



Energy Outlook – Global/Asian Region

Oil and Gas Energy Forum

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DEFINITIONS AND CAUTIONARY NOTE

Resources: Our use of the term “resources” in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves or SEC proven mining reserves. Resources are consistent with the Society of Petroleum Engineers 2P and 2C definitions.

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We use certain terms in this presentation, such as resources, that the United States Securities and Exchange Commission (SEC) guidelines strictly prohibit us from including in filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov. You can also obtain these forms from the SEC by calling 1-800-SEC-0330.

AGENDA

- PART 1: TRENDS AND DRIVERS
- PART 2: ENERGY DRIVERS
- PART 3: ASIA ENERGY DEVELOPMENTS
- PART 4: SHELL ENERGY SCENARIOS TO 2050 – SIGNALS & SIGNPOSTS

PART 1

TRENDS AND DRIVERS

SIGNALS & SIGNPOSTS – A SNAPSHOT

Intensified economic cycles following the end of the 'great moderation'

Heightened political instability

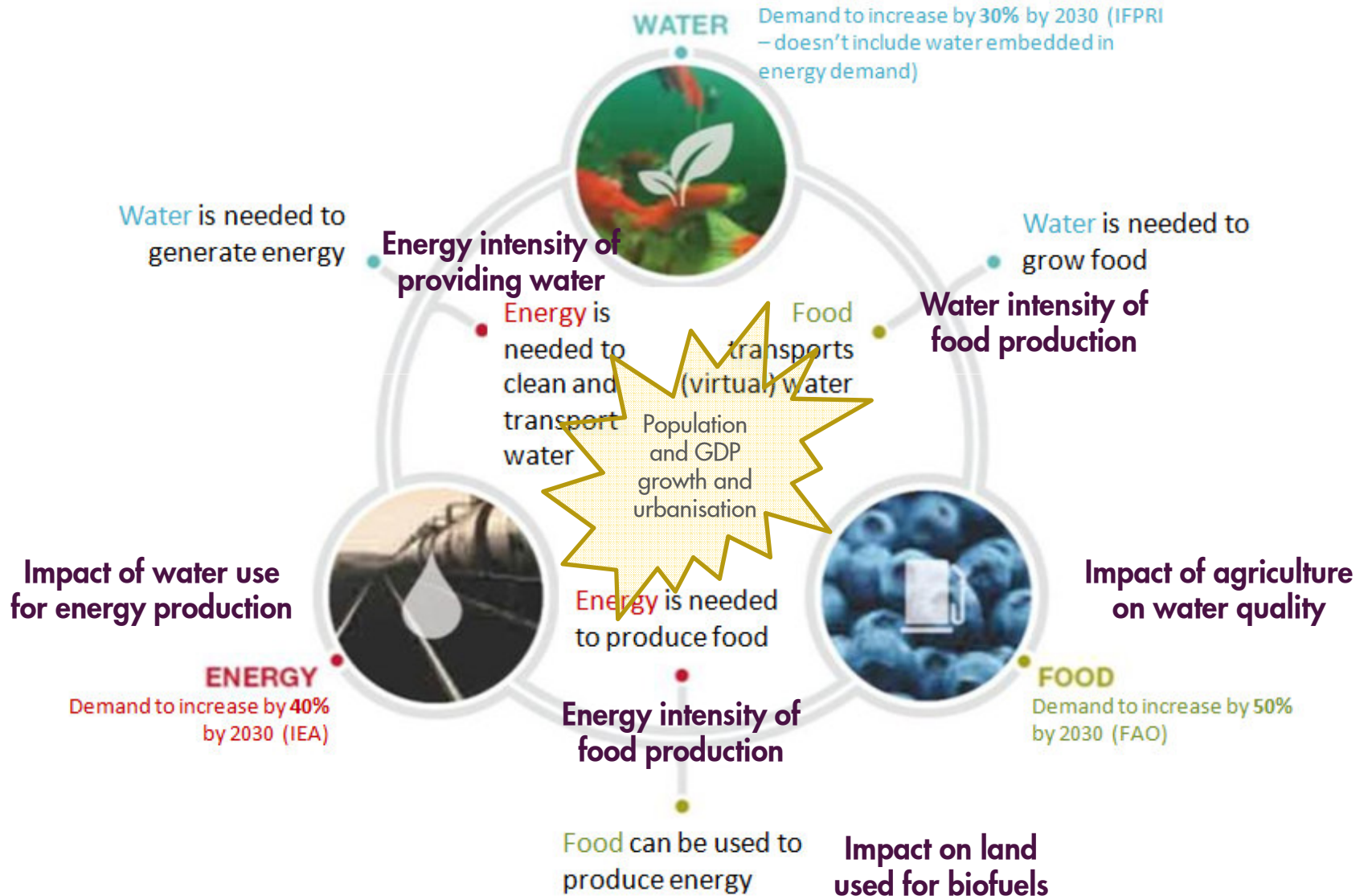
We have entered an
'era of volatile transitions'

