

Volatile Oil prices :Challenges and Policy Responses

UNDP Regional Experience



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Regional Energy Program for Poverty Reduction: Knowledge Products



Overcoming Vulnerability to Rising Oil Prices:
Options for Asia and the Pacific

Will Tomorrow be Brighter than Today?
Addressing Gender Concerns in Energy for
Poverty Reduction in the Asia-Pacific Region

Cross-Border Energy Trade and its Impacts on
the Poor

Delivering Energy Services for Poverty
Reduction: Success Stories from Asia and the
Pacific

Financing Options for Renewable Energy: The
Asia-Pacific Experience

MDG Energy Costing Tool

Energy and Poverty in Nepal: Challenges and
the Way Forward

Energy and Poverty in Bangladesh: Challenges
and the Way Forward

Energy and Poverty in Malaysia: Challenges
and the Way Forward

Energy and Poverty in the Philippines:
Challenges and the Way Forward

Energy and Poverty in China: Challenges and
the Way Forward

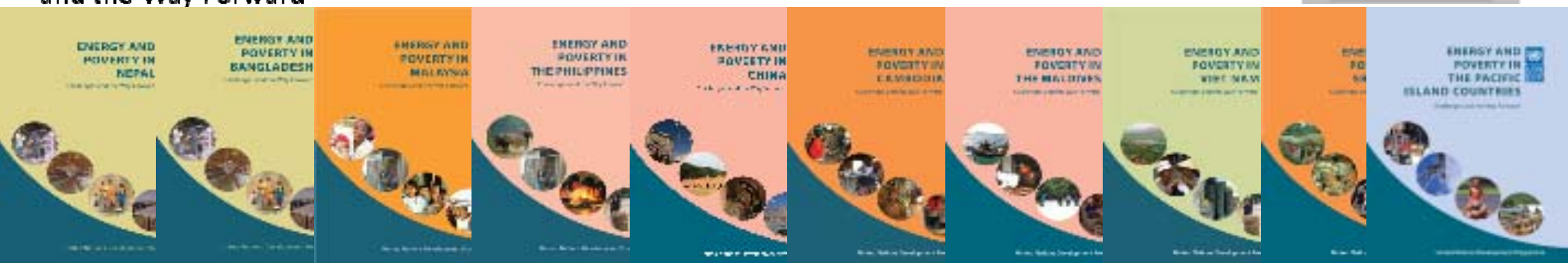
Energy and Poverty in Cambodia: Challenges
and the Way Forward

