

Revisiting Global Energy Security

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Global Age-Nation to Global

- Nation Economies are globalising.
- Globalising nation economies are integrating.
- Interoperability of the diverse segments of the global markets.
- Mutually interdependent and vulnerable as well.
- There is tension between nation and global.



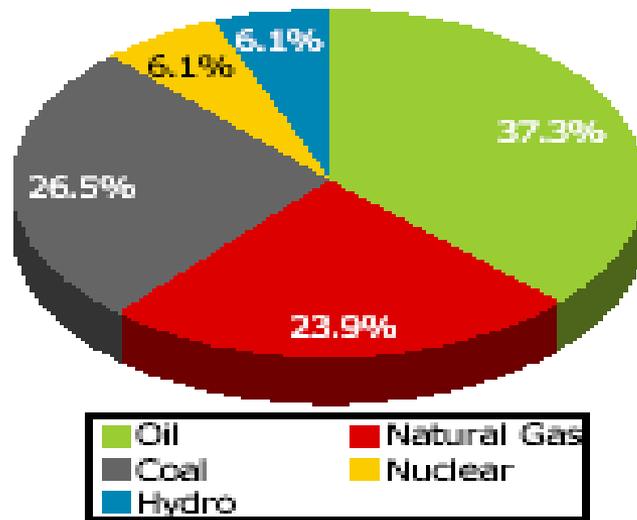
Source: Cambridge Energy Research Associates

Globalisation of energy market

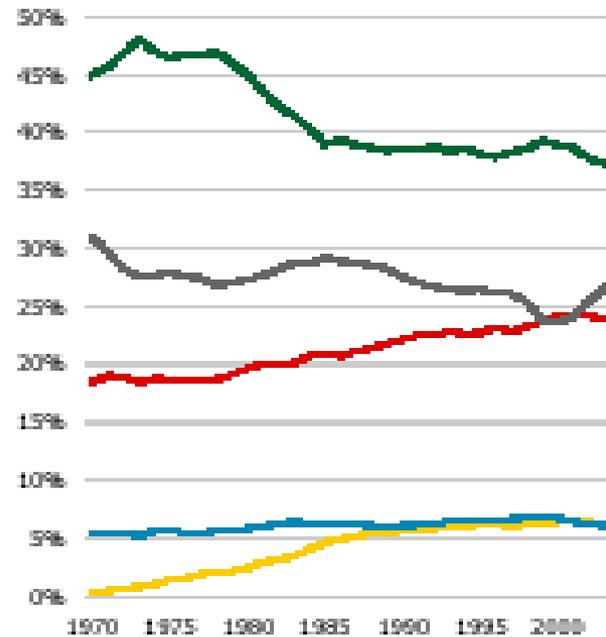
- Oil prices not controlled by oil exporters, oil companies though they influence its movement.
- Interoperability: FAO says \$ 11-12 billion investment on bio fuel diverted 100 million tonnes of cereals from human consumption to fuel for vehicles.
- IFPRI bioenergy accounts for 30% of the rise of food prices.
- Speculation and future trading. "A barrel of oil may trade 20-plus times before it is delivered and used; the price goes up with each trade and consumers pick up the final tab. Some market experts estimate that current prices reflect as much as \$30 to \$60 per barrel in unnecessary speculative costs."