Significant demographic transitions – urbanisation

New political consensus building – a *mini-lateral* world

New planetary boundaries defined

FOOD – WATER – ENERGY



POPULATION AND PROSPERITY DRIVES ENERGY DEMAND

RISING GLOBAL POPULATION, ENERGY DEMAND

100 = Global Primary Energy 2010

Population
200

6.9

7.7

9.3

100

NON-OECD

OECD

0

2010

2030

2050

AND CO₂ EMISSIONS

100 = Global CO₂ Emissions 2010

150

100

50

0

2010

2030

2050

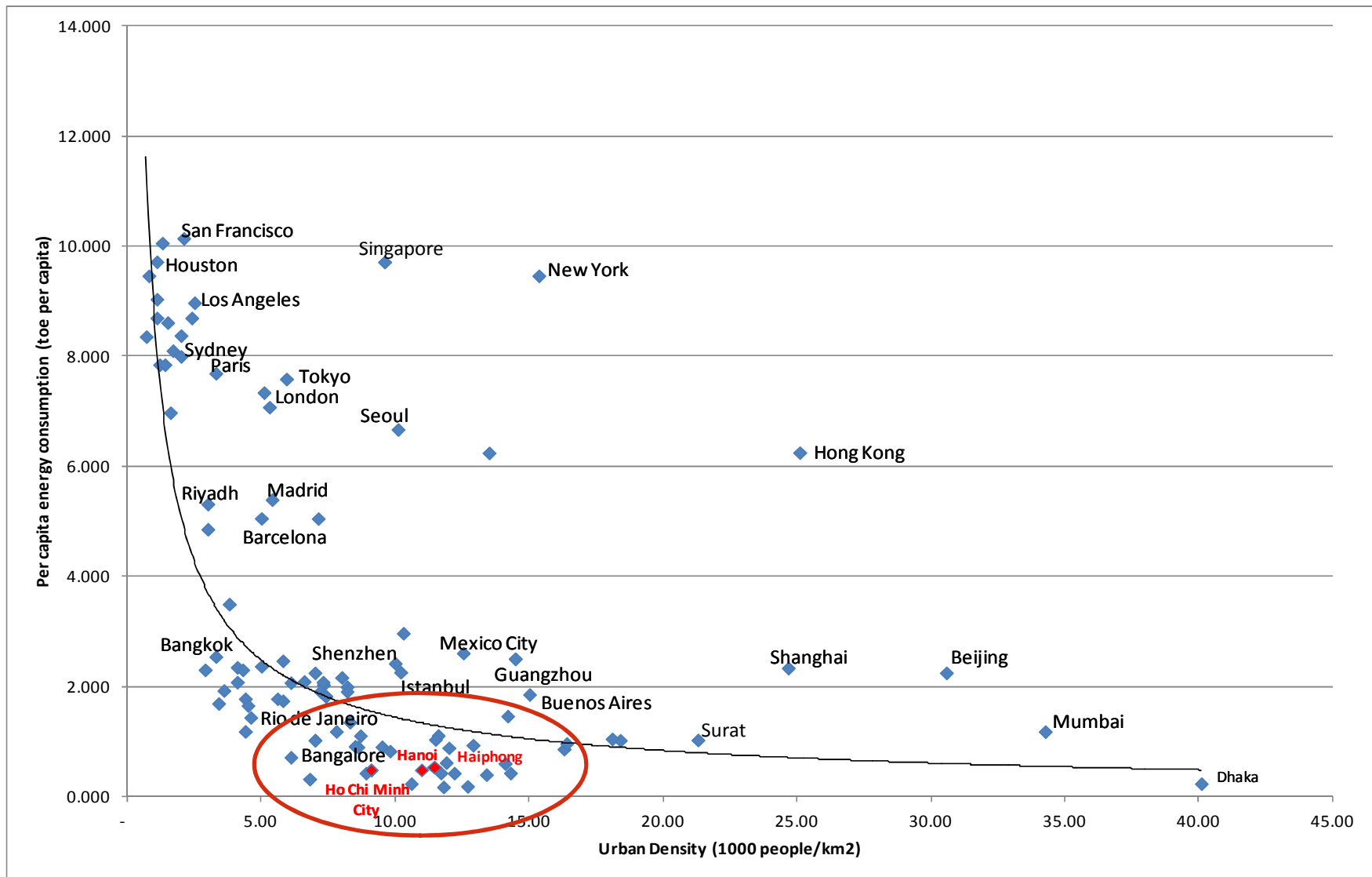
SOURCE: SHELL ESTIMATES, UN

SOURCE: SHELL ESTIMATES

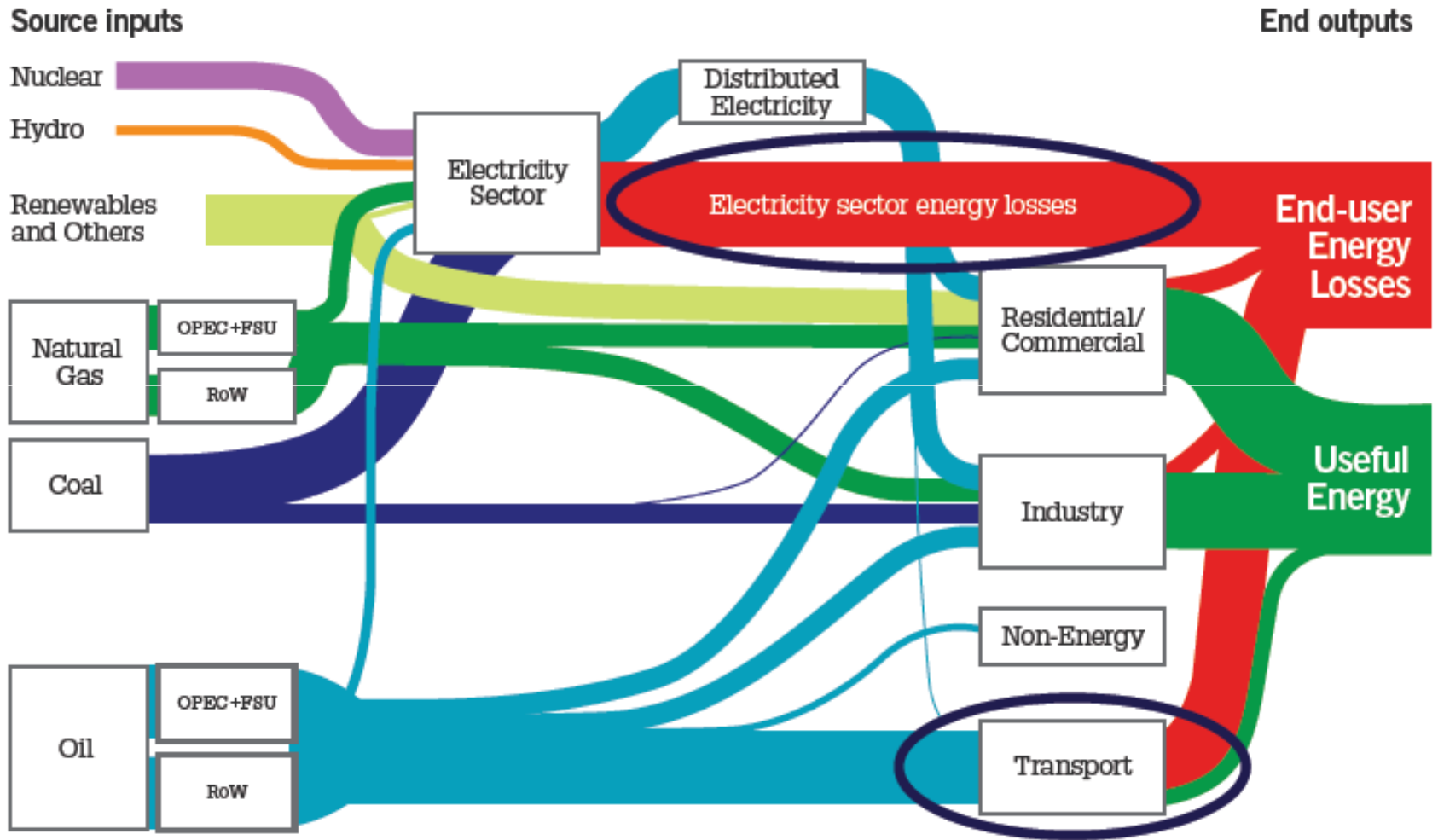
IMPACTS OF AN URBAN WORLD

- 75% of world's population in cities by 2050
- Urban development decisions lock in city energy profile in the early stages
- Urban planning decisions historically reflect energy prices at the time of development (urban sprawl in the US linked to low gasoline prices)
- Can cities be the saviour of the global energy crunch – extra-ordinary demand moderation?

DENSER CITIES CONSUME LESS ENERGY



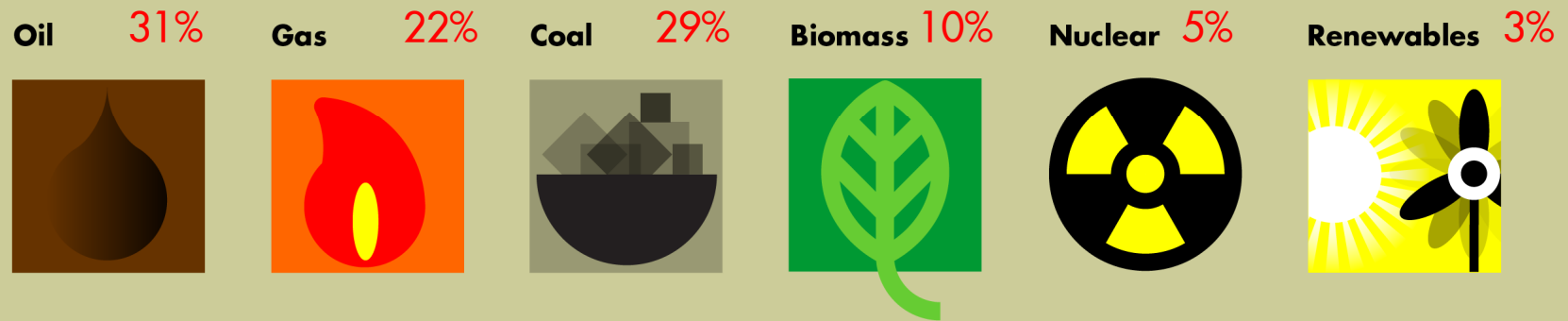
CITIES IN THE ENERGY WEB



PART 2

ENERGY DRIVERS

THE ENERGY SYSTEM TODAY SETS THE CONTEXT FOR THE FUTURE

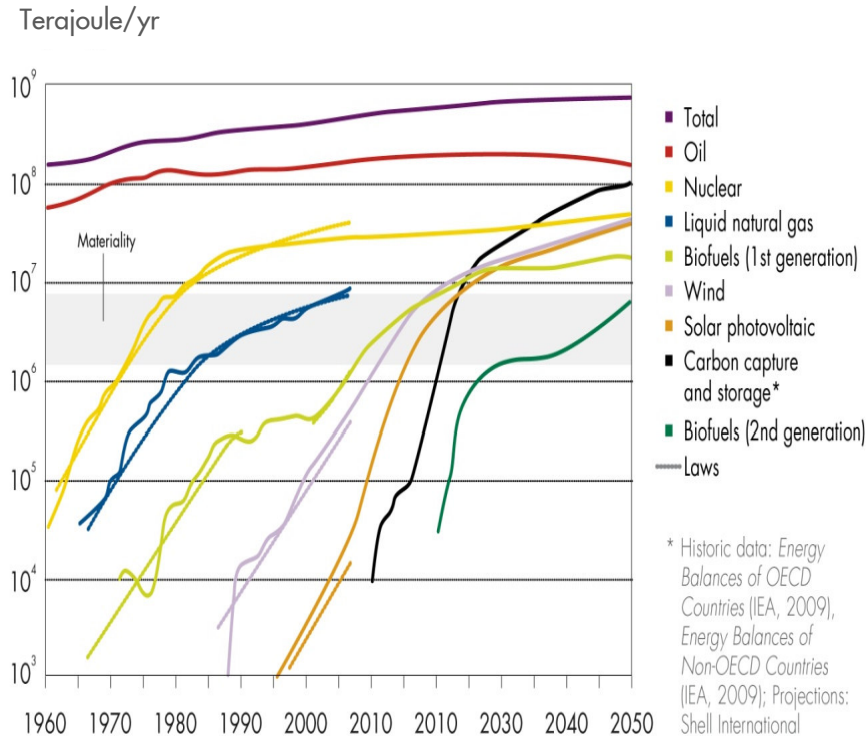


Source: Shell; UN Population Division

World population 7 bln; 50% in urban environment

HOW FAST CAN WE CHANGE?

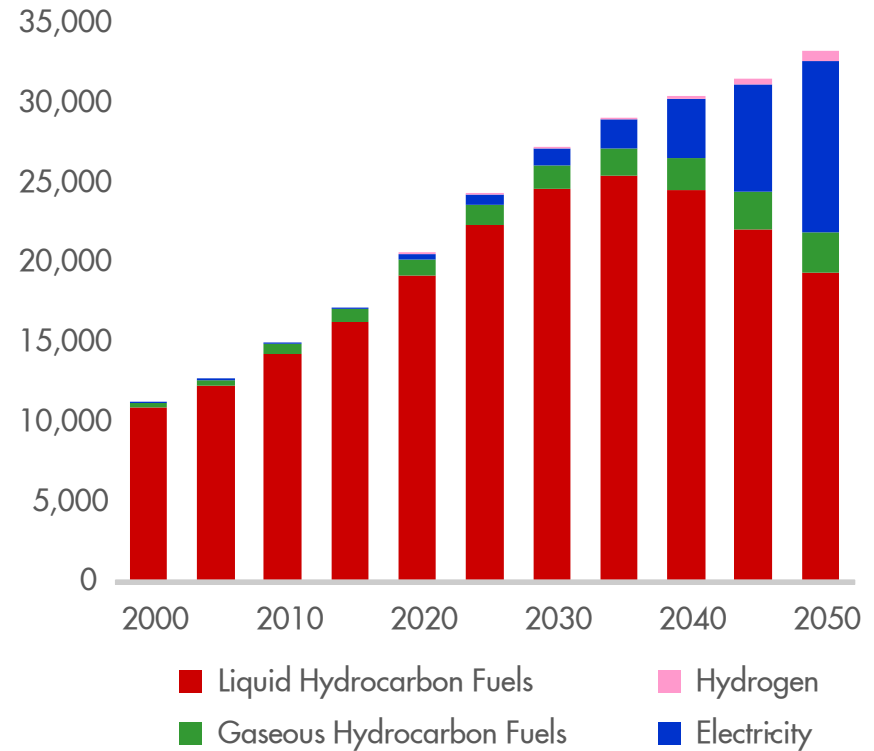
TECHNOLOGIES TAKE DECADES TO MATURE



SOURCE: NATURE 462 (2009)