Energy and Poverty in the Maldives:
Challenges and the Way Forward

Energy and Poverty in Viet Nam: Challenges
and the Way Forward

Energy and Poverty in Sri Lanka: Challenges
and the Way Forward

Energy and Poverty in Pacific Island Countries:
Challenges and the Way Forward



Current Context

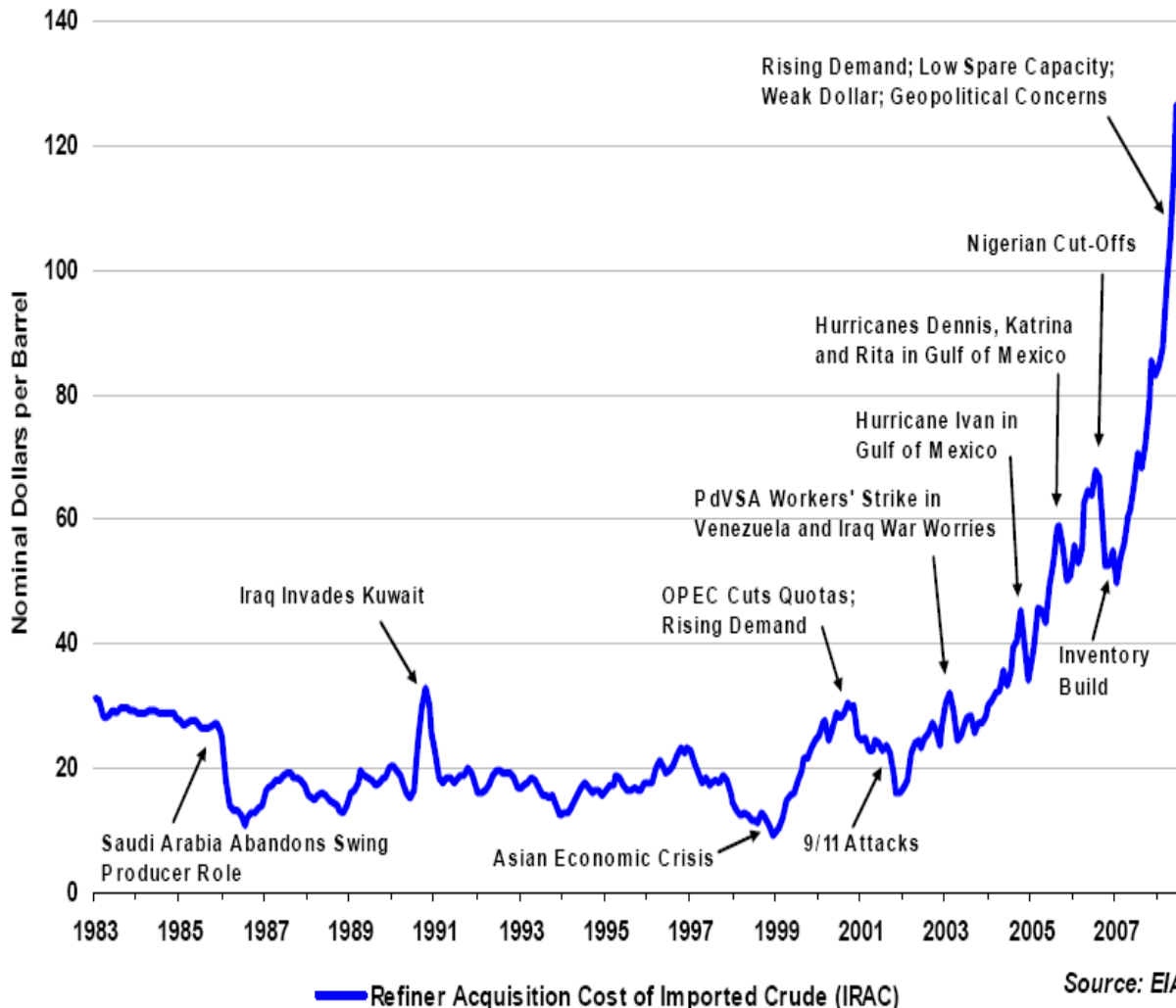


- For developing countries oil price volatility is as much unsettling for achieving MDG targets as an unidirectional price hike. After a consistent rise in price of oil at \$ 147 / barrel between 2005-2008 June the international price of crude oil has dropped to \$ 66 as of Nov 10.
- Prices eased over the last three months but they are still high by historical standards. As a consequence, the IMF estimates that 58 net fuel-importing low-income countries will still face a rise in their fuel bill, globally. There is expectation market will face a spike .
- Questions we address :
what are the causes , impacts & hence policy responses to mitigate the causes ?

How to enhance energy access ?

Links to Climate Change mitigation strategy ?

Sharp rise in oil prices doubling from end 2006 to a record high of \$147 a barrel in July 08...



COMMODITY PRICES

Oil (\$)

Aug 08 - Oct 08



...to around \$67 a barrel in October 08

Underlying causes of oil price fluctuations



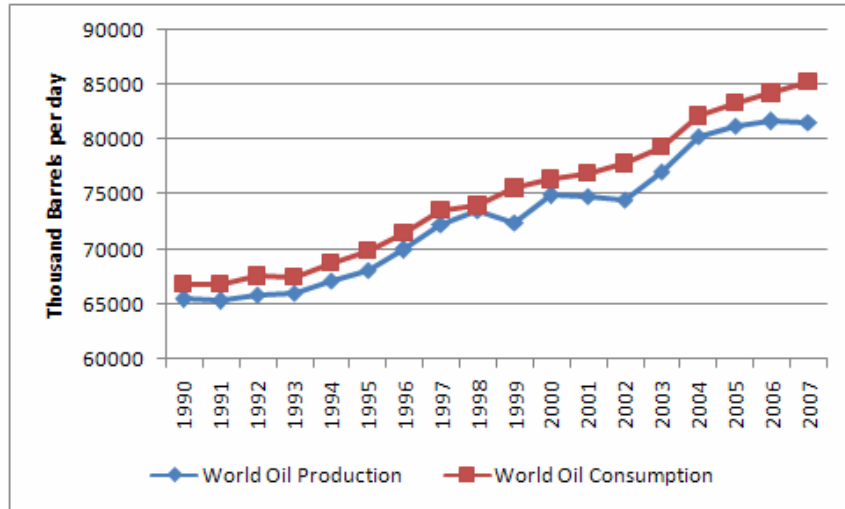
Structural Factors

- Growing demand, supply pressures and constraints, depleting reserves and
- turbulent geo-political situation;

Speculative investments

- Oil futures markets, hedging
- Currency fluctuations (\$\$)

