

Overcoming Vulnerability to Rising Oil Prices

Options for Asia and the Pacific



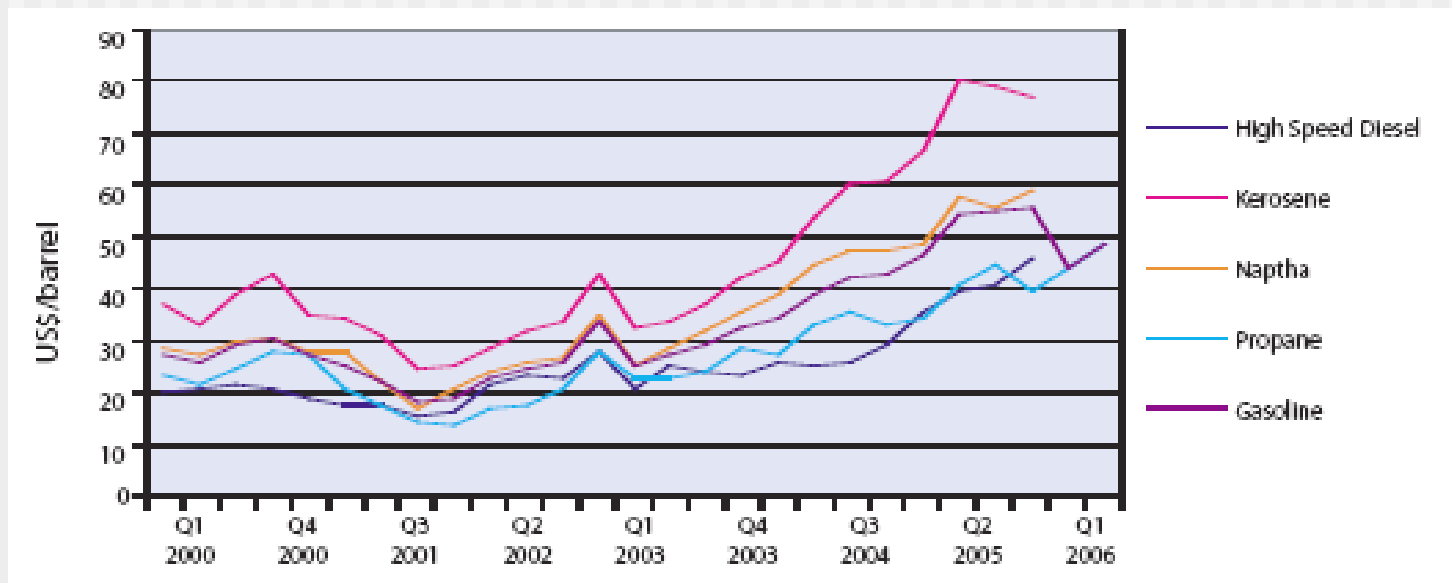
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A new era of expensive oil

- Since 2003, crude oil prices have risen from \$22 to over \$80 a barrel. Today it is touching \$90.
- Steep rises in the prices of petroleum products used by poor households: diesel, kerosene, propane, gasoline