EXAMPLE: PASSENGER ROAD TRANSPORT

Billion vehicle kilometres

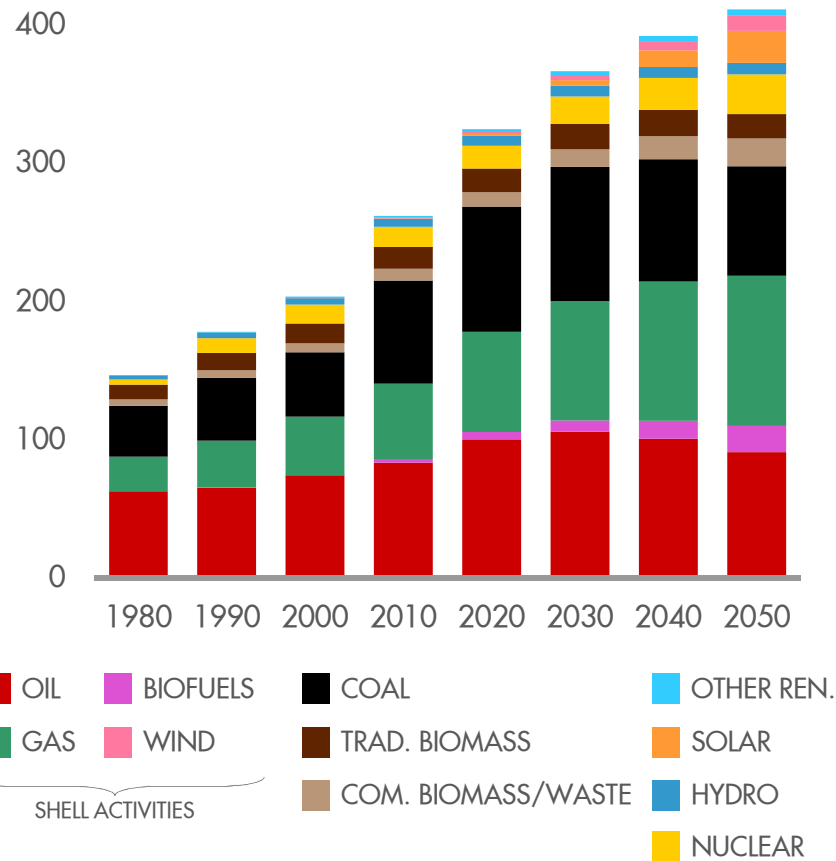


SOURCE: SHELL

ENERGY INVESTMENT FUNDAMENTALS POSITIVE

ROBUST LONGER TERM FUNDAMENTALS

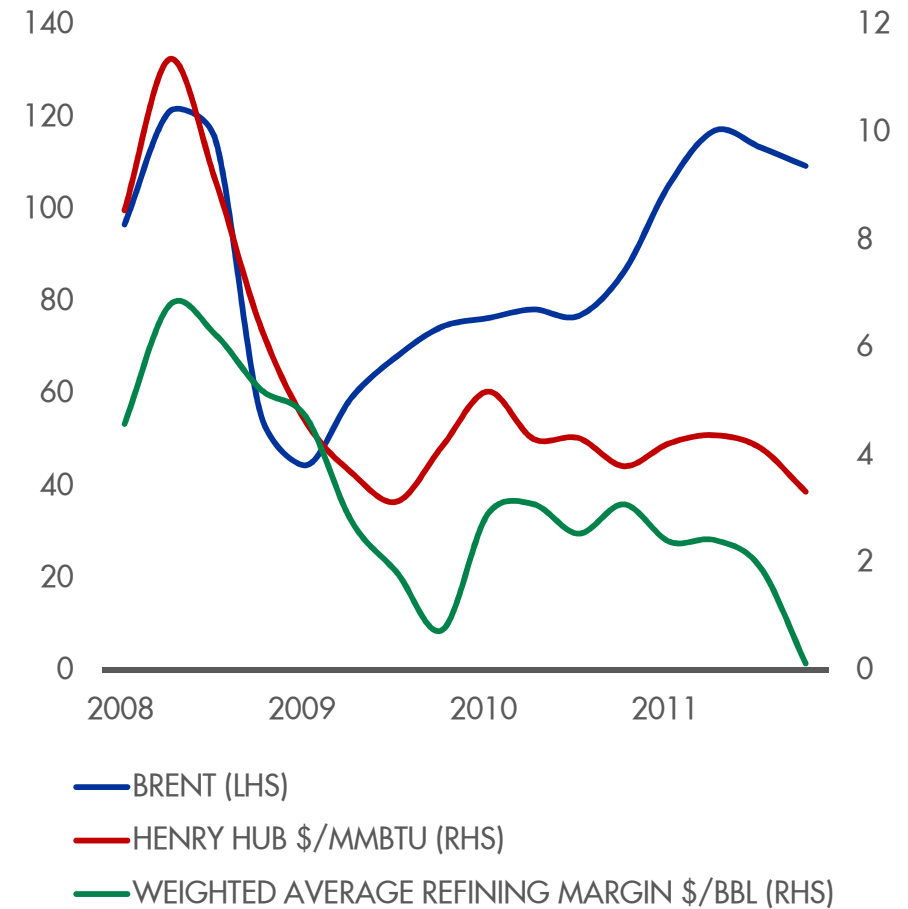
Energy demand outlook in million boe/d



SOURCE: SHELL ANALYSIS

MANAGING SHORT-TERM VOLATILITY

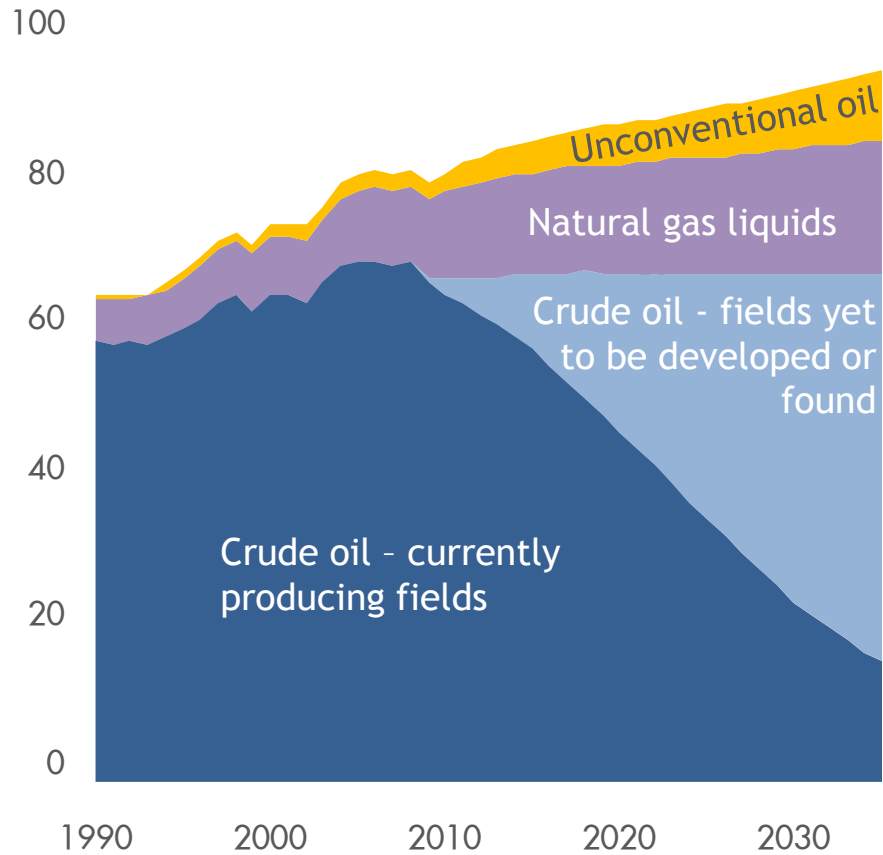
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OIL MARKET