Growth in world oil demand



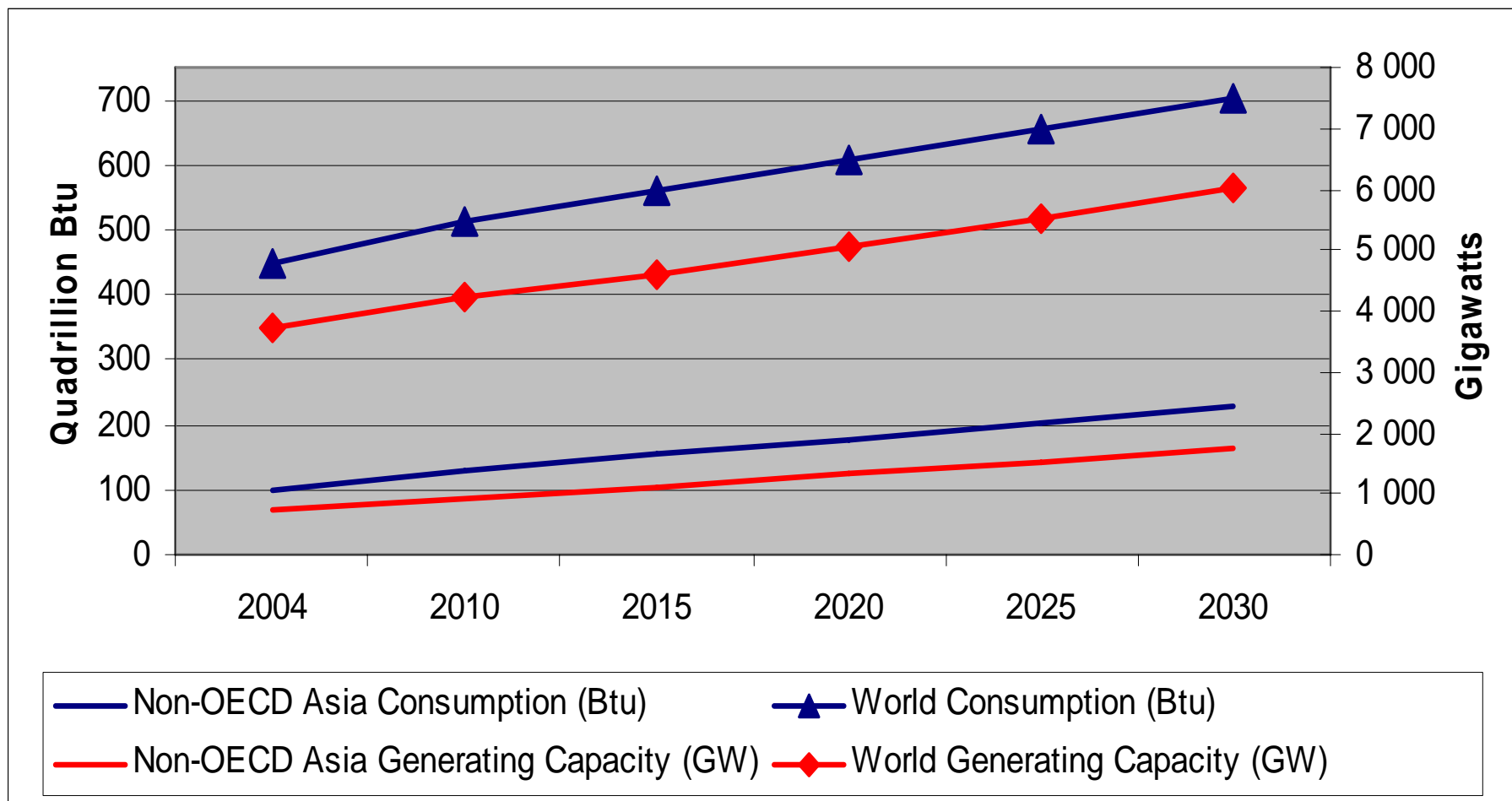
- Consumption has been consistently greater than supply and since 2006, gap has been further widening

- However **trends do not reveal** any significant correlation between supply responses and price
- There are **other factors** which have influenced oil price movements
Policy responses need to be targeting the causes.

