



# **RISING ENERGY COSTS**

## **Consequences for the Region's Food System**

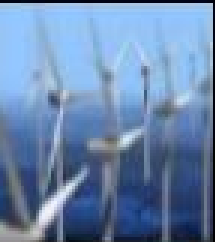


### *The Case of the Philippines*

*Salvador P. Catelo*



*Pacific Economic Cooperation Council Meeting  
Pacific Food System Outlook 2006-2007*



*Orchard Hotel  
Singapore  
May 17-18, 2006*



# PHILIPPINES

- *not as geologically endowed with commercial energy resources as its Asian neighbors*
- *self-sufficiency in energy over the past decade is rather flat at 43-50%*

## *State of fossil fuel resources (ARRPEEC, 2002)*

*oil reserve – 28.3 M cubic meters*  
*natural gas reserve – 104.6 B cubic meters*  
*recoverable reserve – 333 M mt*



# PHILIPPINES

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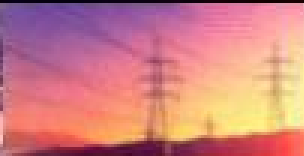
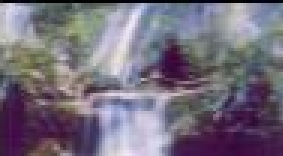
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## *Global oil demand-supply situation*

### *Supply-Demand Driving Forces*

*Pace of global activity*

*Global trading activities with US, etc.*

*Expansion in China and India*

*Severity of winter in the northern hemisphere*

*OPEC production*

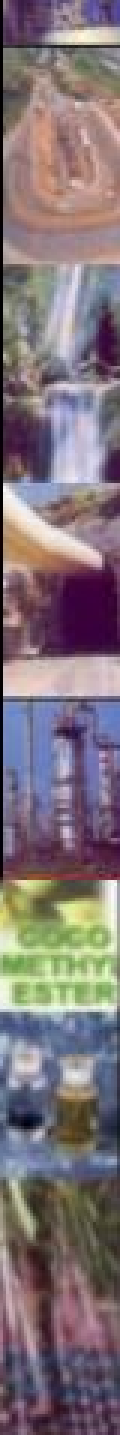
*Sabotage activities on Iraqi pipelines*

*Adverse economic impact of higher oil prices on oil-importing developing countries*

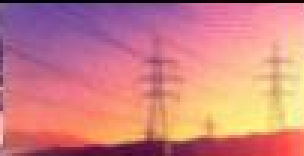
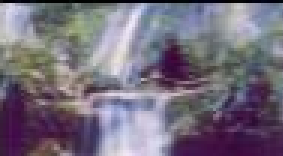
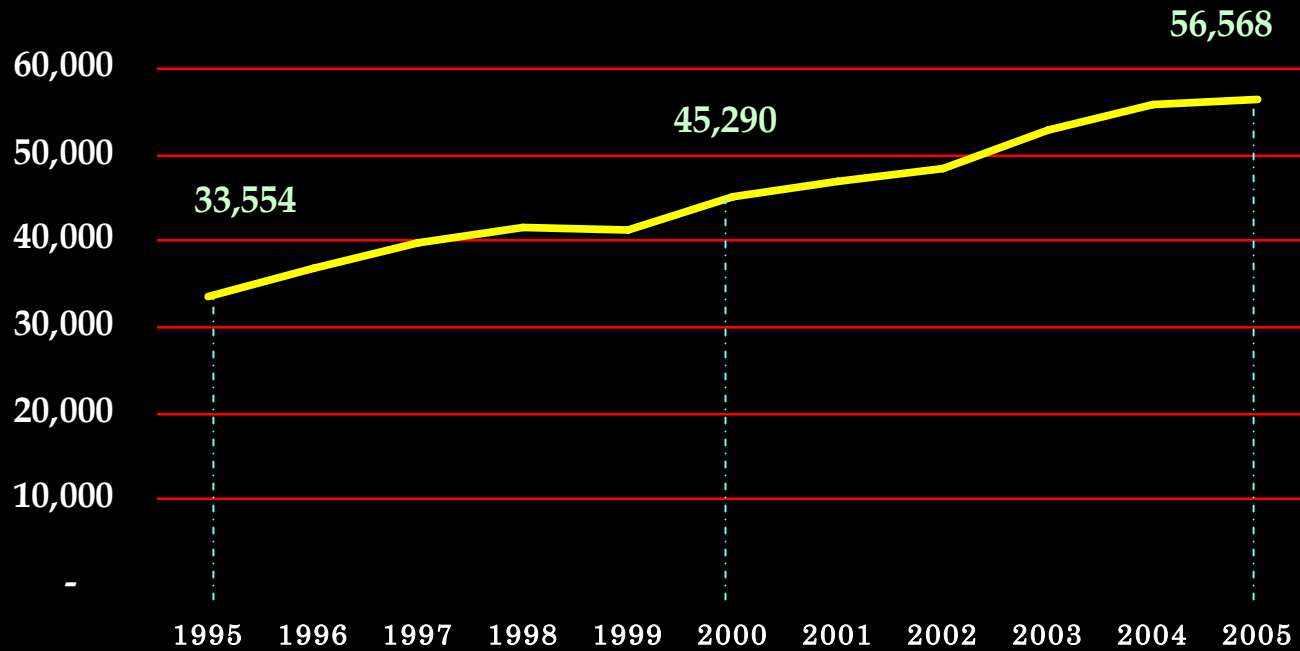
*generally more severe than for OECD countries (IEA, 2004)*