Oil products, quarterly prices, 2000-06



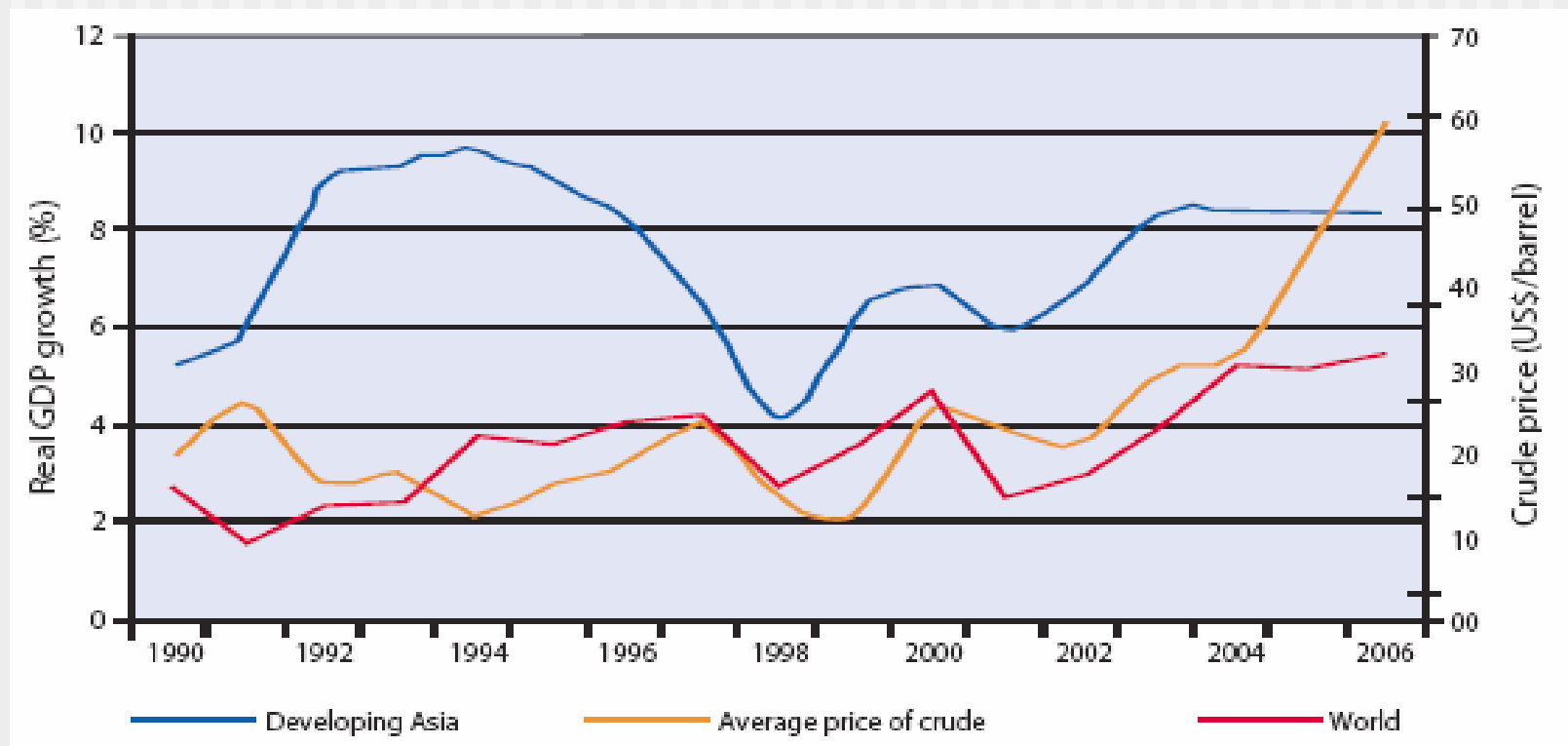
Causes of price increases

1970s shock caused by disruptions in supply, but the reasons today are different:

- Growth in world oil demand
- Shrinking buffers
- Oil supply insecurity
- Speculation in the world oil market
- Underinvestment in exploration and refining

Till now observed macroeconomic impact has been limited

- Economic growth has continued, signs of slow down
- Some increase in inflation



Why the small visible macroeconomic impact till recently ?

- This time the price rises have come in the midst of a global economic boom
- Rising exports have enabled even some of the poorest countries to finance oil import bills
- Inflation is lower because governments have subsidized the prices of oil products

The damages have started appearing, in the future - especially if the current high prices are maintained