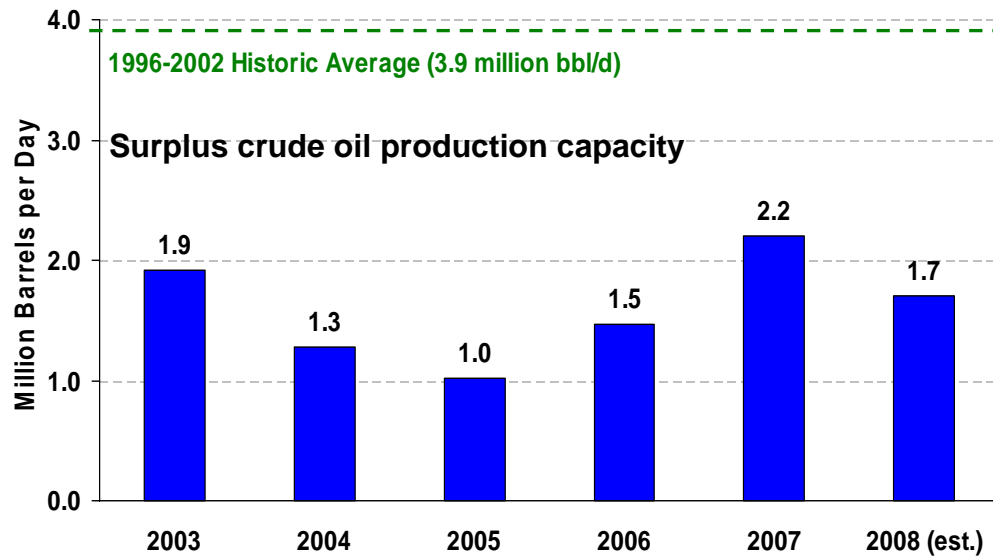


Future long-term predictions

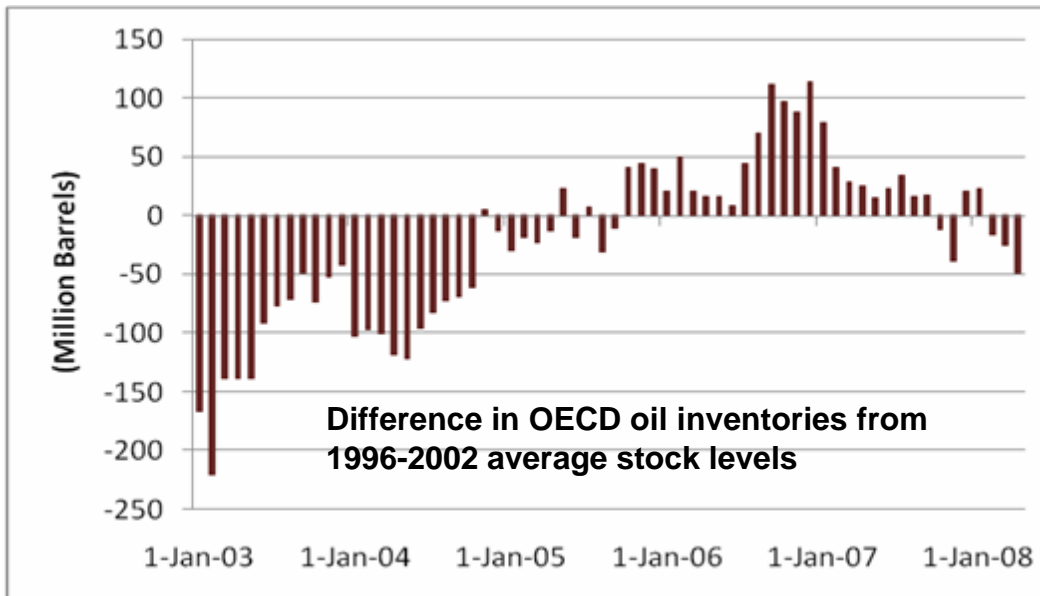
Consumption (Btu) - Generating Capacity (GW)



Shrinking Buffers



- Historic average surplus of capacity of **3.9** million barrels per day during 1996-2002 decreased to **1.9** MBD in 2003 reaching a low level of **1.0** MBD in 2005. Subsequently it rose, reaching 2.2 MBD in 2007, but is still relatively small. It is estimated to further reduce to **1.7** MBD by end 2008.



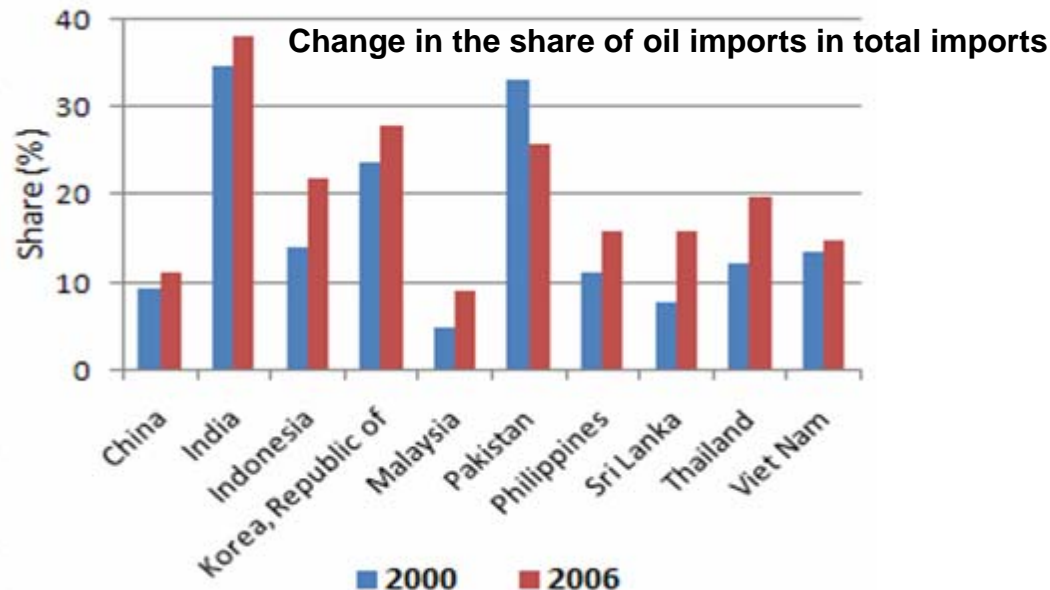
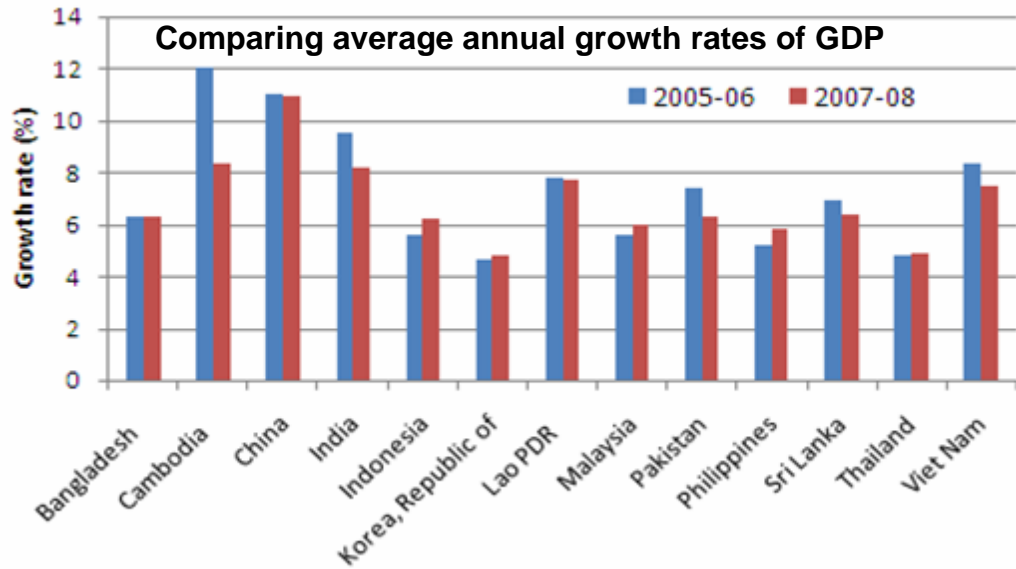
Other Causes



