



Policy study on
impact of rising oil prices
on the poor and
implications for
the achievement of the MDGs

Summary of draft final report
August 9, 2006

Outline of presentation

Introduction

- Project objectives / research questions
- Project backdrop: the recent oil price rise
- Methodological framework
- Major study findings
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- Policy challenges and directions

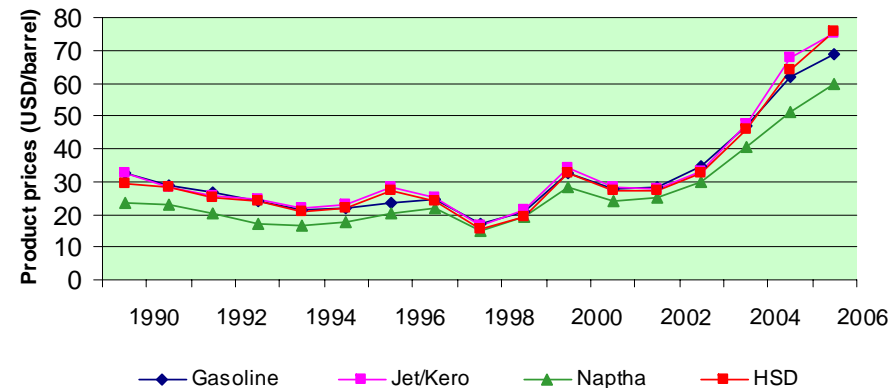
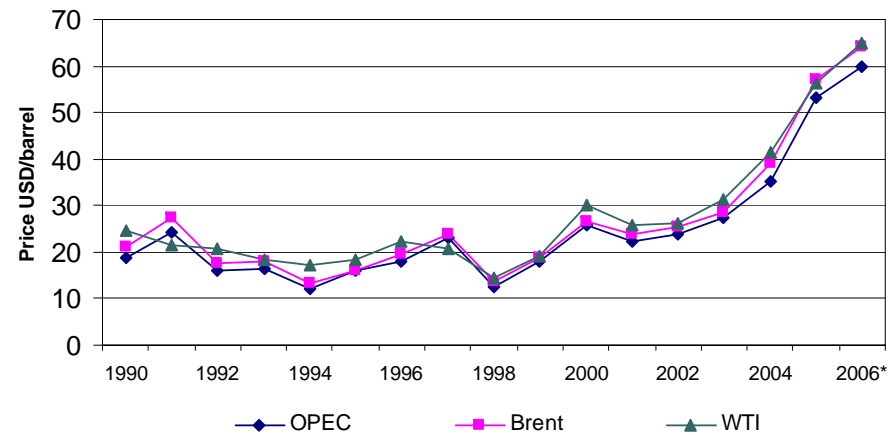
Project objectives, research questions

Placed in the context of oil price rise since late 2002
Seeks to assess the impact of recent oil price hike
Focus on poor in Asia Pacific

- What factors triggered recent oil price rise
- Impacts of oil prices on
 - energy prices
 - major macroeconomic variables
 - sectors
 - various MDG components
- Impacts of oil prices on the poor
 - Income and expenditure
 - access to energy
 - MDG components
- Policies and mechanisms to cope with oil price uncertainties
 - Specific strategies to ensure poor's access to energy services is enhanced

Study back drop: the recent oil price rise

- Oil price trebled: 25\$/bl in 2000 to over 75\$ in recent months
 - Persistent but relatively gradual compared to previous spikes (monthly average spike less than 20% vs 50% in 1990 and even higher in 1970s)
 - Lower level in real terms than prices observed in earlier episodes (early 1980s real price equivalent to over 90\$/bl)
- Product prices track oil prices