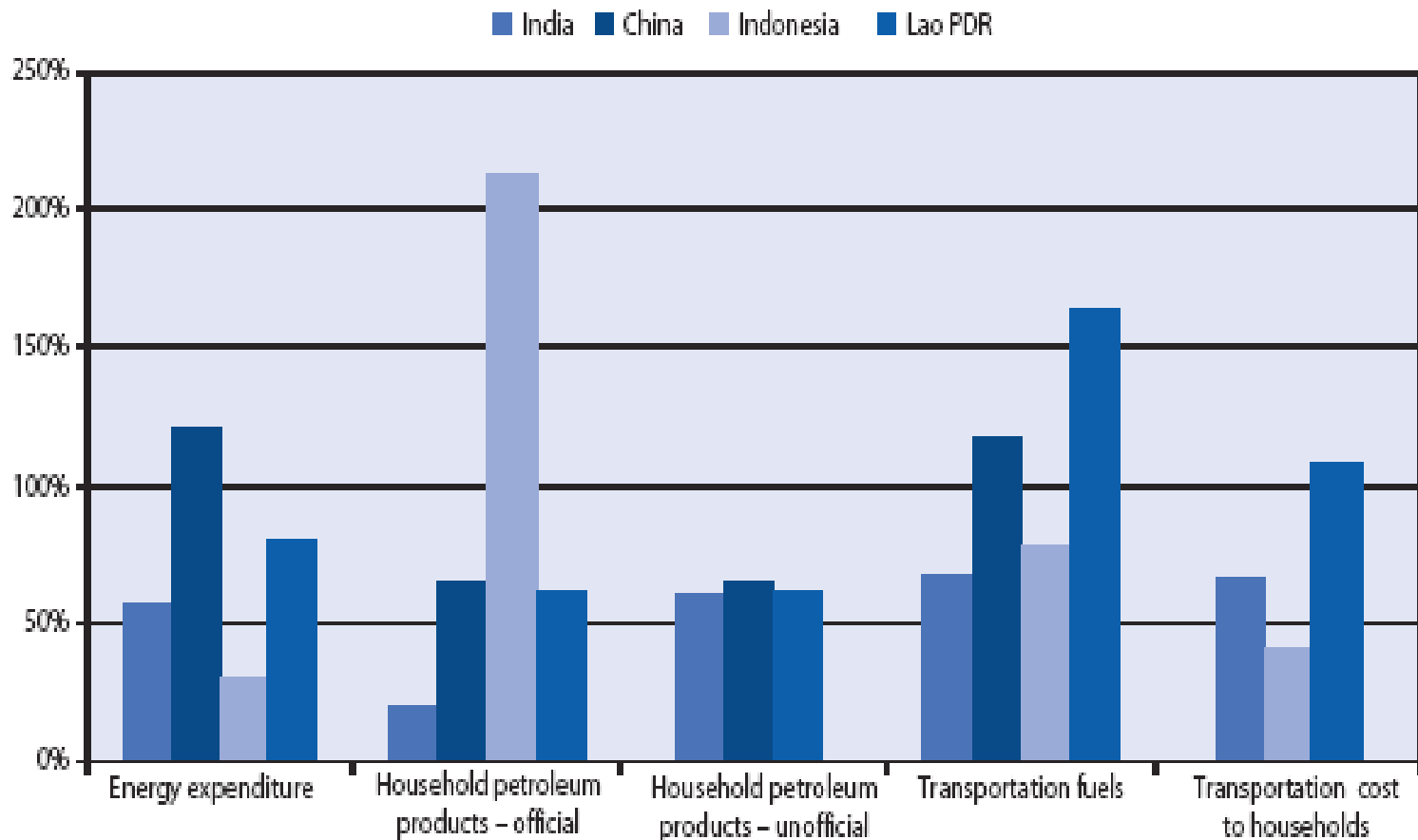
The micro impact of oil price rises on the poor...some examples

Survey of 500 households in 14 poor rural and peri urban communities in China, India, Indonesia and Lao PDR

Households use:

- *Kerosene* - for lighting and cooking
- *Liquefied petroleum gas* - mainly for cooking
- *Diesel* - transport, agricultural equipment, power generation
- *Gasoline* - less important, mainly private transport
- *Chemical fertilizers* - agriculture

Shrinking subsidies and increase in poor's fuel expenditure (2002-2005)



Price increases faced by poor communities

Between 2002 and 2005, the amount each surveyed household spent for its energy needs increased by 74 percent

- 171 percent more for cooking fuels;
- 120 percent more for transportation;
- 67 percent more for electricity;
- 55 percent more for lighting fuels;
- 33 percent more for petroleum-based fertilizers and other agricultural inputs;



Forced to climb down the energy ladder*among the communities surveyed*

- **Burning dung cakes** - Some 36 percent of kerosene-using households in *India* and 80 percent in the rural communities of *Indonesia* have reduced their consumption of kerosene for cooking. Instead, they have reverted to biomass and dung cakes.
- **Wood and crop residues** - In *China*, 89 percent of the rural households using LPG and coal for cooking have switched partly or entirely to fuel wood and crop residues.
- **Back to the dark ages** - For home lighting, most poor households have continued to incur higher expenditures on kerosene for lighting. Some very poor households in India, unable to pay the price, stay in darkness during power outages.