- **Oil Supply insecurity**
 - Unstable situations in the Middle East
 - Iran's long-simmering conflict with the US
 - Nationalization of oil industries in Venezuela, Bolivia
 - Terror strikes in the middle east
- **Speculation in the oil market**
 - Speculators, reacting to vulnerabilities in supply, fluctuations in demand and external shocks, had expanded trading, causing price volatility
 - Some estimates predict that 60% of the high oil price at \$ 100 was pure speculation

Underinvestment in exploration and downstream refining capacity

Evidences of impacts from selected Countries

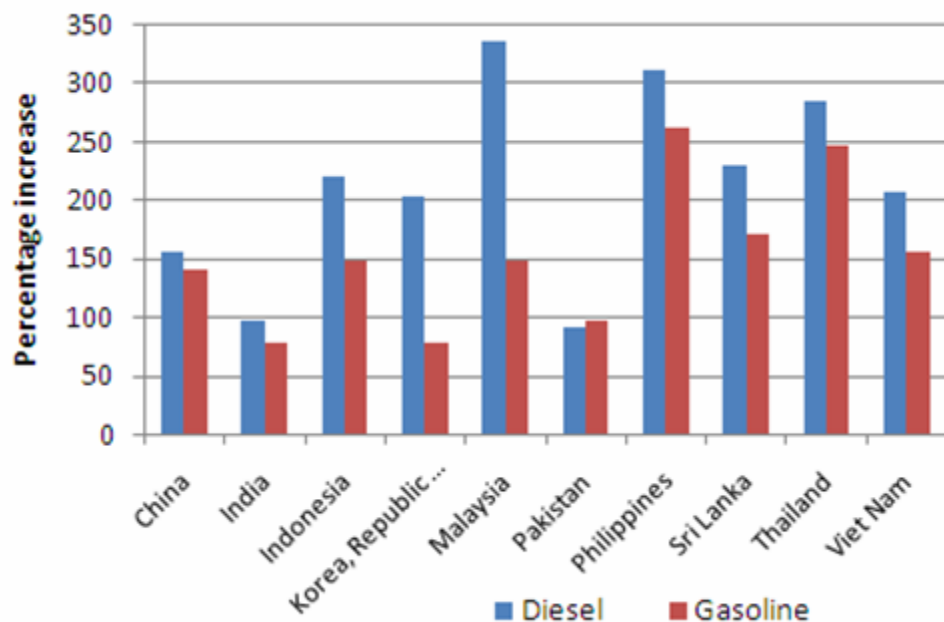


- Oil price hike among other factors may have caused deceleration in growth rates (8 out of 13 selected countries)
- Higher oil prices have caused **rise** in **share of cost of oil imports** in total imports
- Except for Pakistan where the government absorbed most of the price hike this has happened for all the countries
- In case of Sri Lanka, the share of oil imports in 2006 is twice of that in 2000. Thailand experienced an increase of about 63%

Evidence of impacts in selected Countries



Percentage increase in the retail prices during 2002-2008



- Both Indonesia and Malaysia spent heavily during 2007 in **subsidising** the fuel prices
- Sharp rise in retail prices of the petroleum products is another outcome of increase in oil prices. For example,
 - Diesel prices in Malaysia have increased by about 336% and 311% in Philippines between 2002 and 2008.
 - Gasoline prices have increased in Philippines at about 262% and in Thailand at about 247% between 2002 and 2008.

Tracking Direct and Indirect Impacts



Two track impact analysis undertaken :

1) Focused household survey (micro analysis)

1) Oil Price vulnerability Index (OPVI ...macro analysis)

- The **direct impacts**: higher expenditure on fuels for household needs, and travel to work, school, market, etc.
- **Indirect impacts**: in the form of higher cost of living due to rise in the prices of essential commodities , higher inflation and transport costs.
- Focused household **surveys** show:
 - => the governments of the region could not shield the poor completely
 - =>The poor experienced greater increase in the energy costs compared to the national average increases.
 - => expenditure on energy accounting for 5-10% share in the total household expenditure in the pre-oil price rise period, the oil price rise led to increase in this share.

