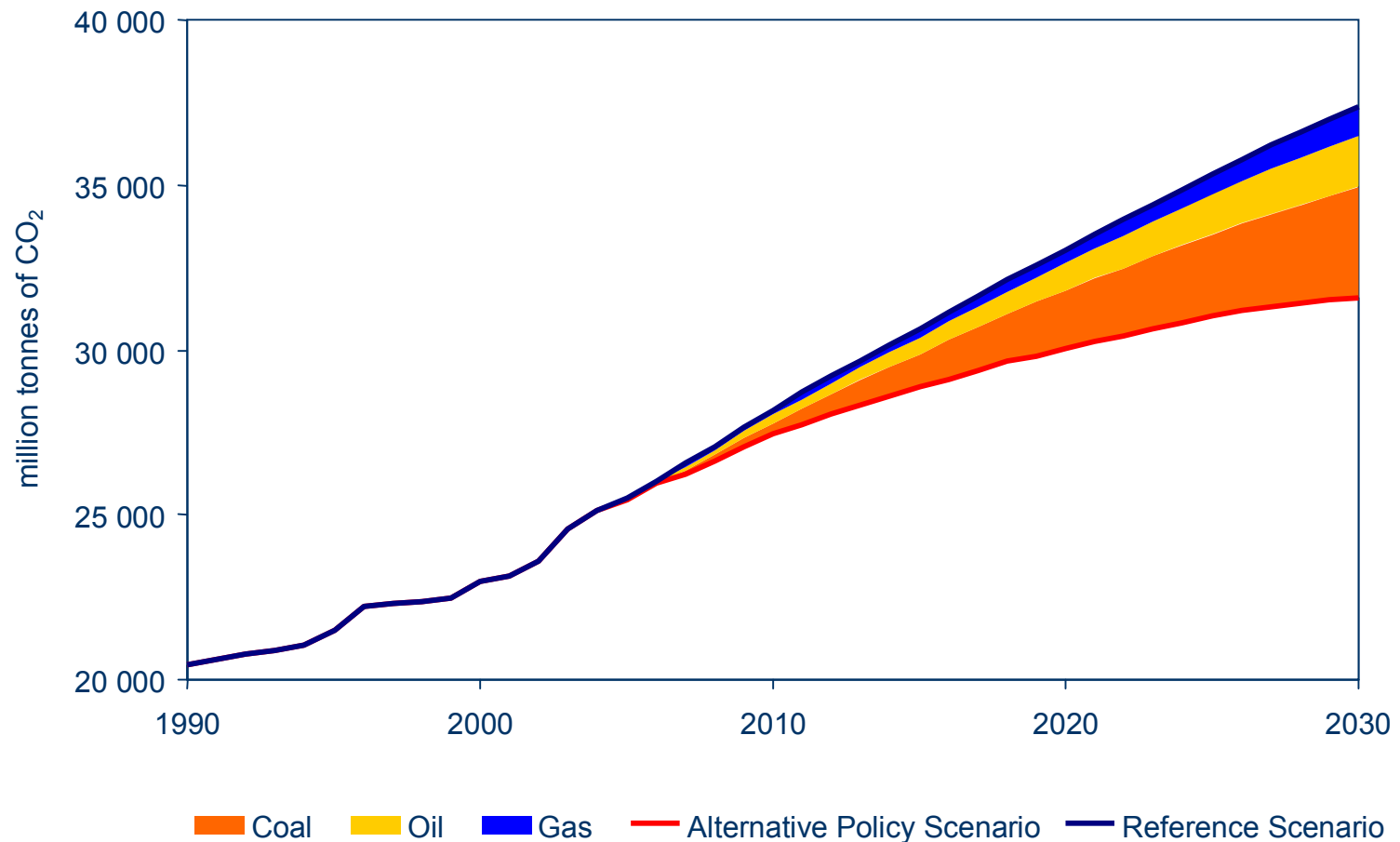


Oil & gas demand in the Alternative Scenario are both 10% lower in 2030 due to significant energy savings and a shift in the energy mix



IEEJ(Nov14)

Global Energy-Related CO₂ Emissions in the Reference and Alternative Policy Scenarios



In 2030, CO₂ emissions are 16% lower than in the Reference Scenario, but are still more than 50% higher than 1990