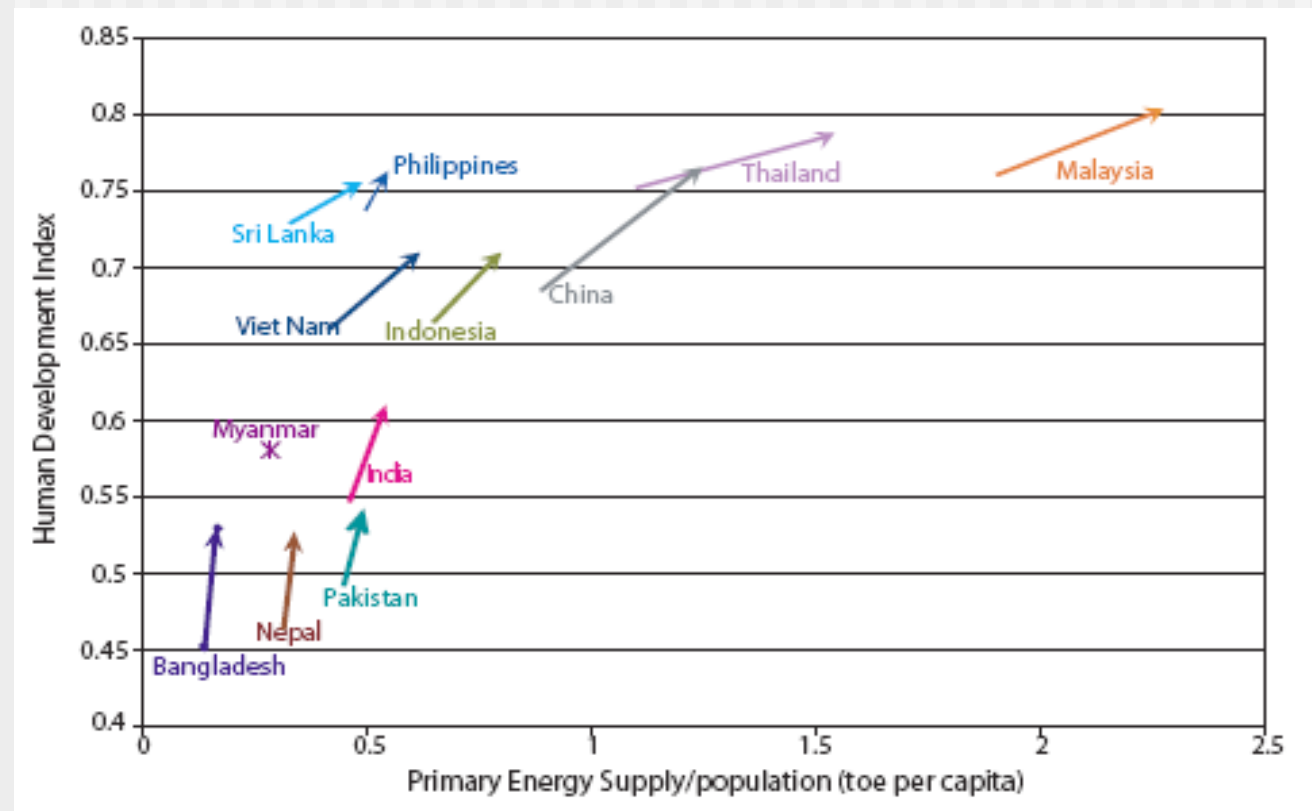
Millennium Development Goals at risk

- **Health** - Burning smoky fuels in the home increases the risk of respiratory diseases, especially for women and children.
- **Education** - In India, rising transport costs have compelled a number of households to move their children to schools closer to their homes, from better ones further away.
- **More work for women** - Rising household expenditures due in part to higher energy costs have obliged women to take on extra work.

Higher transport costs are isolating poor households from essential services

Oil consumption and human development

Poor households will need to increase consumption of modern energy, including oil



Per capita energy use and the human development index

An oil price vulnerability index (OPVI)

Based on:

- Economic strength
- Economic performance
- Importance of oil to growth

Low OPVI - Iran, China, Malaysia

Medium OPVI - Bhutan, India, Papua New Guinea, Indonesia, Thailand, Mongolia, Viet Nam, Myanmar

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

Capturing oil price vulnerability

Asia-Pacific Countries by Oil Price Vulnerability

COUNTRY	OPVI
1. Maldives (H)	0
2. Vanuatu (H)	0.17
3. Cambodia (H)	0.17
4. Solomon Islands (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. Iran (L)	1



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

Policies for reducing vulnerability

- *Managing oil price risk* – Pricing policies, targeted subsidies, financial tools.
- *Enhancing oil supply* – Strengthening oil exploration and extraction, building refining capacity, diversifying sources of supply, engaging in barter.
- *Restraining oil demand* – Increasing efficiency in transport, industry and agriculture.
- *Preparing for emergencies* – Building strategic reserves and planning for rationing.
- *Diversifying fuels* – In some cases this may mean using more coal or gas, but for many countries the opportunities will lie in renewable resources.