Impacts ..(validated through HH survey)



- Focused survey of poor households in Asia revealed that between 2002 and 2006, the average poor household paid:
 - 171% more for cooking fuels; 120% more for transportation; 67% more for electricity; 55% more for lighting fuels; 33% more for petroleum-based fertilizers and other agricultural inputs; and 74% more for energy as a whole
- The Mongolia household survey undertaken in 2008 revealed that
 - Transport expenditure has gone up by 90% in the urban and 104% in rural areas
 - Public transport related expenditure went up by 60% in urban and 120% in rural areas
 - For the urban households, share of transport expenditure in income has risen to 15.9% and it is 24.1% in expenditure. Whereas these percentages are 8.9% and 18.2% for rural households.
 - Transport related expenditure share has increased by about 8%.

Impacts validated through HH survey *...the reversal up the energy ladder happens with a lag)*



- **Climbing down the energy ladder**
 - Increases in prices of oil products have forced many poor households to either consume less of these products or to fall back upon inferior sources of energy.
 - Approximately 36% of kerosene-using households in India and 80% in the rural communities of Indonesia (among surveyed households) have reduced their consumption of kerosene for cooking. Instead, they have reverted to primary biomass and dung cakes wholly or partly.
- **Impact on lifestyles and livelihoods**
 - To overcome burden of high fuel prices, about 66% of the urban and 76% of the rural households surveyed in Mongolia have stated that they have partially reduced consumption of relatively expensive food items like meat and moved to cheaper forms of bread and 51% of the urban and 25% of the rural households have said that they have switched to less expensive alternatives, both food and fuel types.

Macro Analysis: Vulnerability Index

❑ OPVI constructed using **three principle** components:

❖ **Economic strength (Strength)**

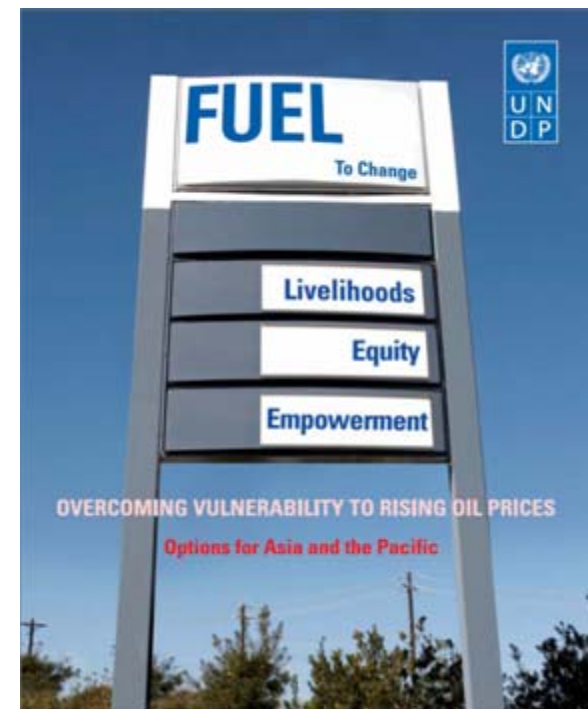
- ✓ Balance of payment: current account
- ✓ Budget balance
- ✓ Import cover
- ✓ Oil import dependence

❖ **Economic performance (Performance)**

- ✓ GDP per capita
- ✓ Oil intensity of GDP

❖ **Economic growth with low share of Oil (Low-oil based growth)**

- ✓ Real GDP growth rate & share of oil in primary energy consumption



Macro Analysis :OPVI Findings



□ Low OPVI

❖ Iran, China, Malaysia

□ Medium OPVI

❖ Bhutan, India, Papua New Guinea, Indonesia, Thailand, Mongolia, Viet Nam, Myanmar

□ High OPVI

❖ Philippines, Afghanistan, Nepal, Bangladesh, Pakistan, Lao PDR, Fiji, Samoa, Sri Lanka, Solomon Islands, Cambodia, Vanuatu, Maldives



Capturing vulnerability to Oil prices in Asia-Pacific Countries

COUNTRY	OPVI
1. Maldives (H)	0
2. Vanuatu (H)	0.17
3. Cambodia (H)	0.17
(H)	0.18
5. Sri Lanka (H)	0.18
6. Samoa (H)	0.24
7. Fiji (H)	0.28
8. Lao PDR (H)	0.31
9. Pakistan (H)	0.34
10. Bangladesh (H)	0.34
11. Nepal (H)	0.38
12. Afghanistan (H)	0.38

COUNTRY	OPVI
13. Philippines (H)	0.39
14. Myanmar (M)	0.40
15. Viet Nam (M)	0.42
16. Mongolia (M)	0.43
17. Thailand (M)	0.44
18. Indonesia (M)	0.45
19. Papua New Guinea (M)	0.46
20. India (M)	0.49
21. Bhutan (M)	0.56
22. Malaysia (L)	0.72
23. China (L)	0.78
24. Oman (L)	1

- Of the seven most oil price vulnerable Asia-Pacific countries four are SIDS
- Most vulnerable oil price country is a SIDS (i.e. Maldives)
- PNG, an exporter, is an exception

Responses by sub-strategies (time, cost & infrastructure)



High priority

- Pricing of petroleum products
- Managing oil subsidies
- Rationing
- Financial tools
- Improve public transport
- Strategic reserves (Coal Oil Ng)

Medium priority

- Fuel efficiency in transport (oil & coal)
- Fuel efficiency in industry (Oil ,coal, gas)
- Bio-fuels in transport (??)
- Oil substitution in agriculture
- Strengthening oil exploration

Each country will choose its own policy mix, but countries with similar Vulnerability index rankings may use similar overall policy combinations. These will also change according to the fuel price & fuel mixes scenarios.