CRUDE OIL SUPPLY

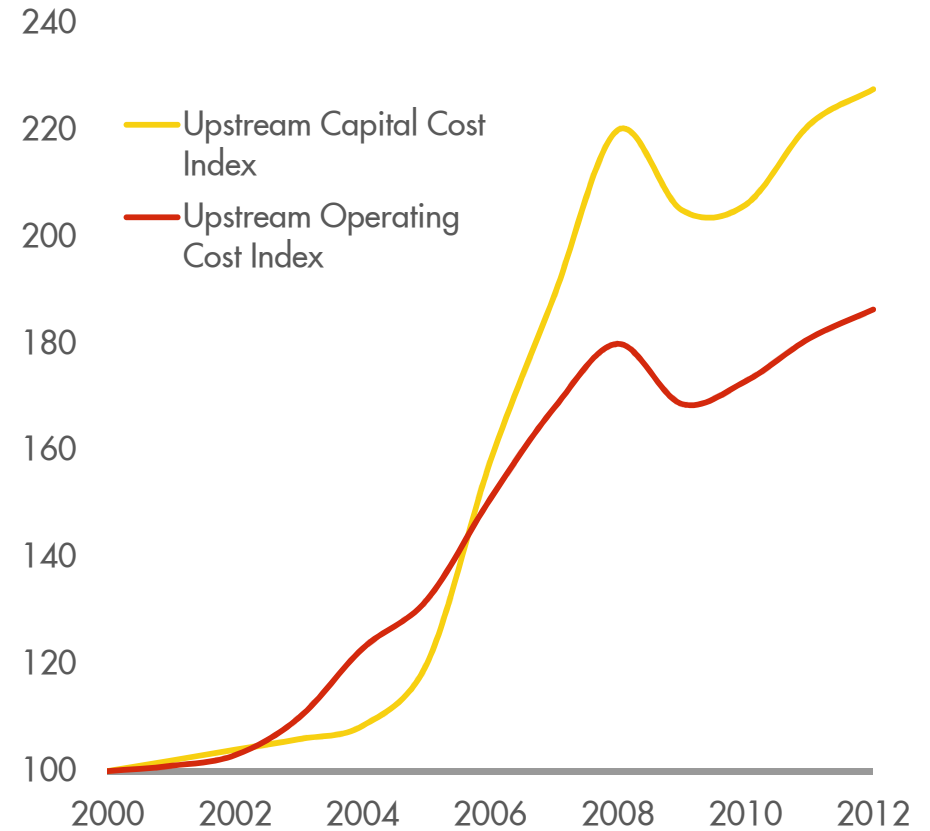
Global oil production million boe/d



SOURCE: IEA WEO2010

INDUSTRY COST ESCALATION

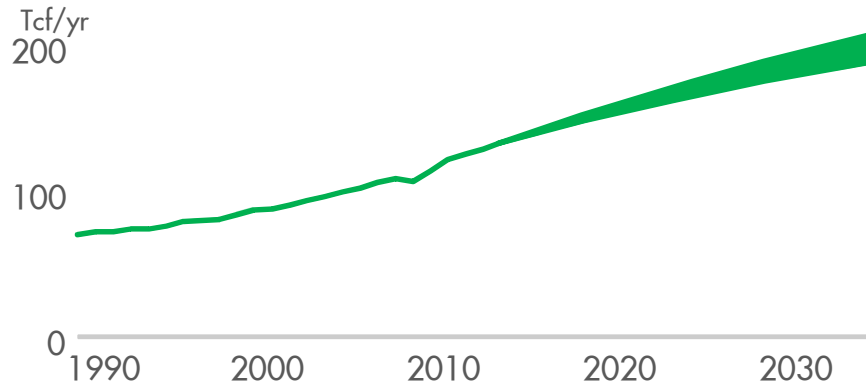
Cost indices Upstream - Year 2000=100



SOURCE: IHS-CERA

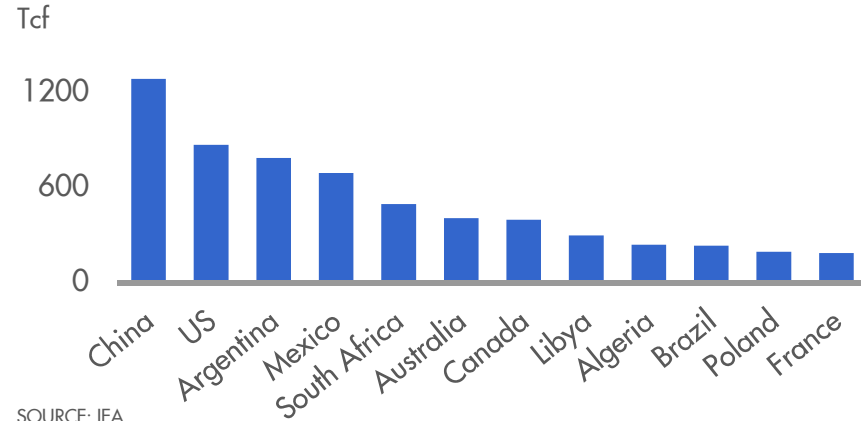
NATURAL GAS OUTLOOK

NATURAL GAS DEMAND GROWTH



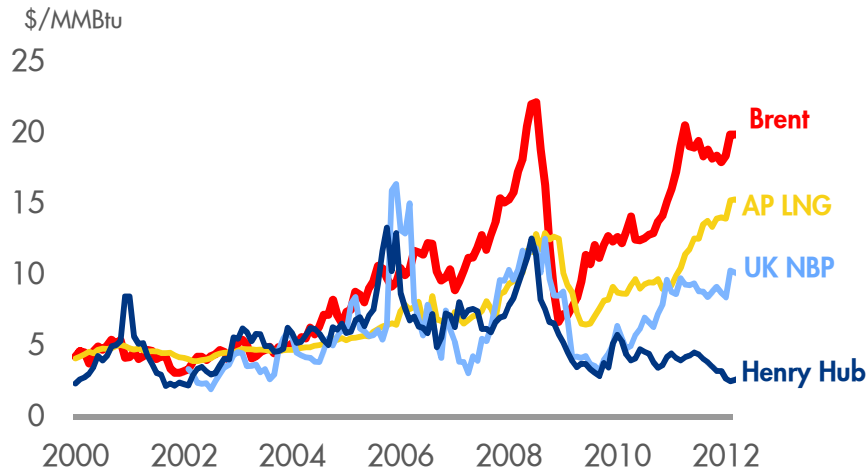
SOURCE: IEA, SHELL

UNCONVENTIONAL GAS RESOURCES



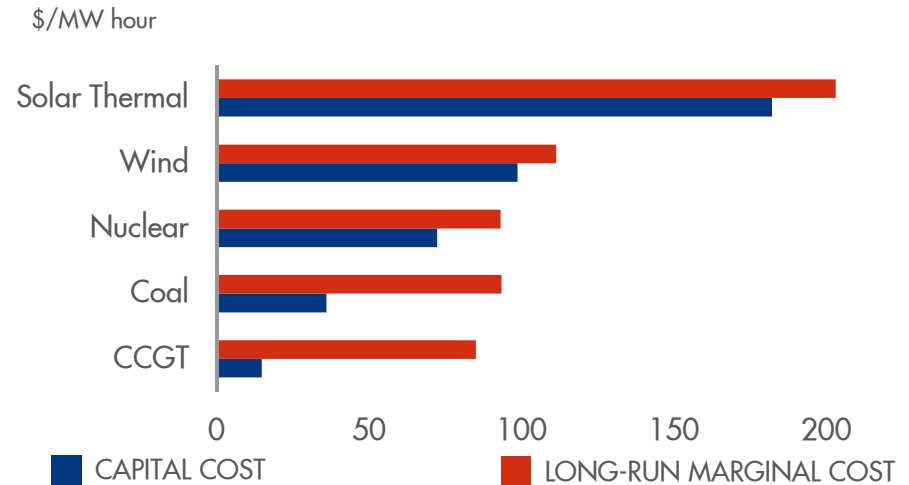
SOURCE: IEA

NATURAL GAS REGIONAL PRICES



SOURCE: PLATTS, NYMEX

ATTRACTIVE ECONOMICS FOR ELECTRICITY PRODUCERS

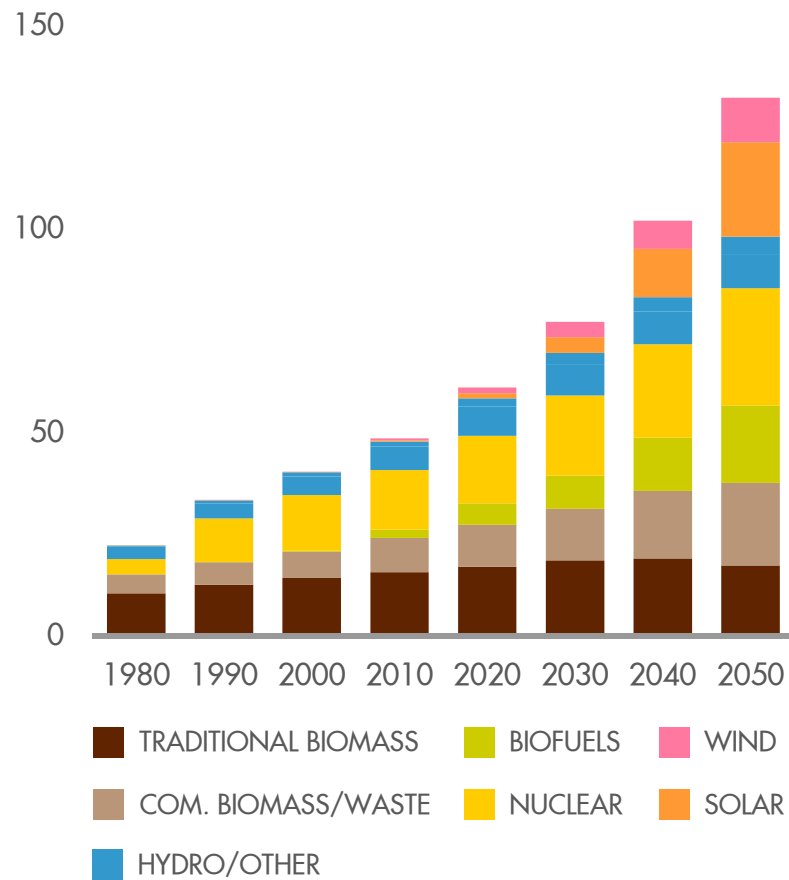


SOURCE: WOODMACKENZIE; SHELL ANALYSIS BASED ON EU DATA

ALTERNATIVE ENERGY

NON FOSSIL ENERGY GROWTH

Energy demand outlook in million boe/d



SOURCE: IEA, SHELL

SHELL BIOFUELS - BRAZIL



PART 3

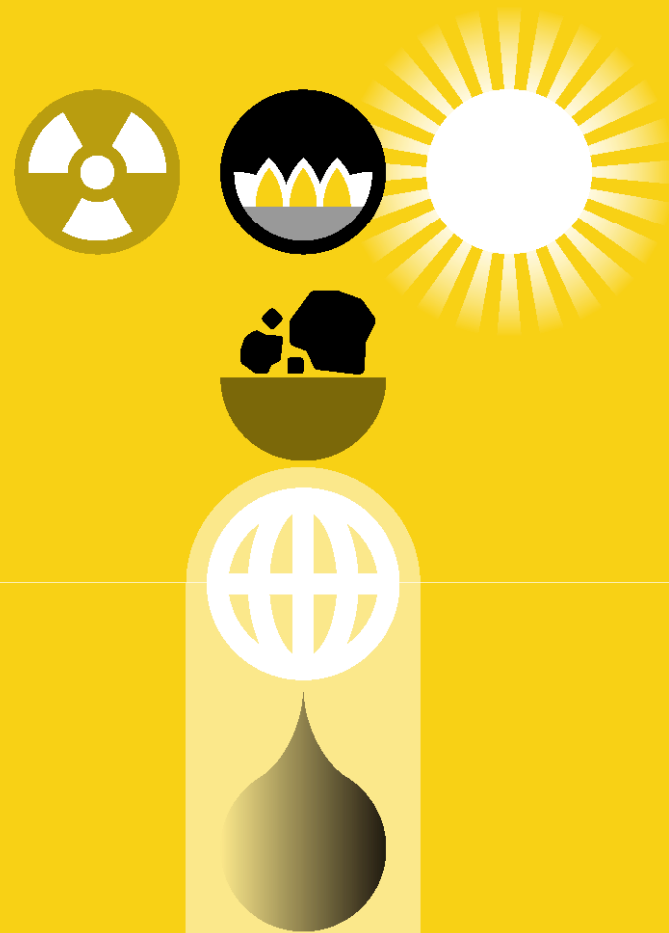
ASIAN ENERGY DEVELOPMENTS

ASIAN ENERGY DEVELOPMENTS

Asia energy outlooks under current trends

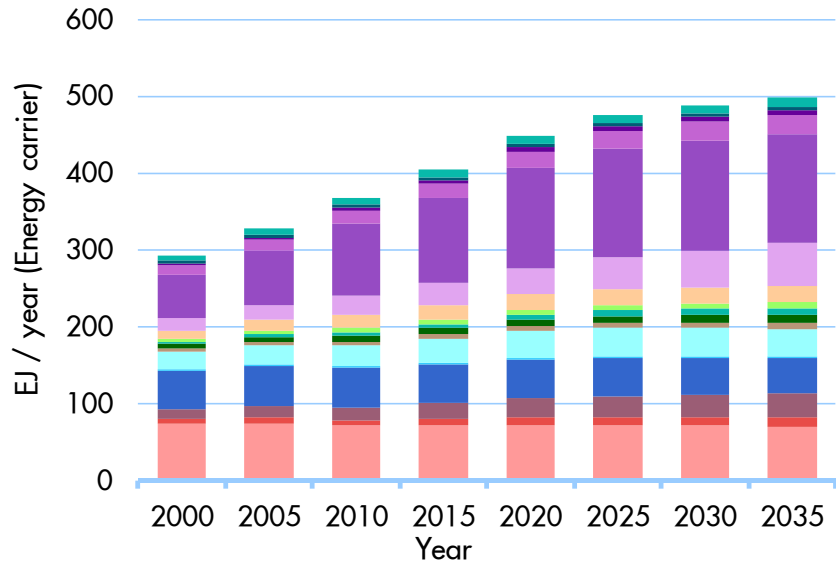
Energy Mix

This outlook is based on many assumptions and interpretations of possible future choices from today's perspective. Many uncertainties remain and many alternatives to this outlook are possible. It should be seen as a starting point for discussion and Shell by no means advocates this outlook as a preferred or inevitable one.