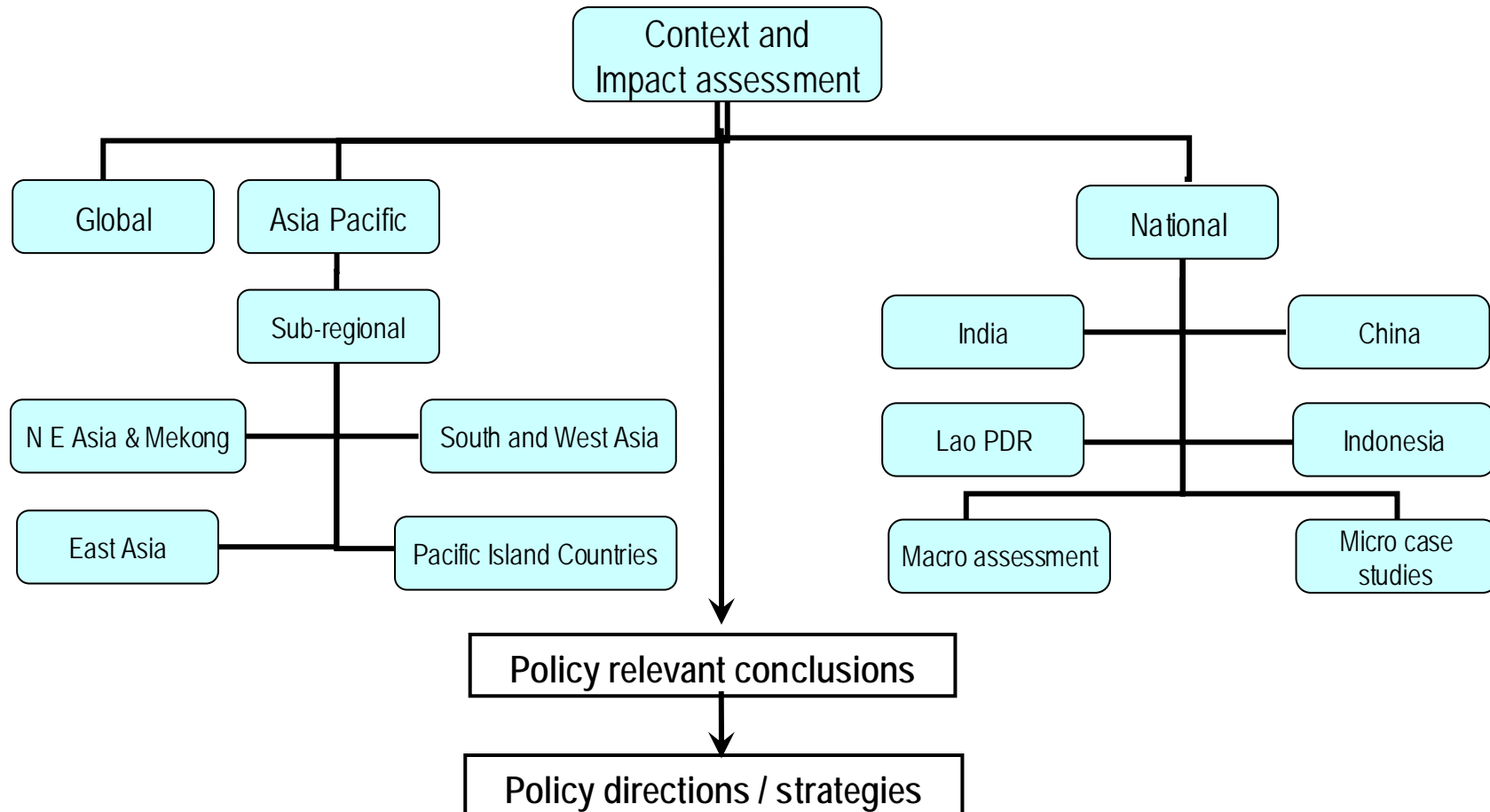
Recent oil price rise: triggers

Combined outcome of demand growth, tight supply and rising costs

- Substantial growth in demand led by China
- Supply disruptions - Middle East, Iraq, Iran, Russia, Nigeria, hurricanes in Mexican Gulf Coast
- Underinvestment in refining - capacity not keeping pace with demand growth - linked to low oil price in 1990s
- Inflow of speculative money

Rising vulnerability not only to high oil price but also to price volatility and supply disruptions