Lower priority

- Better land-use planning
- Fuel substitution in transport
- Fuel efficiency in agriculture
- Diversifying sources of primary energy
- Barter
- Oil substitution in industry

Policy Response Options based on Oil Price Vulnerability Index



Ranking of strategies and sub-strategies for addressing oil price fluctuations will be different for different countries

Strategy	Sub-strategy	Rank
Oil price risk management	Pricing of petroleum products	1
	Managing/targeting oil subsidies	1
	Financial tools	2
Enhancing oil security	Strengthening oil exploration	4
	Refining capacity to process sour crudes	4
	Diversifying sources of oil	6
	Barter	7
Restraining oil demand	Oil efficiency in transport	2
	Better land-use planning to reduce transport demand	5
	Improve public transport	4
	Improve oil efficiency in industry	4
	Improve oil efficiency in agriculture	6
Fuel diversification	Biofuels in transport	4
	Oil substitution in agriculture	4
	Oil substitution in transport	5
	Oil substitution in industry	7
Emergency preparedness	Rationing	1
	Strategic reserves	3

Responses noted to date : short term



- Governments have shielded consumers through a series of pricing measures that have regulated the 'pass-through'. This is indicated by the low “pass-through coefficients” observed during 2002-08. Regulation of pass-through is typically done through subsidies, cross-subsidies, tax adjustments and price restraints.
- India with pass-through coefficients of 0.30 for diesel and 0.23 for gasoline appears to be relatively more restrained in allowing passing through of oil price rises. At the other extreme, Malaysia with a pass-through coefficient of 0.85 for diesel and Lao PDR with a value of 0.70 for gasoline appear to be forthcoming in passing through the oil price rises.
- To enhance immediate oil supplies, a number of oil-producing countries in the region have been simplifying their procedures and dismantling national monopolies in order to encourage greater private investment, including foreign direct investment.

Responses noted to date: short term



- A number of countries like Bangladesh, India, Indonesia, Sri Lanka and Viet Nam introduced such measures as fuel rationing, cash payouts, fuel stamps and lifeline tariffs.

In India, kerosene supply is rationed and distributed through PDS. Quota per family and prices varied across states and categories of users. The interventions are reversible ; they are targeted;

Responses noted: medium to long term



- There have been efforts in **improving energy efficiency**. China between 1990 and 2003, energy use per PPP \$ GDP declined from 0.49 to 0.22 kgoe. India: reduction over the same period, from 0.25 to 0.18.
- **Diversifying to other fuels:** natural gas, hydro, renewable energy and nuclear energy are some of other strategies. India has a target of achieving 20% blending of bio-fuels with petroleum products by 2017 and China has fixed a target of bio-fuel share of 15% by 2020.
- Both **governments and private companies have stockpiled crude oil and oil products**.
 - India: strategic crude oil reserve of 37.4 million barrels, enough for 2 weeks of consumption.
 - Korea: reported reserve of 43 million barrels.
 - Thailand: increased its strategic reserve from 60 to 70 days of consumption.
 - China announced an expansion of their reserves into a two part system; consisting of a government controlled strategic reserve of 101.9 million barrels complemented by commercial reserves of 209.44 million barrels.

Key issues for a broad Energy Policy in a volatile market



- Energy security
 - Increased & consistent access
- Global warming and Climate change
 - Mitigation
 - Conservation
 - Adaptation
- Energy Sector policy reform and governance
- Enhanced Energy Efficiency

Key Recommendations

manage DD- SS gaps



- Regulate pricing policies such that while the interests of poor are protected, leakages to the non-poor are prevented
- Use targeted subsidies on household fuels (LPG, kerosene) to shield consumers from full impact of oil price rise
- Include oil exploration in the mandate of the oil companies; for example, a part of their profits must be expended on exploration activities and provide fiscal incentives like tax rebates to oil companies to strengthen exploration activities.
- Encourage the establishment of refining capacity for sour crudes by introducing capital subsidies for sour crude refining facilities and duty exemptions for imported technology
- Diversify import sources as well as invest into foreign oil fields when opportune

Key Recommendations

manage DD- SS gaps



- Reduce oil intensity through energy efficiency, fuel shifts and structural shifts including targeted subsidies, financial and fiscal incentives to promote technological changes ;
- Promote use of natural gas, clean coal and renewable energy for electricity generation
- Mandate use of LPG and CNG for public transport
- Make investments in building strategic reserves
- Implement targeted rationing to ensure essential supplies as well as effective distribution
- Introduce ‘smart cards’ or other mechanisms to provide poor households with access to public transport at subsidized rates
- Plan distributed access to essential facilities in urban areas so as to reduce transport demand