*Price increases and possibility of further increases have serious implications on the Philippine economy*

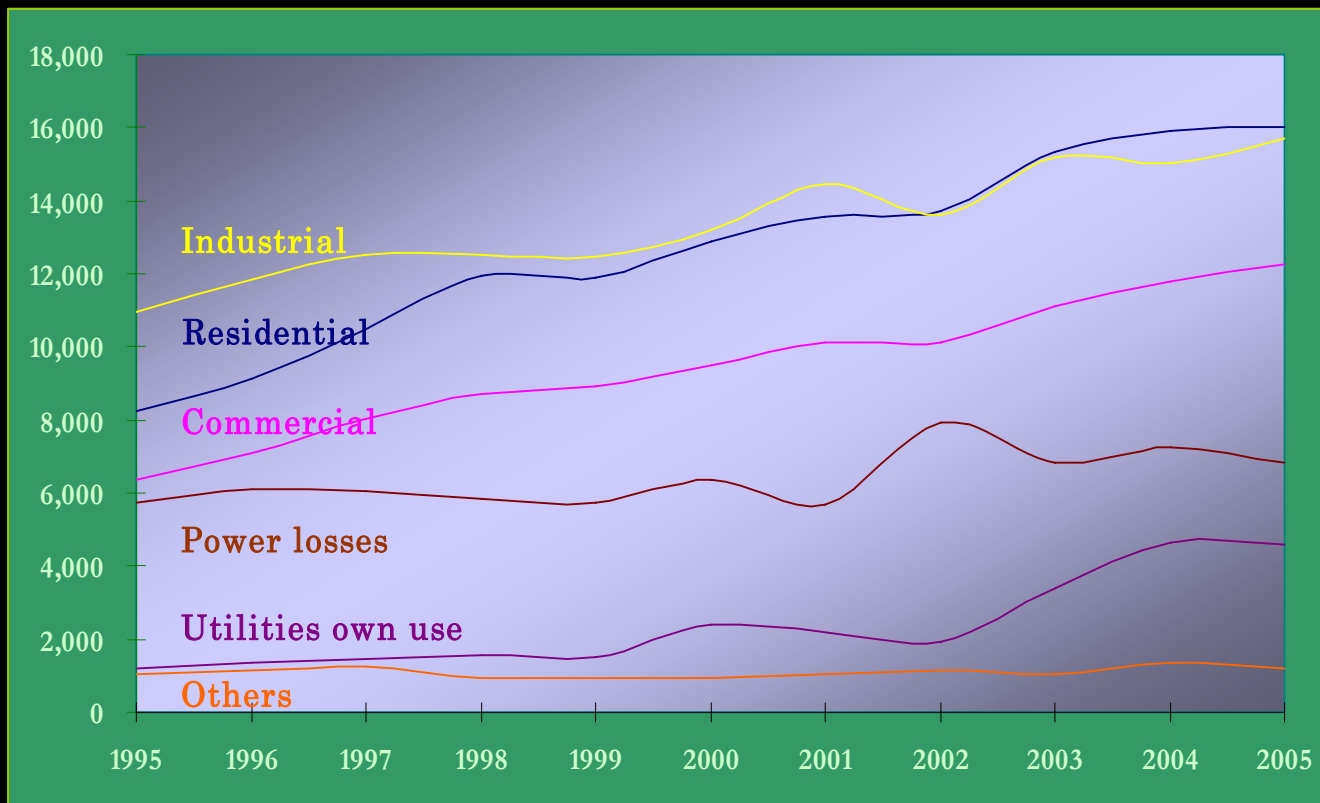
*(expanding economic activities, increasing population and food system)*