Project structure



The study process

- Literature review
- Data collection and analysis – multi-country and national reports
- National policy consultations
- Field studies – small samples covering low-income households in rural and urban sites (very poor vs poor households)
- Consultations with energy researchers and practitioners
- Reports submitted
 - Inception
 - First interim – global and regional assessments
 - Second interim phase one – one national assessment including one country case study
 - Draft Final

Regional assessment- methodology

- Providing the locational /policy context
 - Vulnerability profiles
 - policy commentary
- Sub-regional impact assessment: Tracking macroeconomic variables (by sub-region) with international price of oil
- Disaggregated analysis
 - focus on two countries per sub-region (high and low HDI)
 - Tracking movement of quarterly data on macro variables
 - Indicators to track progress on MDGs

Country level assessment: methodology

Countries covered: India, China, Lao PDR, Indonesia

1. Context: Policy review and vulnerability assessment
2. Macro impact assessment
 - Policy consultations to discuss preliminary findings
 - Quantitative analysis –
 - Time period: 1990- 2002 (before) and 2003 to latest available data (after the oil price rise)
 - Variables considered: macroeconomic variables; sectoral variables, public expenditure variables
 - Sub-sectoral assessment
 - Criteria for selection: Oil-intensity , relevance to the masses
 - Sectors covered
 - India- downstream oil, transportation, fertilisers
 - China – downstream oil, transportation, agricultural production material (mulching film, fertilisers)
 - Lao PDR – micro studies in rice processing, wood processing and mass transportation
 - Approach: assessment of impacts on sector, responses by sector, impacts on consumer

Micro impact assessment: methodology

Field-based case studies

- Rural and urban sites in each country
- 25-30 households at each location: total 100+ households per country
- Focus on energy use
 - in household and
 - in economic activity
- Focus on poor households
 - Differential across very poor and poor households
 - Differential impacts on women - FGDs
- Survey to gather recall-based perceptions about changes over the last 3-4 years
 - Income
 - Energy expenditure – household, economic activity, transportation
 - Energy consumption patterns
 - Impacts on well-being

Oil price rise: hypothetical linkages with MDG components

MDG component	Linkage with oil price rise
Poverty and hunger	Inflationary effects
	Recessionary effects
Education	Higher costs of access to school (transport costs)
	Lower capacity to pay school fees
	Reduced public spending in education
Health	Ill effects of partial or complete switch to traditional fuels
	Switch to non-mechanised transport and farming (higher fuel costs)
	Reduction in expenditure on food and other essential items
Gender	Women particularly affected by reversal to traditional fuels
Environment	Local - air pollution in households
	Global – investments in alternative energy – not fossil fuels
Partnerships	Shifts in energy trade
	Regional and strategic international coalitions