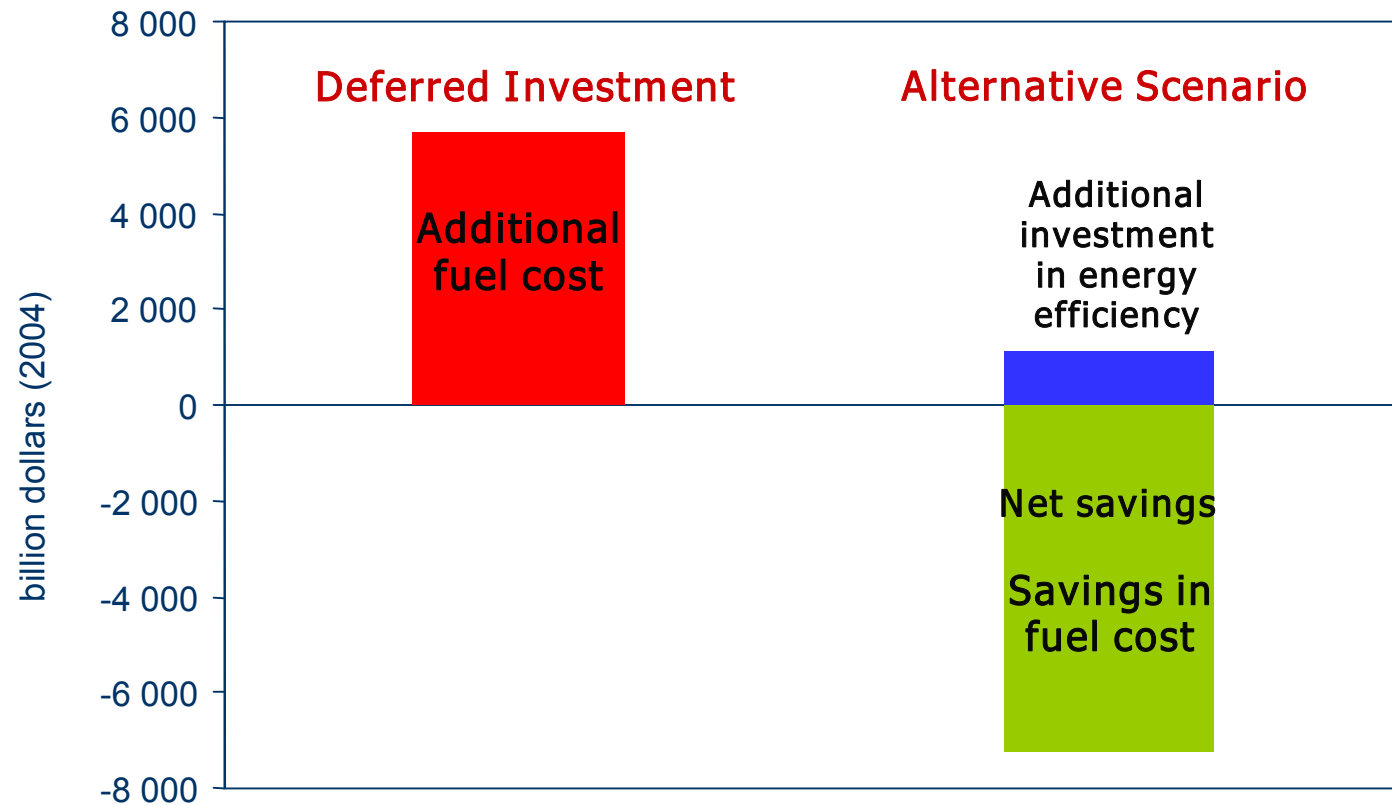
WORLD
ENERGY
OUTLOOK
2005

Middle East
and
North Africa
Insights

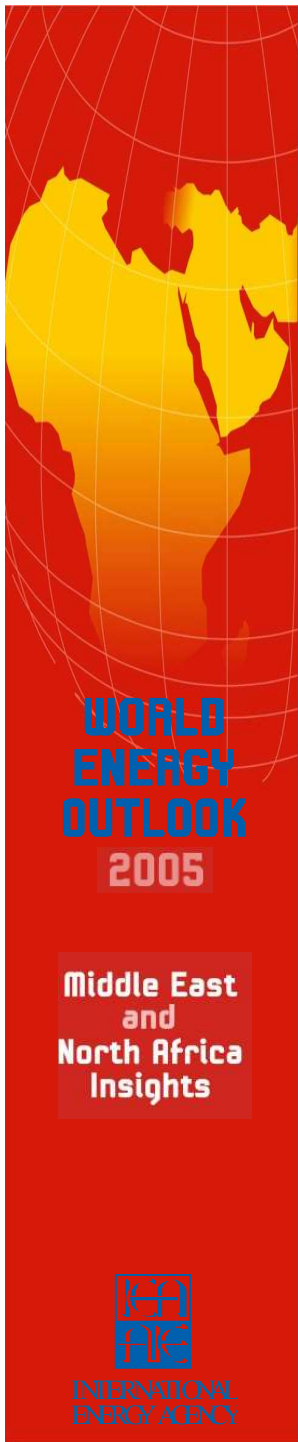


INTERNATIONAL
ENERGY AGENCY

Difference in Cost of Oil Consumption in the Alternative and Deferred Investment vs. Reference Scenario, 2005-2030



In the Alternative Scenario, the cost of additional investments in energy efficiency are more than offset by savings in fuel cost. CO₂ emissions are also significantly lower



Key Messages

- If governments stick with current policies, global energy needs will be more than 50% higher in 2030 than today
- In any plausible scenario, MENA oil & gas resources will be critical to meeting the world's growing appetite for energy
 - ❑ Countries like Saudi Arabia, Iran, Iraq and Algeria will play key roles
- Further underinvestment in oil and gas would drive up prices & depress global GDP growth, eventually harming producers too
- Major importing countries are already considering more vigorous policies to curb demand growth & reduce reliance on oil and gas
- Continued need for dialogue between producers and consumers to find mutually beneficial outcomes