Global energy mix

Current and historical global energy mix



Share of energy mix over time



Source: BP Statistical Review

The Global Energy Reserves Oil

- **1987: 910.2 billion barrels**
- **1997: 1069.3**
- **2007: 1237.9**

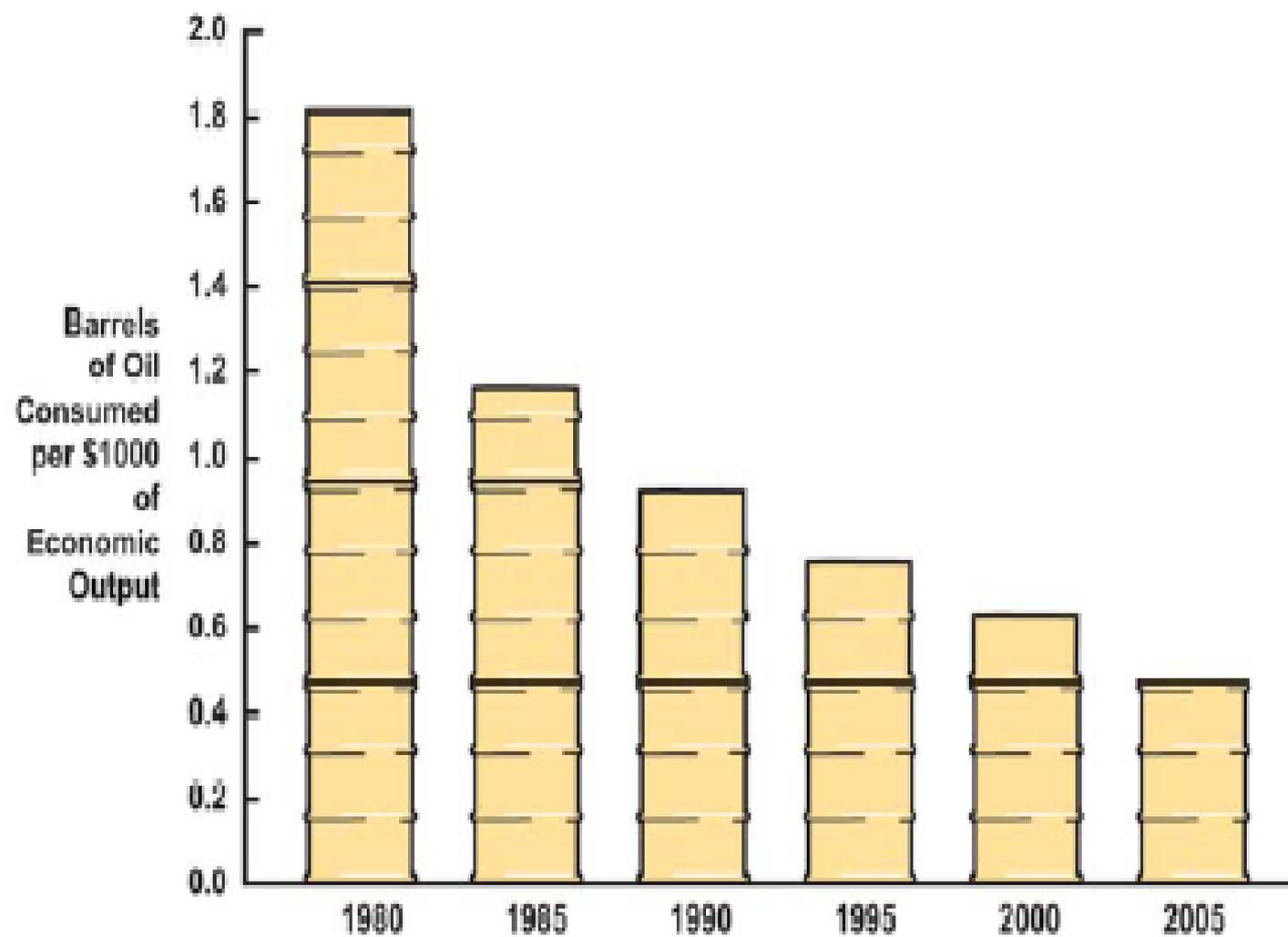
Oil Production

- Global oil production fell by 0.2%, or 130,000b/d, the first decline since 2002.
- OPEC production dropped by 350,000b/d.
- Increased output in Angola and Iraq.

Oil Consumption

- Global oil consumption grew by 1.1% in 2007.
- Two third consumption in oil-exporting regions of the Middle East, South and Central America and Africa.
- The Asia-Pacific region grew by 2.3%.

Oil Intensity of the Global Economy



Natural gas

- **Total reserves at 177.4 trillion cubic metres at the year-end, an increase of 1.14 tcm relative to the end-2006.**
- **World natural gas production grew by 2.4% in 2007.**
- **World natural gas consumption rose by 3.1% in 2007.**

Coal

- Coal the fastest growing fuel in the world for the fifth consecutive year.
- Global consumption rose by 4.5%, above the 10-year average of 3.2%.
- Consumption growth was widespread, with growth in every region except the Middle East.

Nuclear Energy

- ***Bulletin of the Atomic Scientist Says:***
- In 2007, nuclear power plants generated 14% of world's commercial electricity down from 15% in 2006 and 16% in 2005.
- Less than 6 percent of the commercial primary energy.
- Armenia, Romania, Slovenia, South Africa, and Switzerland, together operate 11 nuclear plants, increased their nuclear share in the power mix in 2007. Fifteen countries remained stable (less than a 1 percent change) and in 11 countries the role of nuclear power declined

Contd.