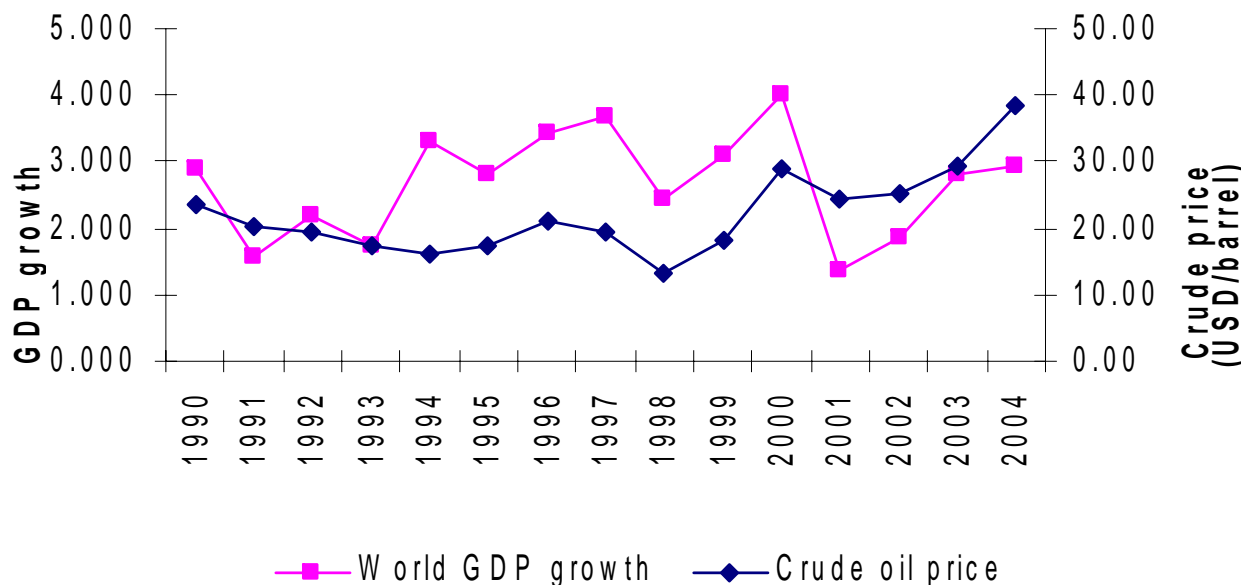
Major findings

Global assessment: findings

Macroeconomic effects expected: A \$10/bl rise in oil price --> cut world GDP by 0.25- 0.5% (IMF, IEA estimates);
developing countries most vulnerable

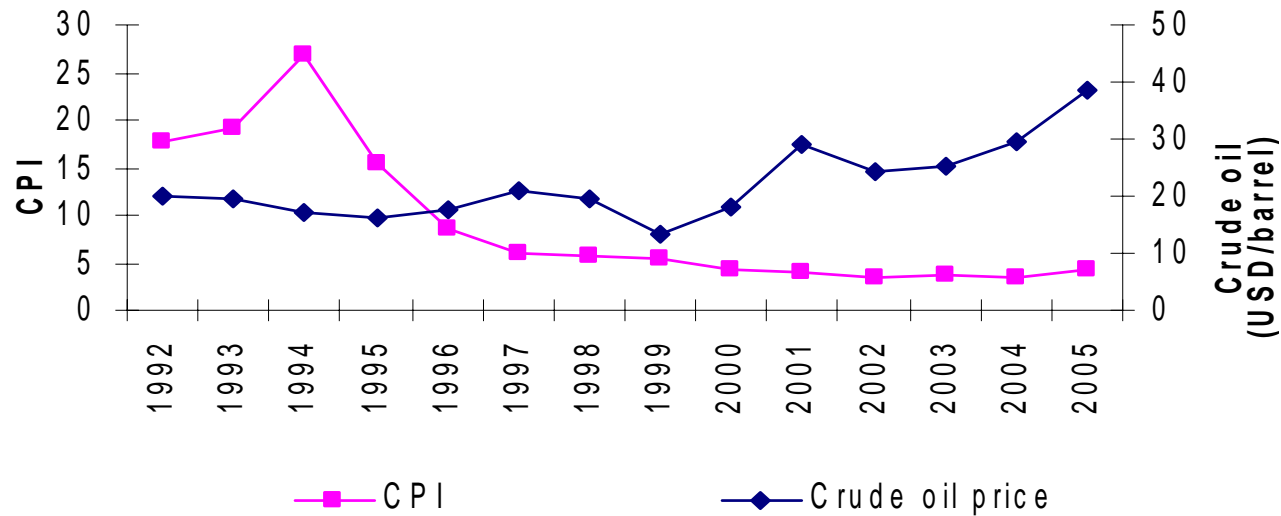
- GDP growth rate continuing to rise, but plateauing
- Inflationary effects observed 2004 onwards

Global assessment



- World GDP has shown random fluctuations between 1990 and 2001
- Upward trend in GDP trend continued despite oil price rise

Global assessment



- World inflation has experienced a downward trend since 1994, small rise after 2004