ASIA'S SHARE IN WORLD TFC AND TPE

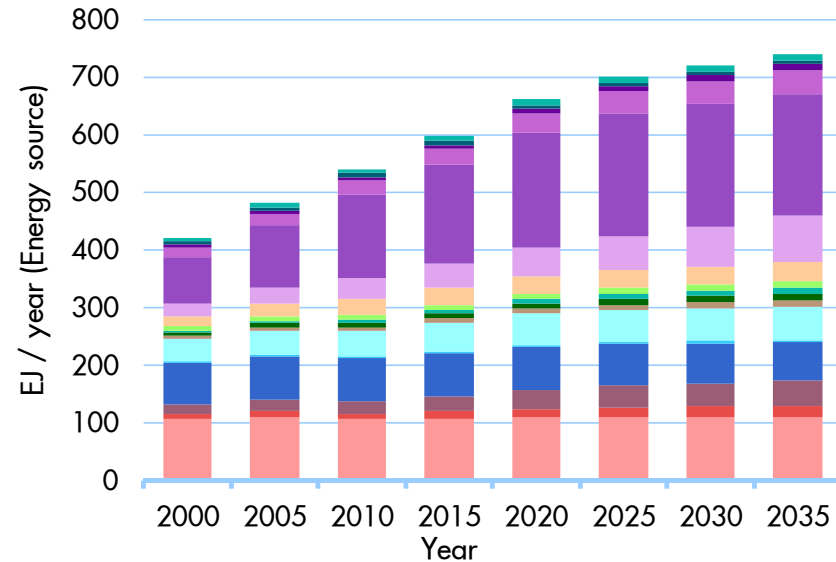
World - Total Final Consumption



- North America
- South America
- Europe West Other
- North Africa
- East Africa
- Middle East
- East Asia
- Central Asia
- International marine bunkers
- Central America & Caribbean
- EU
- Europe East Other
- West Africa
- Southern Africa
- South Asia
- SE Asia
- Oceania

FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

World - Total Primary Energy

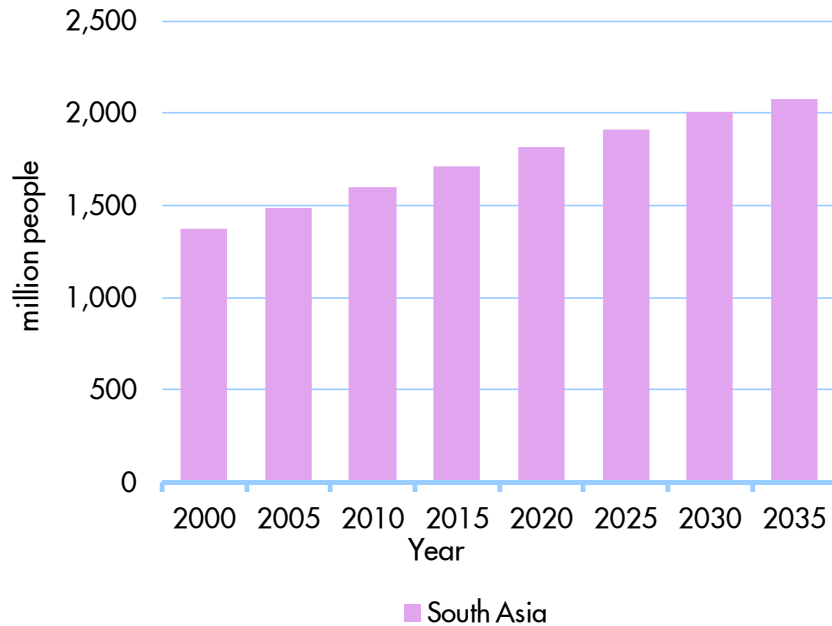


- North America
- South America
- Europe West Other
- North Africa
- East Africa
- Middle East
- East Asia
- Central Asia
- International marine bunkers
- Central America & Caribbean
- EU
- Europe East Other
- West Africa
- Southern Africa
- South Asia
- SE Asia
- Oceania

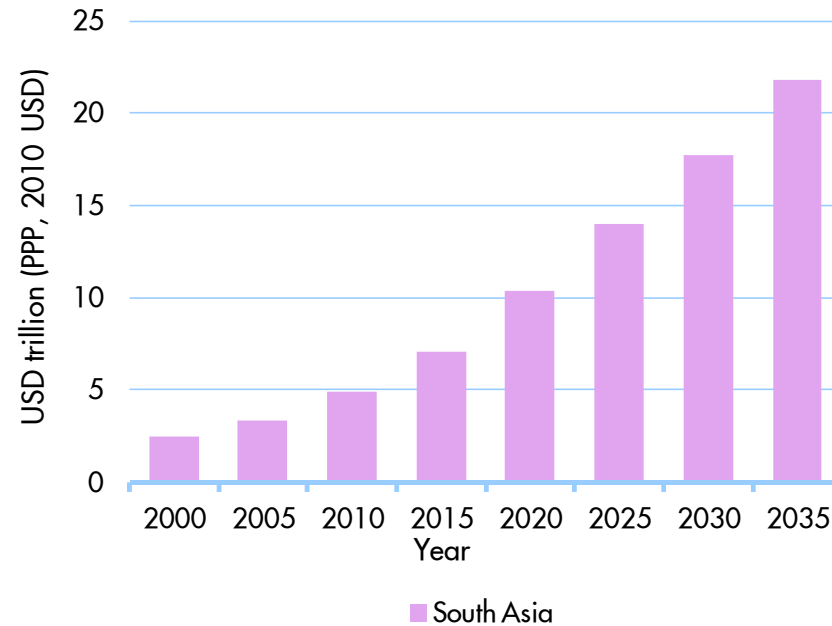
FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

SOUTH ASIA POPULATION AND GDP

World - Population



World - GDP



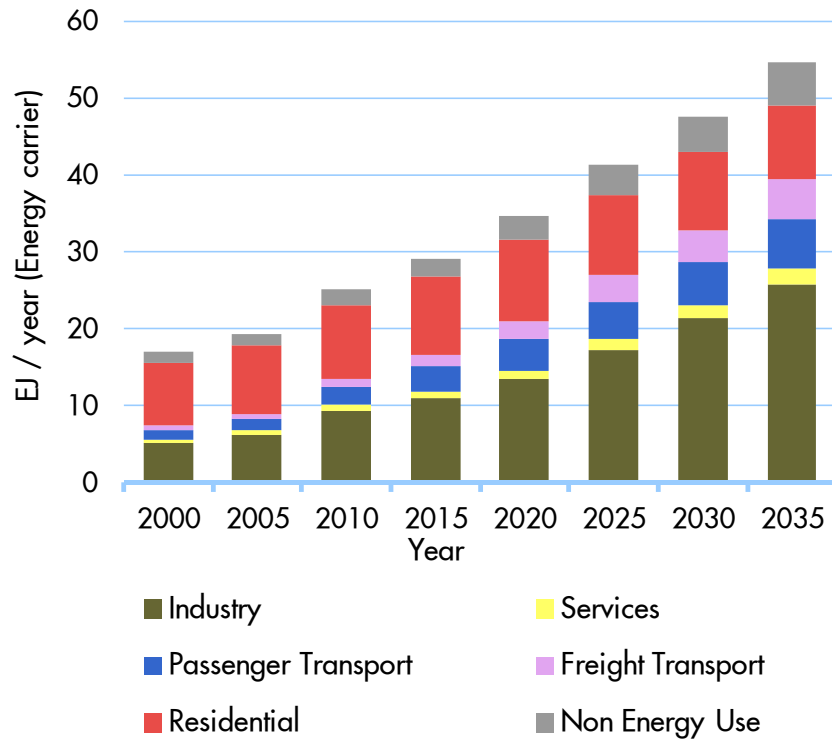
South Asia
 India
 Pakistan
 Bangladesh
 Rest of South Asia

FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

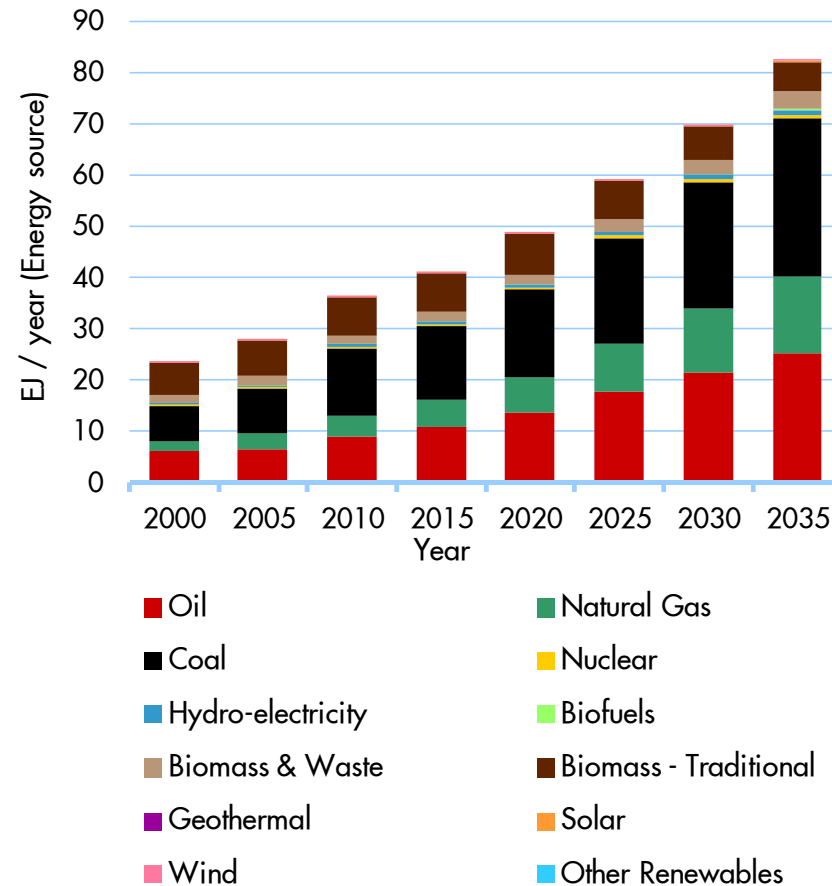
FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