- EU-dropped 6 percent--more than in any other year since the first fission reactor was connected to the Soviet grid in 1954.
- The "Big Six" nuclear powers--the United States, France, Japan, Germany, Russia, and South Korea--saw their global share of nuclear-generated electricity drop from about three-quarters in previous years to 68 percent in 2007.

Geographic distribution

- Between 2004 and 2007, 14 nuclear plants, were started up all located in Asia or Eastern Europe.
- Currently, 30 of the 35 reactors "under construction" are also located in those regions.

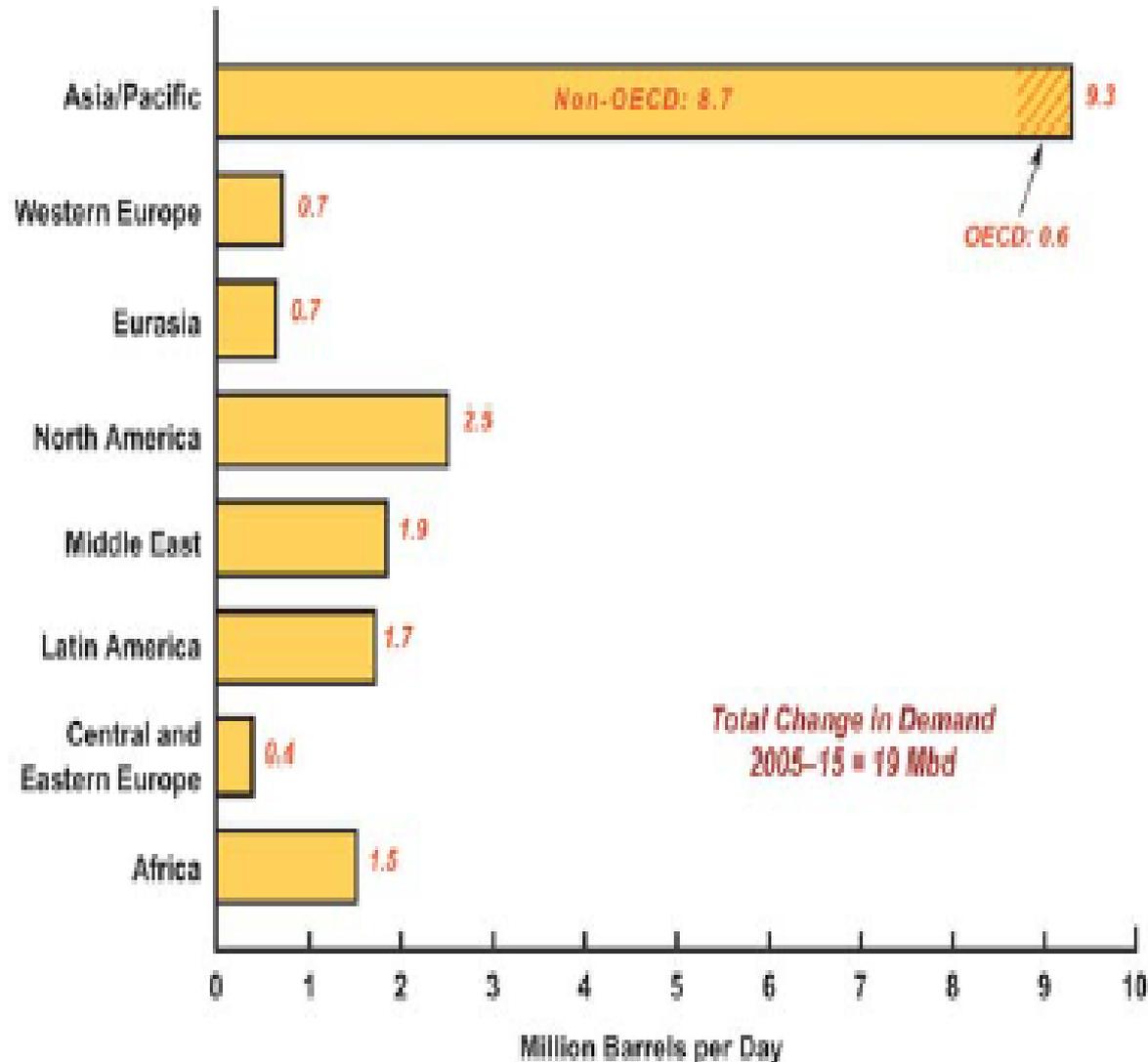
Energy Players: growing numbers

- Seven sisters.
- OPEC and IEA
- Rise of Non OPEC.ie Central Asian, Africa supplies.
- Russia rising energy power
- Rise of National oil Companies.
- Missing barrels