Petroleum pricing policies in sub-regional countries

Features

- ❑ Largely regulated oil-pricing, therefore incomplete pass-through of higher oil prices
- ❑ Fuel subsidies approx. 3.5 % of GDP in Asia-Pacific in 2005 (ADB est.)
- ❑ Transport and electricity companies absorb some degree of price increases
 - e.g., China, Bangladesh, India, Sri Lanka, Thailand, Vietnam
- ❑ Taxes a substantial proportion of pump level prices (China: 17 % VAT)
- ❑ Increases in domestic prices pronounced since 2005 in most countries; however price differentials still exist
 - Diesel prices in SL increased by 67 % in 2005
 - Thailand completely abolished fuel subsidies by July 2005

Regional impact assessment: findings

GDP growth: maintaining an average upward trend post 2002

- Rising demand for regional exports spurred by growth in OECD countries and China
- Rapid growth in domestic demand and private remittances

Inflation: Inflationary effects visible but moderated by

- Limited pass through due to regulated pricing; subsidies retention encouraged by strong interest groups in many countries
- Low weight of energy in region's price indices

Total reserves: No decline in reserves despite rising oil import bill

- Contribution of capital inflows and private remittances

Trade balance: also not adversely affected

- Exports in many countries notably China booming

India: context

- World's fifth largest oil consumer (127 million tonnes of crude consumed as refinery throughput)
- 76% of crude imported, largely self-sufficient in petroleum products
- Regulated pricing for major household and transportation fuels
- Subsidies borne partly by government, largely by oil companies
- Price rise: 20% rise for kerosene, LPG, 70% rise for gasoline and diesel
- Consumers already paying high prices
 - Household fuels – compelled to tap “black” market where prices are 2.5-4 times the stipulated rates
 - Transportation fuels: High taxes - 50% of the price build-up

India: context

Energy consumption pattern in households

- Primary cooking fuel:
 - Rural households: firewood (76%), dung cake (10%), LPG (5%)
 - Urban households: LPG (44%), firewood (22%), kerosene (22%)
- Primary source of energy for lighting
 - Rural households: kerosene (51%), electricity (48%)
 - Urban households: electricity (89%), kerosene (10%)

Source: NSSO 2001

China's energy sector: overview

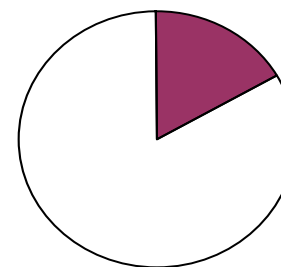
- One of the major oil importers, second largest oil consumer
- Coal meets 65% of primary energy needs;
- Changes in consumption of petroleum products in residential sector
 - substitution of low quality energy with high quality energy with improvements in quality of life
 - Oil consumption increased at an annual rate of 14.4%
 - LPG increased at 17.5%; Natural gas at 9%
 - Kerosene consumption declining
- Crude prices linked to international prices, regulated pricing of petroleum products
- 2006 - all round adjustment of taxes on petroleum products, special income tax levy (oil windfall tax) on state oil enterprises for excess revenue from sales of crude oil made in China when price exceeds \$40 a barrel
 - Income from levy to be a source of funding for subsidizing vulnerable groups and industries adversely affected by the oil price rise

Lao PDR: socio-economic context

- A **least developed landlocked** country; 80 % of population rural
- Largely **agrarian**, agricultural output comprised 47 % of GDP in 2004
- **New Economic Mechanism** initiating market oriented reforms since 1986
- **Structural changes**: industrial output = 28 % of GDP in 2004 versus 15% of GDP in 1990
- **Hydropower** and **mining** important growth drivers: exports and FDI

Lao PDR: energy context

- Traditional fuels = 77.3 % of total energy used in 2003
- Energy consumers: residential sector = 51 %; transport sector = 26 %; industry = 20 %
- Oil = 17 % of total energy used in 2002
- No refining capacity, imports only petroleum products
- Oil pricing: import prices + lump-sum charges + tax/ duty rates; no direct subsidization of retail prices; regulations through tax reductions/ exemptions