Options in renewable energy

- Hydropower
- Solar photovoltaics
- Biomass
- Geothermal
- Wind

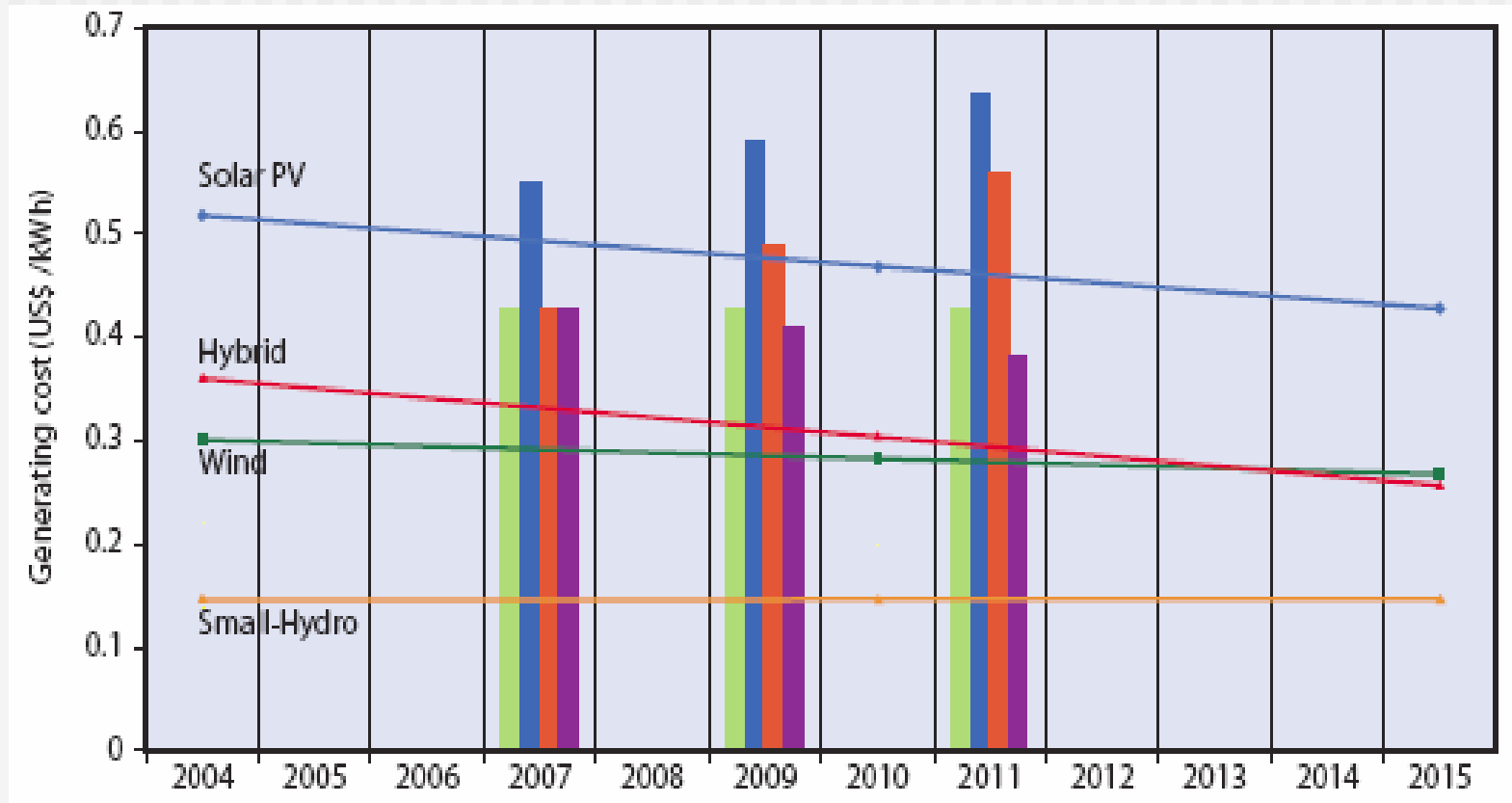
Large electricity grids

Already being powered by hydro large and small and by wind and biomass

Mini-grid and off-grid systems

Renewable energy technologies, except for photovoltaics, are usually cheaper than oil