SOUTH ASIA TFC AND TPE

South Asia - Total Final Consumption - By Sector



South Asia - Total Primary Energy - By Source



South Asia
 India
 Pakistan
 Bangladesh
 Rest of South Asia

FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

SE ASIA POPULATION AND GDP

World - Population

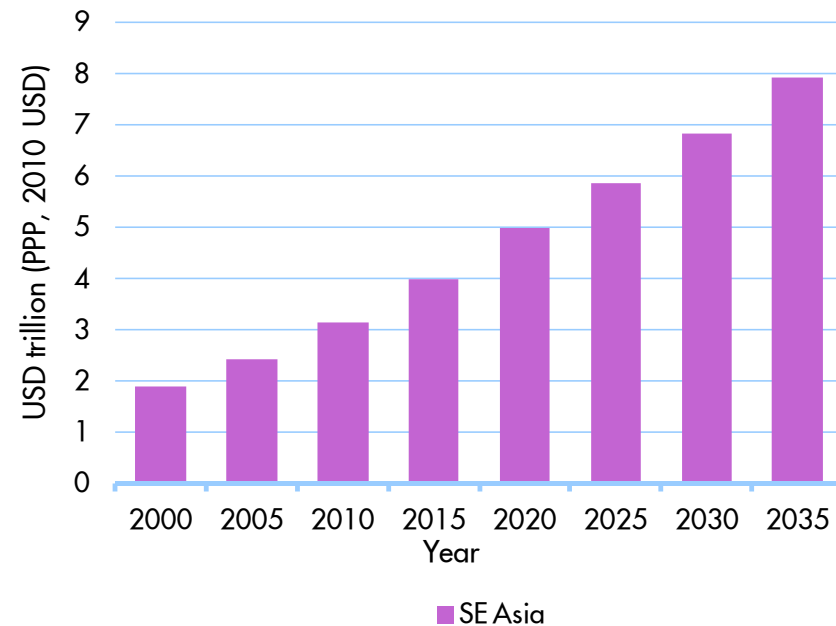


SE Asian population grows x% pa from ~600 mln to 720 mln.

SE Asia
 Indonesia
 Thailand
 Malaysia
 Vietnam
 Philippines
 Singapore

FSB Energy - Shell WEM v2.4.17 - BBC12 - Version Release

World - GDP

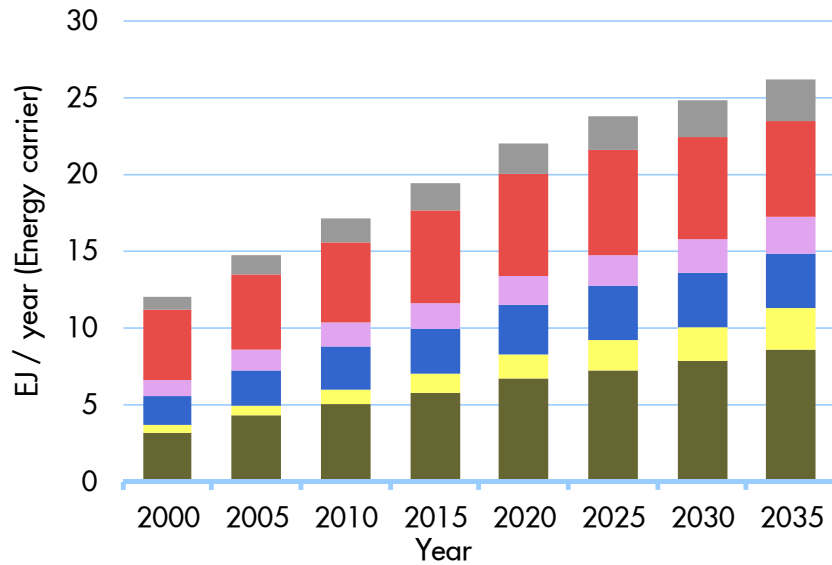


SE Asian GDP/capita grows 2.9% pa from 5,500 to 11,000 (2011-2035)

FSB Energy - Shell WEM v2.4.17 - BBC12 - Version Release

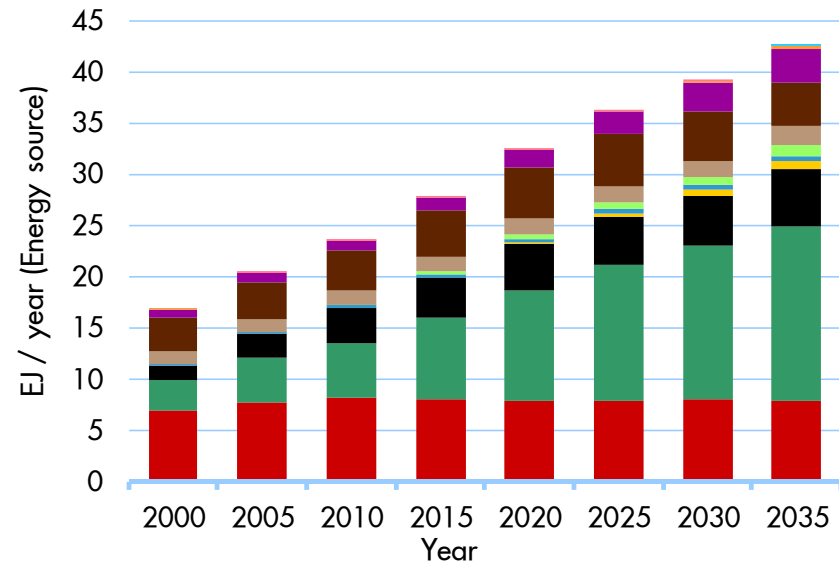
SE ASIA TFC AND TPE

SE Asia - Total Final Consumption - By Sector



- Industry
- Passenger Transport
- Residential
- Services
- Freight Transport
- Non Energy Use

SE Asia - Total Primary Energy - By Source



- Oil
- Coal
- Natural Gas
- Biomass & Waste
- Biomass - Traditional
- Geothermal
- Wind
- Hydro-electricity
- Nuclear
- Biofuels
- Solar
- Other Renewables

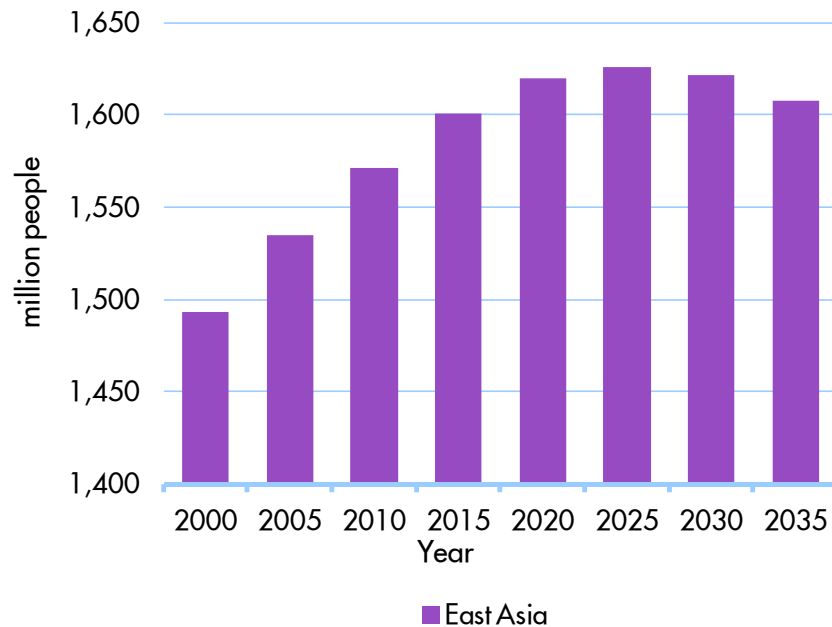
SE Asia
 Indonesia
 Thailand
 Malaysia
 Vietnam
 Philippines
 Singapore

FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

FSB Energy - Shell WEM v2.4.13 - BBC12 - Normal Efficiency

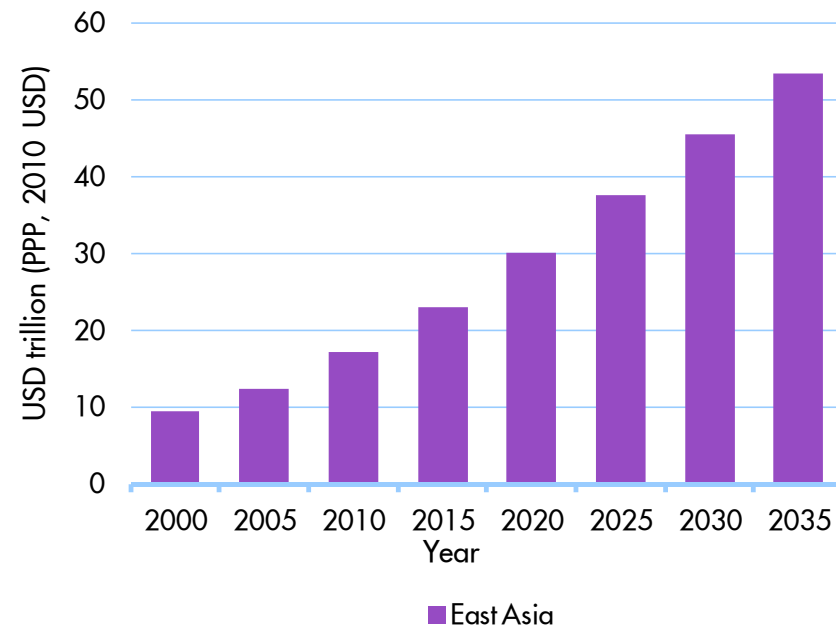
EAST ASIA POPULATION AND GDP

World - Population



SE Asian population hardly grows and remains around 1.6 bln people

World - GDP



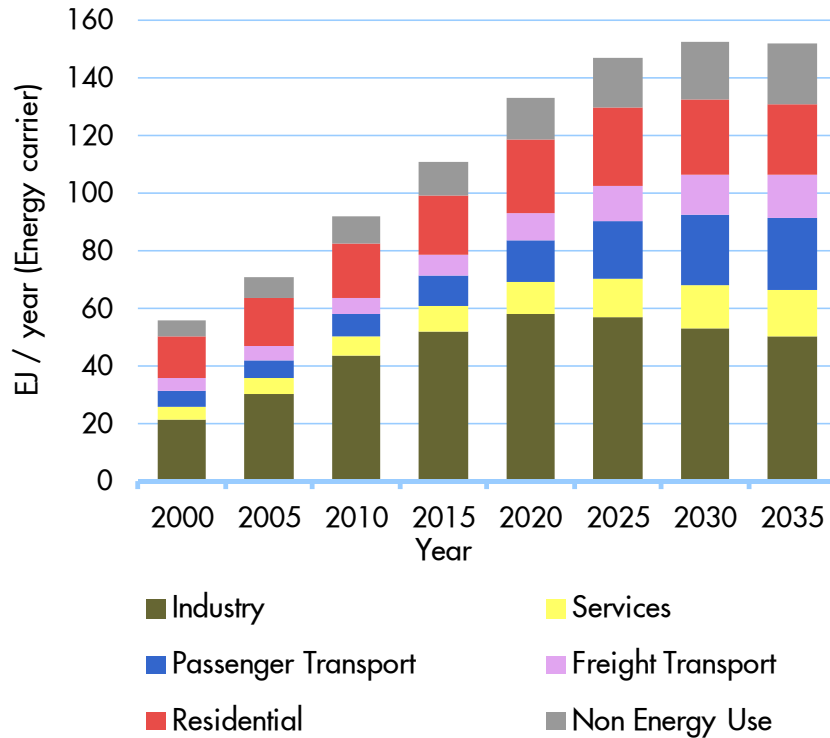
SE Asian GDP/capita grows 4.5% pa from \$11,500 to \$33,160 (2011-2035)