Highly subsidized electricity tariffs, esp. residential and agriculture

Indonesia: context

- OPEC member
- Production increased from 467 in 1990 to 514 MBPD in 1996
- Since then production declined to a record low of 386 MBPD in 2005 (mainly due to low investments, use of outdated technologies, financial crisis and natural disasters)
- Became net importer in 2005 due to low production and increased domestic demand
- Petroleum product prices regulated till 2000
- Deregulation in prices since 2000 (subsidy retained for kerosene, diesel and lower grade petrol)

India macro: quantitative analysis

	Mean (before)	Mean (after)	Elasticity wrt oil price (before)	Elasticity wrt oil price (after)
GDP growth %	6	7	-0.35	0.66
Inflation	8	4	-1.35	-0.41
Foreign exchange reserves (Rs billion)	1158	4336	0.96	1.49
Public spending (Rs billion)	117	297	1.48	0.65
• Infrastructure				
• Social sector	104	256	1.63	1.61
• Renewable energy	1.9	3.4	0.53	1.22
Oil price considered (Rs/kg)	6	11		

Study highlights: national macro findings

	India	China	Indonesia	Lao PDR
GDP growth				
Inflation				
Trade deficit				
Forex reserves				
Public spending-social				
Public spending-renewable energy				

Points to be noted

- Previous oil price hikes had major macroeconomic effects
- Somewhat “muted” macro impacts observed in this study - possible reasons:
 - Modest inflation, low interest rate
 - Competition – producers unable to pass on higher costs to consumers
 - Role of India, China as low cost suppliers
 - Price rise gradual and in some sense “expected”
 - Regulated pricing in many countries
 - Economies especially China and India on high growth trajectory
 - impacts may have been cushioned or growth may have been moderated, but difficult to analyse such “what if” effects
- Impacts may appear with a lag; some impacts observed in recent quarters; sharpest oil price rise in recent quarters

Summary of sub-sectoral assessments

- Downstream oil sector affected: upstream companies to share the burden in India, to share the windfall in China
- Agricultural production materials: fertilizers, mulching film- where prices are regulated, subsidies have gone up
- Transportation: no reduction in demand visible, transportation fuels price rise but not in line with international prices in India and China. Tariffs up in all countries
- Lao – most of oil use is for transportation. Diesel fuelled auxiliary power generating systems affected – switch to use of wood waste

Micro study locations

	India	China	Indonesia	Lao PDR
Rural	Deepdi, Bangrasia, Hoglagare	Tanchang, Jiuyang	Mekarjaya Sukamaju	Ban Nammadao
Urban	Slums in Delhi, Bangalore	Beijing city, Wuhan	Bandung	Vientianne

Cross country inferences – micro studies

- Energy use in rural households
 - Low oil intensity in rural hhs in China, India,
 - In China, India and Indonesia, households reverting to biomass fuels given rise in price of kerosene and / or LPG
 - India – problem of availability of kerosene at subsidised rates
 - Lao – complete dependence on biomass fuels and very low consumption of kerosene only for lighting

Cross country inferences – micro studies

- Energy use in urban households (hhs)
 - Poor hhs in India use biomass, many are reducing consumption of SKO and substituting with more biomass (paying higher prices), Non-poor hhs continue to use LPG
 - China - poor hhs report that they will switch to biomass if LPG prices rise sharply (nearly double)
 - Indonesia – urban hhs have to pay higher kerosene prices, no substitutes available
 - Lao PDR – Low oil dependence due to high dependence on biomass, charcoal, also have access to electricity

Cross country inferences – micro studies

- Transportation expenditure
 - Rural Lao – transport on foot or horseback, shuttle services very expensive now
 - Urban all countries (India to a lesser extent than others) - two wheelers very expensive to run as gasoline prices go up
 - Across countries and rural-urban settings, remote locations more affected – distance to facilities an important issue.
 - Additionally, India case studies
 - MP rural and Karnataka urban – families withdrawing children from better schools as locational disadvantage results in higher transportation costs

Cross country inferences – micro studies

Energy use in economic activity (agriculture)

- India
 - Not much direct use of petro products such as diesel
 - Reported rise in price of fertilisers – though price of urea is regulated
 - Political influence on tariff setting for electricity and fertiliser pricing
- China
 - 15-20% rise in price of fertilisers and mulching film in 2004 and 2005
 - Transportation costs also higher, expected to increase further
- Lao PDR
 - Case study location – indigenous agricultural practices, no use of petroleum products or fertilisers