Renewable and diesel prices for off-grid electricity



Bars represent potential petroleum product costs

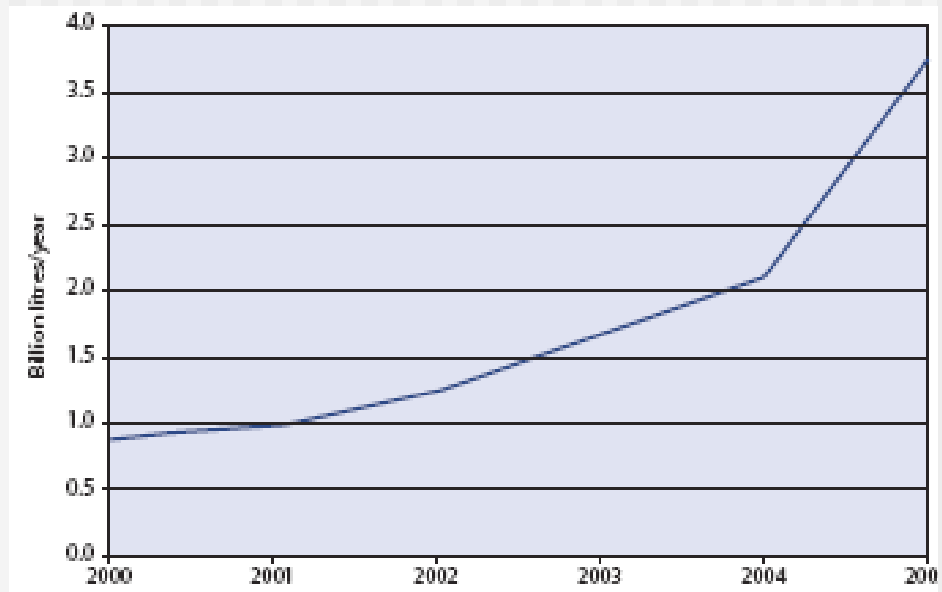
Renewables for heating

- **Traditional biomass** – Wood and agricultural waste burned in inefficient stoves
- **Modern biomass** – Materials burned in improved stoves, or 'gasified'. Poor households can use these for cooking, space or water heating with less indoor air pollution.
- **Solar thermal systems** – Solar driers and solar water heaters, though these are still relatively expensive for poor households so are better community facilities such as health centres.



The potential of biofuels

- **Bioethanol** – To replace gasoline, produced mostly from corn or or sugarcane
- **Biodiesel** – Derived from vegetable oils such as rapeseed, soy, palm, coconut and jatropha.



World biodiesel
production, 2000-05

Biofuels – for and against

Benefits

- Greater energy security
- Less greenhouse gases
- Less vehicle emissions
- More jobs
- Disposal of waste

Costs

- Higher food prices
- Ecological impact
- Water shortages
- Bad working conditions
- Impact on land use pattern

Renewable energy for poverty reduction

- *Savings on household expenditure* – Less spent on kerosene and batteries
- *Savings on time and effort* – No need to collect fuel, and faster cooking times
- *Higher quality services* – Better lighting and no toxic fumes in the home
- *Working at home* – Micro-businesses such as handicrafts and food processing
- *Other income generation* – Electrical power for agriculture, processing and storage
- *Jobs in the industry* – Manufacture and installation, particularly of biogas systems, SMEs



Policies based on future oil price scenarios

- *Baseline* – Oil prices remain \$65 to \$75 per barrel (BL)
- *Supply shock* – A supply crisis pushes prices beyond \$100 per barrel, but over the long term prices decline (SS)
- *Peak oil price* – Oil production peaks. Prices rise gradually \$100 per barrel, then increase exponentially (POP)
- *Energy security* – Reduce oil demand, so prices fall back to around \$50 per barrel (ES)



Priority strategies for each oil price scenario

	Manage oil price risk short to med term	Enhance oil supply med to long term	Restrain demand short, md & long term	Diversify fuels short to med term	Prepare for emergency short to med term
Baseline	5	2	4	1	3
Supply shock	4	1	3	2	5
Peak oil price	5	1	4	3	2

5 = highest priority

Selection of sub-strategies

High priority

- Pricing of petroleum products
- Managing oil subsidies
- Rationing
- Financial tools
- Improve public transport
- Strategic reserves

Medium priority

- Oil efficiency in transport
- Oil efficiency in industry
- Biofuels in transport
- Oil substitution in agriculture
- Strengthening oil exploration
- Refining capacity to process sour crudes

Each country will choose its own policy mix, but countries with similar OPVI rankings may use similar overall policy combinations. These will also change according to the oil price scenario.