Key Recommendations

manage DD- SS gaps



- Promote transport pooling among farmers to reduce their transportation costs to nearby centres;
- Develop bio-ethanol and biodiesel to boost rural agricultural production and employment, particularly for remote mountainous and island communities ,with caution.
- Develop infrastructure for markets/cooperatives so that farmers do not have to travel long distances to sell agricultural produce
- Provide cash transfers for specific purposes such as primary education, through coupons, bank transfers or ‘smart cards’
- Provide access to sustainable wood resources for cooking fuel, as well as to solar- or biogas-powered cookers, LPG and, in some cases, piped natural gas

Deliver rural energy: Strengthen cross-sectoral linkages



- **Who are the Promising ‘Integrators’**
 - Micro Finance Institutions
 - Agencies promoting SMEs and micro-enterprises
 - NGOs/ CBOs working with a holistic development approach
 - RET vendors
 - Community based energy projects
 - Local and national government
 - Development Banks & partners

**Reference : UNDP Report on Financing Options for Renewable Energy: The Asia Pacific Experience,2007*



Recommendations: **How to increase private investments in RETs**

- Substantially increase investments into grid-intertied RETs (and increase rural electrification:
- Increase investments into biofuels, but cautiously (and increase employment through community production of oil crops and biofuels to power multi-functional platforms and local transportation as well as for external sales);
- Expand access of the poor to off-grid RETs through community-based mini-grid systems and a “commercialization plus” approach for household technologies like biogas and solar PV,
- Expand high value applications of RETs in education, health, microenterprise, and telecommunications to benefit the poor.

****Reference to UNDP Report on Financing Options for Renewable Energy: The Asia Pacific Experience, 2007***

Recommendations: How to increase private investments in RETs



- Integrate commercially available RETs into a wide range of ongoing income generation and development activities aimed at reducing poverty - being carried out by government, NGOs/CBOs, micro-finance institutions, and donor financed projects,
- Financing policies to increase access to financing so that the poor can afford to access commercially available RETs,
- Facilitate the development of CDM projects to provide carbon financing to renewable energy projects with the largest MDG impacts (e.g., *community carbon finance initiatives*), bundling of small projects, MDG Carbon initiatives
- ****Reference to UNDP Report on Financing Options for Renewable Energy: The Asia Pacific Experience***



Feeding in renewable electricity to the grid

- **Policy and Legislation**

- Set national targets and timetables for renewables
- Put in place: Renewable Portfolio Standards, establish feed-in tariff, net-metering, interconnection agreements, standardized power purchase agreements.
- Enact laws for sharing royalty from hydropower, wind with local residents for benefit of poor.
- Require green IPPs to distribute portion of power for rural electrification.

Recommendations: **How to increase private investments in RETs**



– **Public Investments**

- Increase awareness of policy makers, utility officials,
- Technical support and training to investors and utility officials
- Pilot benefit sharing with local suppliers of inputs (e.g. rice husk)

– **Fiscal and Financial Incentives**

- Provide direct investment subsidies, production tax credits, income tax holidays for green IPPs.
- Reduce import duties, VAT on equipment for green IPPs

**Reference to UNDP Report on Financing Options for Renewable Energy: The Asia Pacific Experience*

Recommendations: How to increase private investments in RETs



- ***Sustainable development of biofuels***
 - **Policy and Legislation**
 - Implement mandates for blending biofuels into diesel and **petrol, with caution**
 - Set standards for biodiesel
 - Make legal provisions for poor and landless to grow jatropha and other biofuel crops under ‘leasehold forestry’
 - Strictly regulate use of food crops for biofuels (e.g., recent China policy)
 - **Fiscal and Financial Incentives**
 - Provide direct investment subsidies, production tax credits, income tax holidays for selected biofuels investors.
 - Reduce import duties, VAT on equipment for biofuels investors.
 - **Public Investments**
 - Invest in R&D to maximize yields
 - Examine the potential impacts of large-scale biofuels production on land, water, nutrient runoff..
 - Invest in R&D of small-scale seed press and esterification units for community production of biofuels



Recommendations: How to increase private investments in RETs

• **Off-grid RETs**

- Policy and Legislation
 - Announce targets and timetables for universal access to electricity and non-electricity services (milling, cooking fuels) through off-grid RETs complementing rural electrification
- Fiscal and Financial Incentives
 - Provide direct investment subsidies, production tax credits, income tax holidays for manufacturers and suppliers of RET equipment
 - Reduce import duties, VAT on equipment on off-grid RETs
- Public Investments
 - Map renewable resources of the country and increase awareness
 - Invest in public private partnerships for market-based supply of off-grid RETs
 - Standardize equipment, provide training and quality control
 - Provide additional grant support to complement commercialization such that the poor, women, and marginalized can access RETs

Create an Asia-Pacific Compensatory Oil Finance Facility (AP-COIL) Facility to assist regional LDCs and LICs



AP-COIL - flow of funds





Thank You

Q & A