Observations on linkages of oil price rise with MDGs

- Findings from various components of the study



POLICY CHALLENGES AND DIRECTIONS

Oil price outlook scenarios

Scenarios	Oil price level	Key drivers	Major challenges	Responses required towards
1- BAU	50-60\$/bl	Continuation of present trends	Sudden spikes in oil price	Oil price risk mgmt Emergency preparedness
2-Scare	>100\$/bl Abrupt rise	Political factors drive supply disruptions	Oil supply disruptions	Emergency preparedness
3-Scarce	>100\$/bl Gradual rise	Approaching “peak of oil”	Low oil availability	Fuel diversification Augmenting oil supply
4-Optimistic	30-40\$/bl	Lowering of oil demand – energy security environmental concerns	Investments in alternatives to oil, energy efficiency	Fuel diversification Demand mgmt

The policy context

Need to plan for high oil prices

Why may oil prices remain high?

- Increasing share of gasoline and diesel in oil consumption plus tighter environmental regulation
- Related point - challenges for refiners from
 - Processing sour crude
 - Getting higher output of light and middle distillates
- Continued demand side pressures especially from Asia and N America
- Geopolitical factors – possibility of supply disruptions
- Uncertainty over oil reserves and the economics of exploiting various reserves – related to “peak of oil”
- Under-investment in supply infrastructure

Concerns: policy challenges

- Inflationary and recessionary effects imminent esp as oil prices continue to go up
 - Moderated by macroeconomic performance thus far
- Reversal to traditional fuels from petroleum products
 - Subsidies not fiscally sustainable, prices to go up further (India – consumer already paying high prices in the parallel market)
 - Prices of traditional fuels rising
 - Urban poor more vulnerable – biomass alternative unavailable or more expensive
- Higher transportation costs – effects on access to school and healthcare in rural areas, in urban areas impact more on trips to native place (large migrant population)

Immediate measures required

- Safeguards for the poor
 - Rationalisation of subsidies – improved targeting
 - Improved access to healthcare, school, workplace to reduce transportation demand
 - Improved public transport systems
 - Access to alternative household fuels
- Other short term measures
 - Emergency preparedness (stockpiling, rationing, short term measures to curtail oil demand)
 - Tools to manage oil price risk – oil price stabilisation funds

Policy challenges and measures

- Oil price risk management
 - Fiscal pressures and impacts on other sectors arising out of incomplete pass-through
 - Financial price risk
- Enhancing oil supply
 - Expanding sources of oil
 - Enhancing recovery rates
 - Importers need to diversify import sources
- Reducing demand for oil
 - Efficient fuel usage in all sectors - technological and behavioral changes
 - focus on transportation
 - Reduce demand for transportation
 - Fuel diversification
 - Explore opportunities across all oil consuming sectors
- Emergency preparedness
 - Sudden supply disruptions – emergency stockpiling
 - Rationing to curtail demand and channelise limited supplies

Enabling mechanisms required

- Better management of subsidies
 - Improved targetting of beneficiaries
 - Channelising to improved energy forms
 - Supported by access to credit and market development
- Energy pricing principles
 - Market determined pricing coupled with well targeted subsidies
 - Full cost pricing
- Energy demand management
 - Technology, policy, awareness creation
- Institutional set-up in the energy sector
 - Integrated energy policy
- Energy trade and diplomacy
 - Regional and bilateral energy co-operation
- Other partnerships

Areas for further research

- Integrated macroeconomic effects
- Comparative assessment of alternatives to oil
 - Transportation sector: bio fuels, hybrid electric, fuel cells
 - Clean coal technologies
 - Strategic importance of hydro and nuclear power
 - Decentralised and grid-connected RETs
- Full costs of new sources of oil
 - Canadian tar sands
 - Techniques to enhance oil recovery from existing fields
- Sources of oil and gas outside the Middle East