East Asia

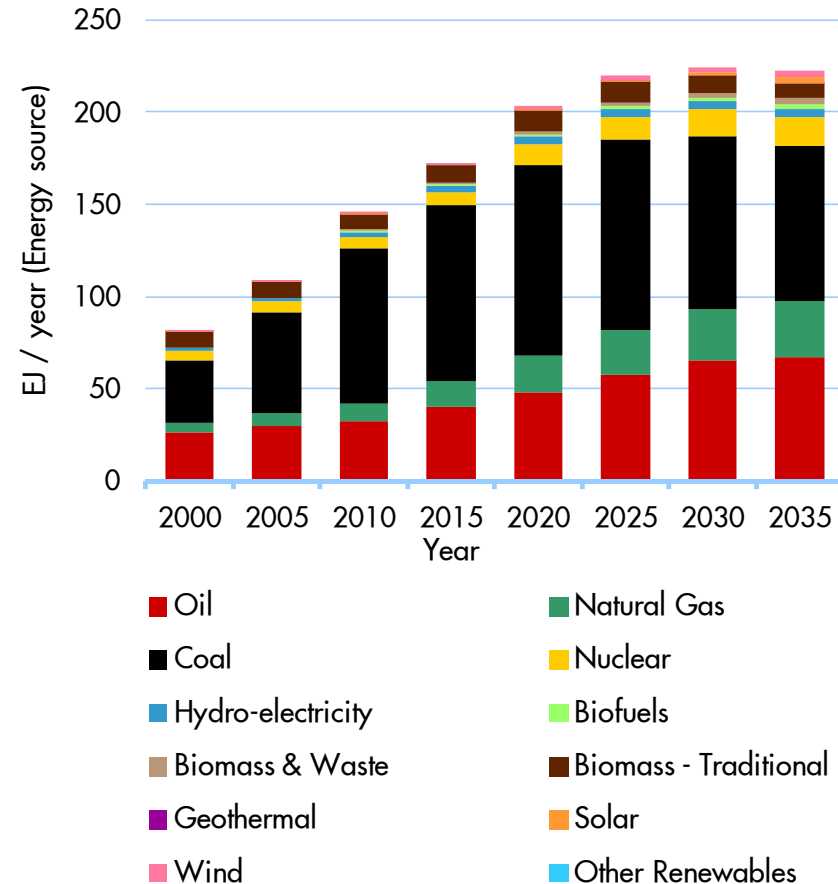
- China
- Japan
- South Korea
- North Korea
- Taiwan

EAST ASIA TFC AND TPE

East Asia - Total Final Consumption - By Sector



East Asia - Total Primary Energy - By Source



East Asia
 China
 Japan
 South Korea
 North Korea
 Taiwan

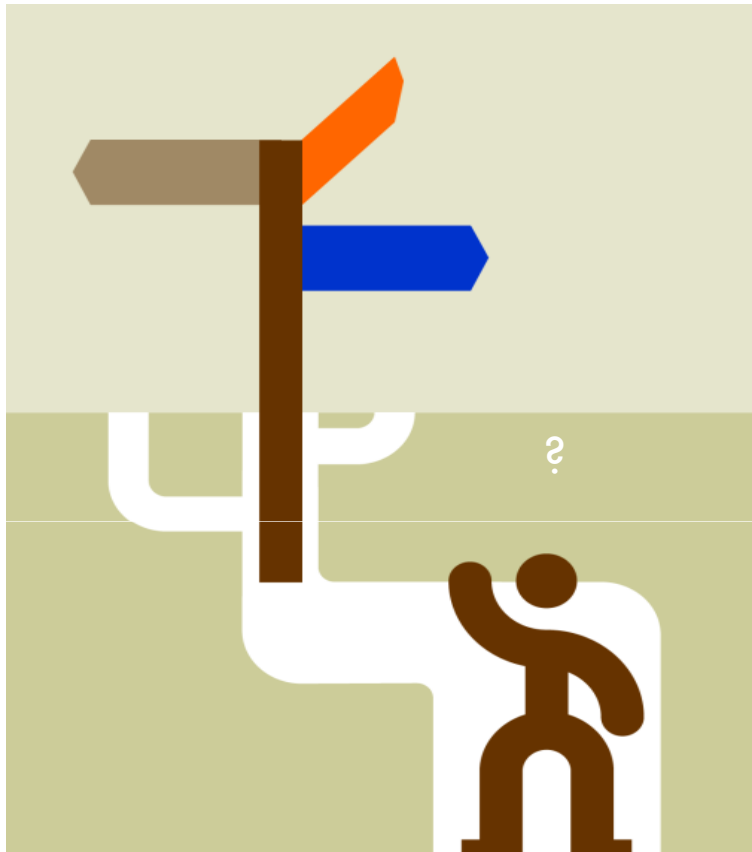
FSB Energy - Shell WEM v2.4.17 - BBC12 - Version Release

FSB Energy - Shell WEM v2.4.17 - BBC12 - Version Release

PART 4

**SHELL ENERGY SCENARIOS TO 2050
SIGNALS & SIGNPOSTS**

WHY DO WE USE SCENARIOS?



- ❑ Dealing with uncertainties greater, and time scales longer, than anyone can make predictions for
- ❑ Today's complexity requires a broad dialogue with diverse communities to arrive at sustainable solutions
- ❑ Broaden peoples' perspective
- ❑ Challenging assumptions and mental models
- ❑ Develop strategies and test plans
- ❑ Identifying risks and opportunities
- ❑ Relevant to business and policy decision makers
- ❑ To ask "what if" questions, not necessarily give answers
- ❑ Not forecasts or predictions

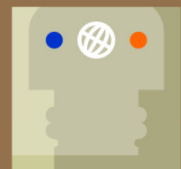
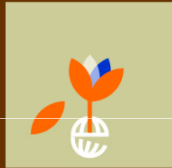
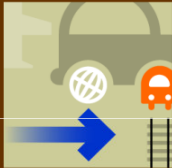
2008 ENERGY SCENARIOS TO 2050

**National supply focus
and reactive change**

Demography

Demand

Environment



Choices

Resources

Technology



BLUEPRINTS

SCRAMBLE

**Emerging coalitions
and accelerated change**

GREENER THAN BLUEPRINTS...?



- *Blueprints* lower CO_{2e} than most scenario analyses but still 650ppm by 2100*
- If 450ppm \approx 2°C, *Blueprints* still isn't good enough
- Truly unprecedented pace of transformational investment would be required



MIT analysis – September 2008

Key insights from Shell's Energy Scenarios to 2050

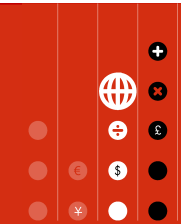
- The three hard truths that must be tackled together
 - Accelerating demand from emerging economies
 - Supply struggling to keep pace
 - Climate change stresses rising
- Transformation in energy systems is inevitable
 - Profound impact on mobility, buildings and electricity generation
- Technology plays an important role, but cannot do it alone – demand reduction and behaviour changes are also required
- Political and regulatory choices are pivotal – short and long term measures are necessary
- Blueprints approach offers more chance of a sustainable future...but more needs to be done ... 2° target will not be met



KEY DRIVERS IN GLOBAL POLITICS



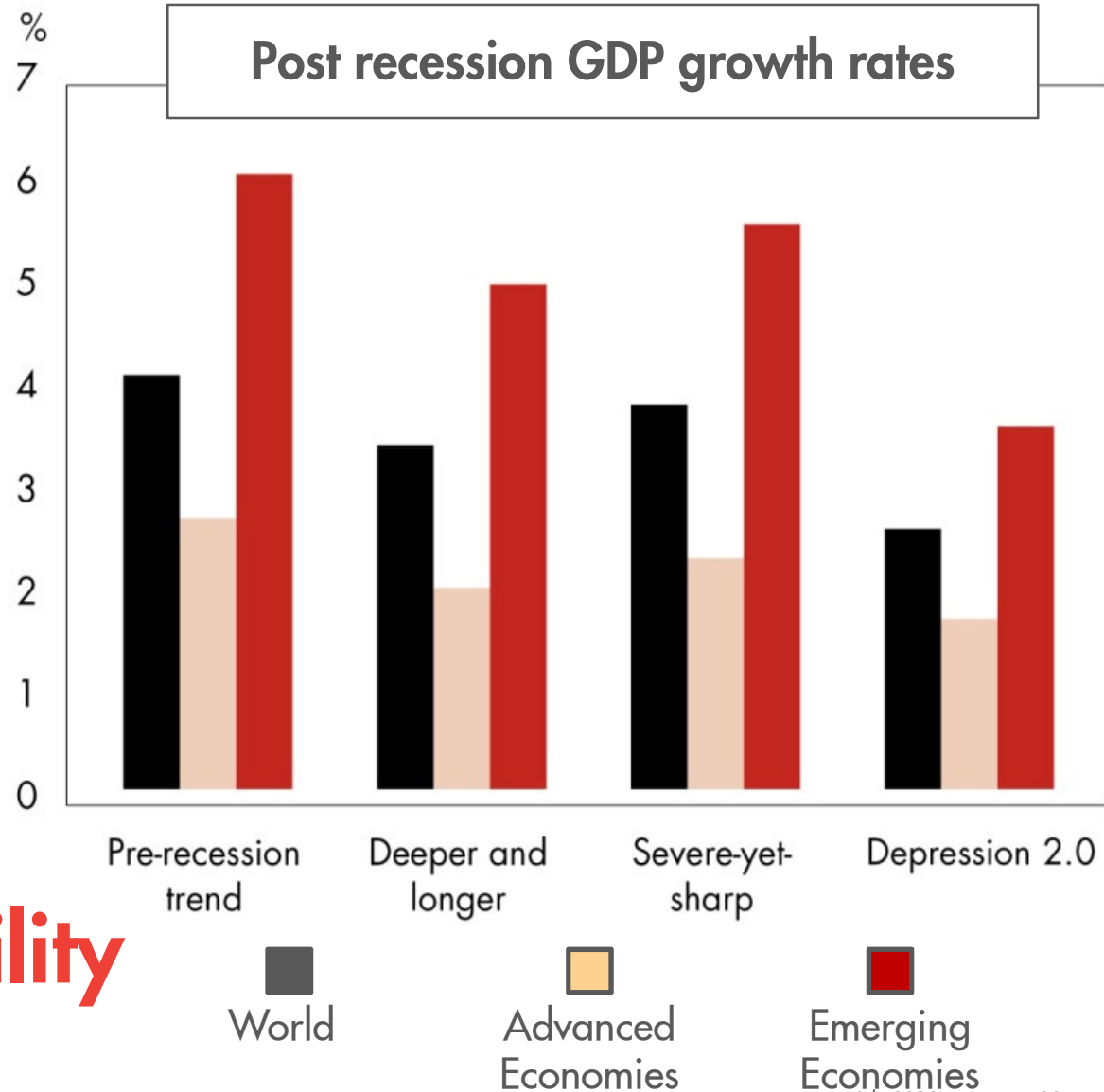
- **G20 vs G8** – a global role for more nations?
 - **China/US** – a crucial new relationship between the established and emerging world orders
- **Policy paradigm** – reshaping the liberal capitalist model.
Re-emergence of state intervention and industrial policy
- **Burdens of adjustment** – choices on taxation, inflation targets, and public spending will impact who bears the costs
 - **Simmering discontent** – unemployment, rising commodity prices