**Oil Production Capacity Increases:
15 Countries Dominate Long-term Oil Supply Growth**
(million barrels per day of production capacity)

Rank	Country	1995	2005	2015
1	Saudi Arabia*	10.2	11.1	13.2
2	Russia	6.2	9.5	11.3
3	Iran*	3.7	4.2	5.2
4	Iraq*	2.1	2.3	4.0
5	Canada	2.4	3.5	5.3
6	Venezuela*	3.0	2.9	3.4
7	UAE*	2.3	2.9	3.5
8	Kuwait*	1.6	2.5	3.2
9	Nigeria*	2.1	2.9	3.7
10	Kazakhstan	0.4	1.2	3.3
11	Algeria*	1.4	2.2	3.1
12	Libya*	1.5	1.8	2.6
13	Brazil	0.8	1.8	2.7
14	Angola	0.6	1.3	2.5
15	Azerbaijan	0.2	0.4	1.1
Total Top15		35.9	47.0	62.8
Share of World Liquid Capacity		50%	54%	58%

Source: Cambridge Energy Research Associates. *OPEC member



The Power shift

- Ranked on the basis of oil and gas reserve holdings, 14 of the top 20 upstream oil and gas companies in the world are national oil companies,
- Exxon Mobil and the Royal Dutch Shell Group are ranked 12th and 13th while BP and Chevron Texaco are ranked 16th and 19th respectively.

The power shift

- Saudi Aramco, Russia's Gazprom, China's CNPC, NIOC of Iran, Venezuela's PDVSA, Brazil's Petrobras, and Petronas of Malaysia control almost a third of the world's oil and gas production, and more than a third of its total reserves.

Asian Players

- Asian national oil companies have increasingly begun to compete for strategic resources in the Middle East and Eurasia, in some cases knocking the Western majors out of important resource development plays.
- Firms such as India's ONGC and IOC; China's Sinopec, CNPC, and Malaysia's Petronas have been successful in Africa and Iran, with eyes now on investments in Saudi Arabia, Kuwait and Iraq.

The New Geopolitics

- Intense competition between older and newer economic powers for available supplies of energy.
- The insufficiency of primary energy supplies.
- The painfully slow development of energy alternatives.
- A steady migration of power and wealth from energy-deficit to energy-surplus nations.
- A growing risk of conflict.

Volatile market & market fundamental

- From \$160 to \$60.
- Threat to Future Investment. OPEC investing \$162 billion for capacity creation.
- Fear of Supply deficit.

Energy Security:the multiple stakeholders

- Old consumer vs. new consumer.
- Asian players overseas Equity Acquisition.
- Demand security and Supply security.
- The Community.

Whose Energy Security?

- “At present, two billion people do not have access to commercial forms of energy.
- Another billion have only periodic unreliable access.
- If about half of the world’s population continues in this condition, the world as a whole faces a significant threat to stability and the quality of life everywhere.”
- In other words for the global security depends upon the pace by which these numbers are reduced.

Securitisation of Energy

- Carter Doctrine. Any disruption of energy supply threatening US national security could be ensured by any means, “including military forces.”
- Preemptive Strike. Bush Doctrine
- AFRICOM in 2007
- NATO: Bucharest Summit in April 2008

Globalisation –unsustainable of energy regime

- Dispersal of growing energy consumption
Europe to Asia to Africa.
- Demand for energy in developing Asia is projected to double between 2001 and 2025, accounting for 40% of the world's increase.
- Sustaining power of present energy mix
- **The question of desirable energy mix.**

Energy Security: Collective action

- Initiatives like GNEP, GBEP are illustration that alternatives efforts are being made.
- World Energy Council's Millennium Statement, energy security can be ensured by three A's **Accessibility, Availability and Acceptability.**
“*Accessibility* to modern, affordable energy for all; *Availability* in terms of continuity of supply and quality and reliability of service; and *Acceptability* in terms of social and environmental goals.”