Lower priority

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

Asia-Pacific Compensatory Oil Finance Facility

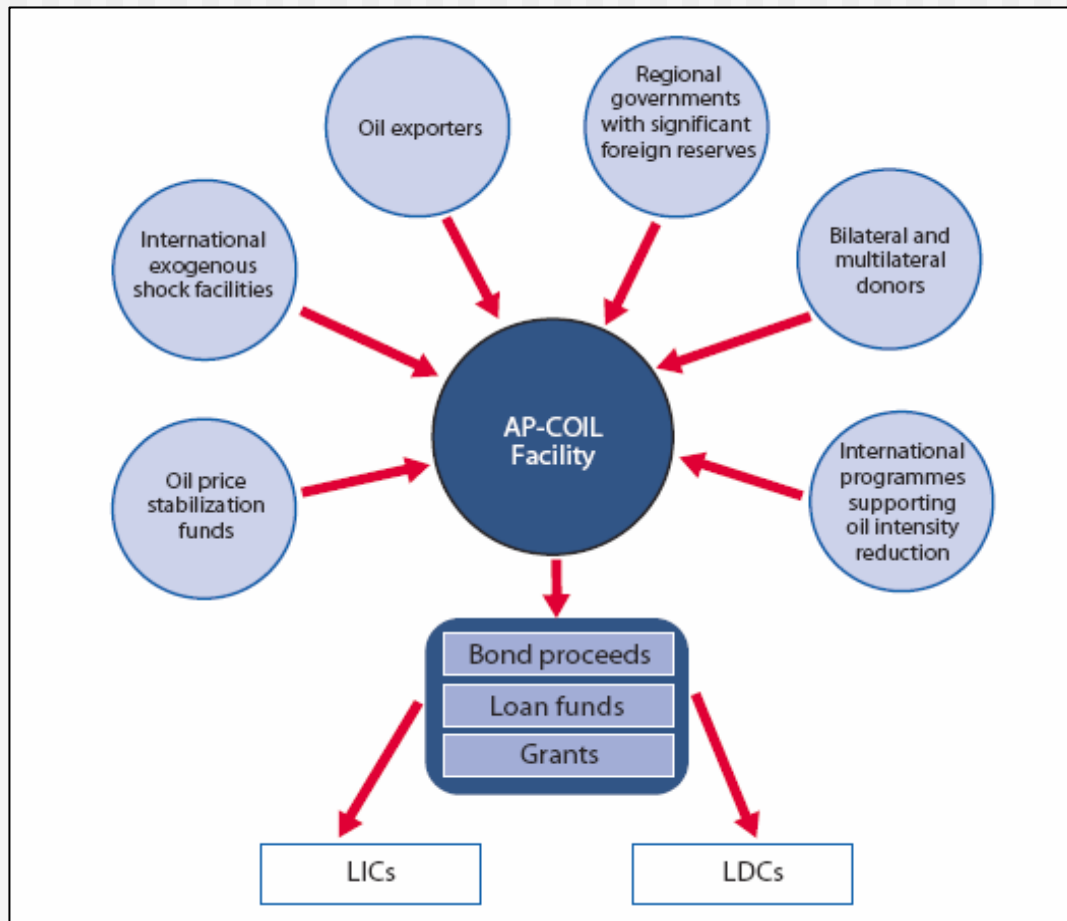
Rising oil prices have created balance of payments problems for the least developed countries

AP-COIL would:

- Help least developed countries overcome balance of payments and fiscal deficits
- Finance essential structural changes in their energy economies to reduce their dependence on oil.

The bulk of the funds could be mobilized through bonds issued in regional and international capital markets.

AP-COIL - flow of funds



**"The time to act is now,
before affordable oil becomes a distant
memory"**