An end to the
'great
moderation'

Reduced trend
growth?

Heightened
economic volatility



Changing demographics and economic landscape



Step change in energy use by global rise in population and prosperity

Supply from conventional energy resources outstripped leading to stresses

Environmental stresses – CO₂ and emerging tensions for water, food, land, etc

Energy drivers and the zone of uncertainty

2050

Underlying
demand
potential

Ordinary
demand
moderation



**Zone of extraordinary
opportunity or misery**

2000

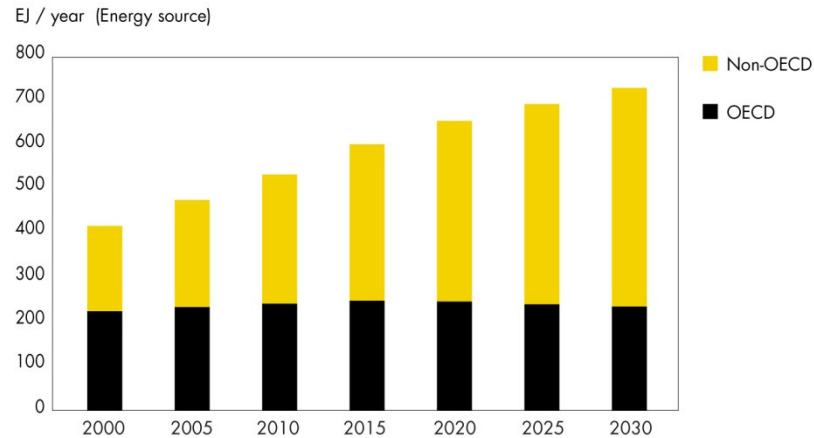
Energy supply/
demand balance

Ordinary
supply
developments

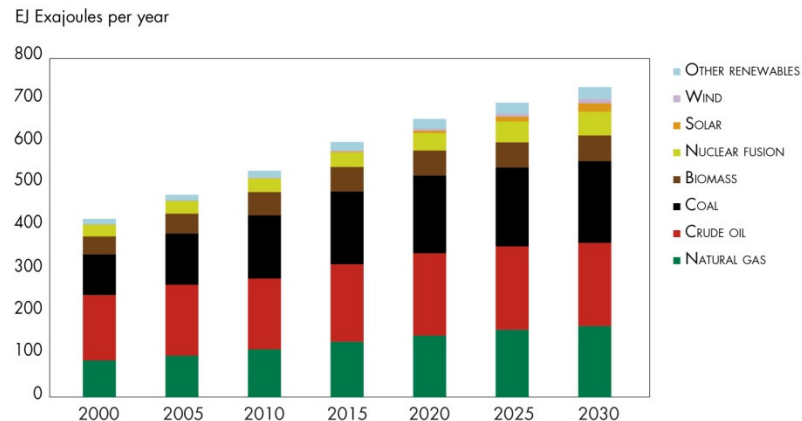
ENERGY GAMECHANGERS...?



World-Total Primary Energy Demand - By Region



World-Total Primary Energy Supply



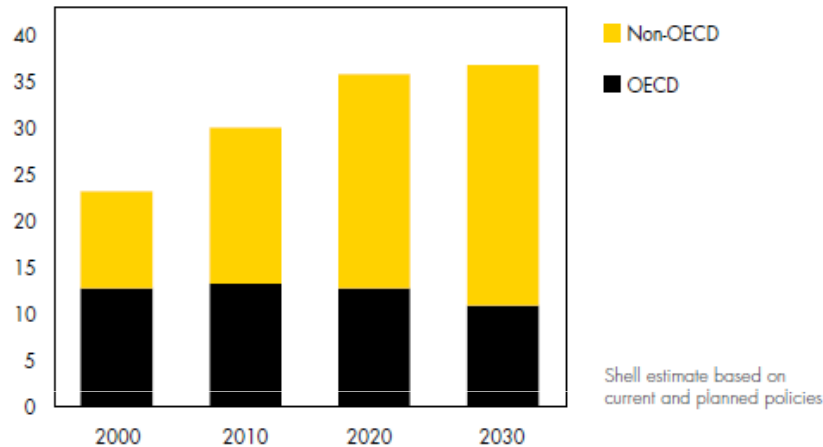
- Shift in consumption power from West to East
- Pressures on oil production
 - Supply power shifting to OPEC?
 - Iraq oil uptake & arrangements
 - Higher cost options
 - LTO uptake
- Natural gas, abundant and affordable
 - Unconventional gas in US (and elsewhere?)
- Shifting mix of primary energies
 - Efficiency affecting demand especially in Transport
 - Substitution in Transport and Electricity
 - Renewables
 - Nuclear post Japan?

ENERGY RELATED CO₂ EMISSIONS



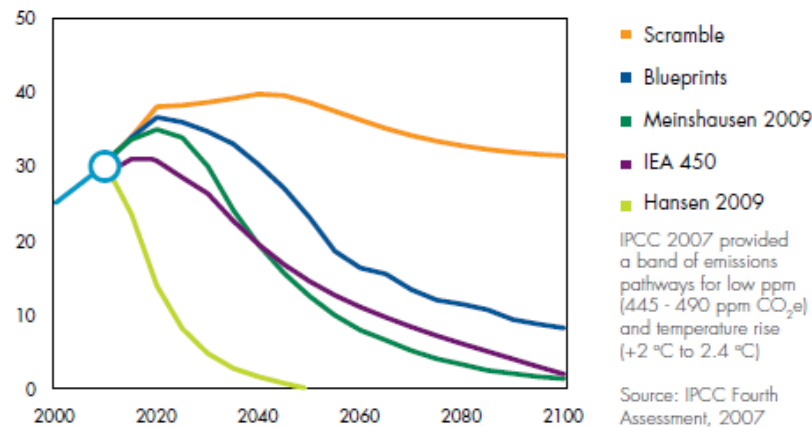
Energy Related CO₂ Emissions

Gigatonnes CO₂ / year



CO₂ Pathways

Gigatonnes CO₂ / year



- Non-OECD has overtaken OECD
- Political process too slow
 - Transparent CO₂ price urgently needed
- Abundant natural gas
 - BLUEPRINTS: early CO₂ saving as a replacement fuel for coal in power generation
 - SCRAMBLE: Energy efficiency measures depressed
- Nuclear slowdown will bring coal back
 - Can renewables accelerate further?

ENVIRONMENTAL SCHISMS

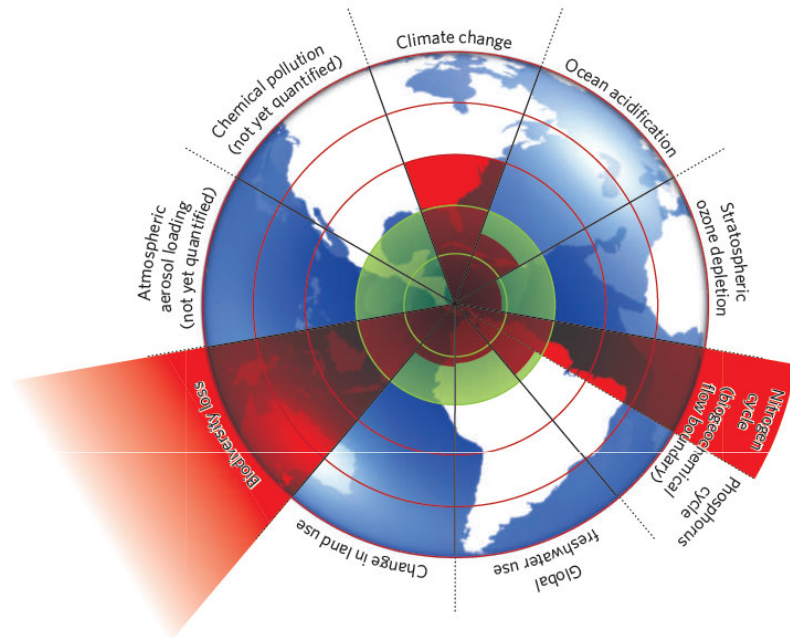


Table 1. Planetary Boundaries	Status
Climate Change (atmospheric CO ₂ concentration and change in radiative forcing)	Boundary Exceeded
Rate of Biodiversity Loss	Boundary Exceeded
Nitrogen Cycle - part of a boundary with the Phosphorus Cycle	Boundary Exceeded
Phosphorus Cycle - part of a boundary with the Nitrogen Cycle	Approaching Limit
Ocean acidification	Approaching Limit
Global freshwater use	Approaching Limit
Change in land use	Approaching Limit
Stratospheric ozone depletion	Not exceeded
Atmospheric aerosol loading	Not yet quantified
Chemical pollution	Not yet quantified

- An uneven road from Kyoto to Durban
 - continued divergence on CO₂ policy is politically unsustainable
- Fallout from *Macondo* and *Fukushima*
 - a higher public awareness of risk
- New planetary boundaries work points to imminent systemic ecosystem stress
 - links to Water, Food and Energy

Q& A

Views

Discussion