# Power consumption (in Gwh) per year, Philippines, 1995-2005



# Power consumption (in Gwh) by sector Philippines, 1995-2005



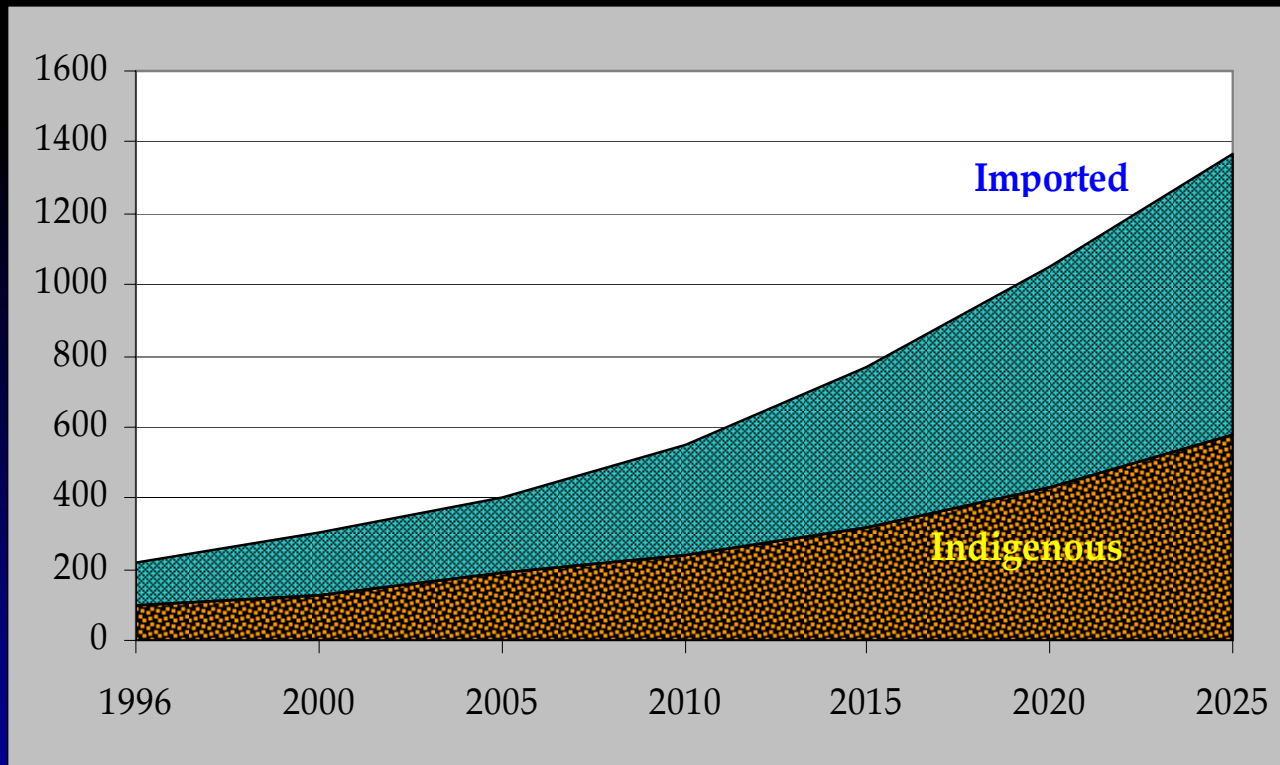
SECTOR	% Share (95-05)
Residential	27.86
Commercial	20.81
Industrial	29.54
Others	2.43
Utilities Own Use	5.27
Power Losses	14.08
<b>Total</b>	<b>100.00</b>

**GROWTH RATE**  
(Average per year)  
1995-2005

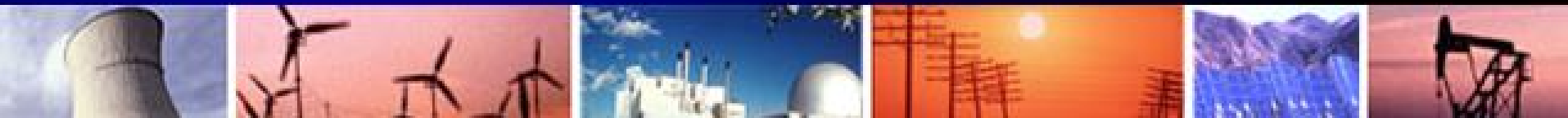


Residential	Commercial	Industrial	Others	Utilities Own Use	Power Losses
7.04	6.85	3.80	2.05	17.11	2.60

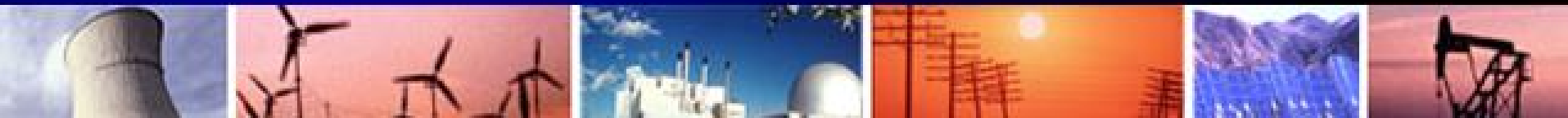
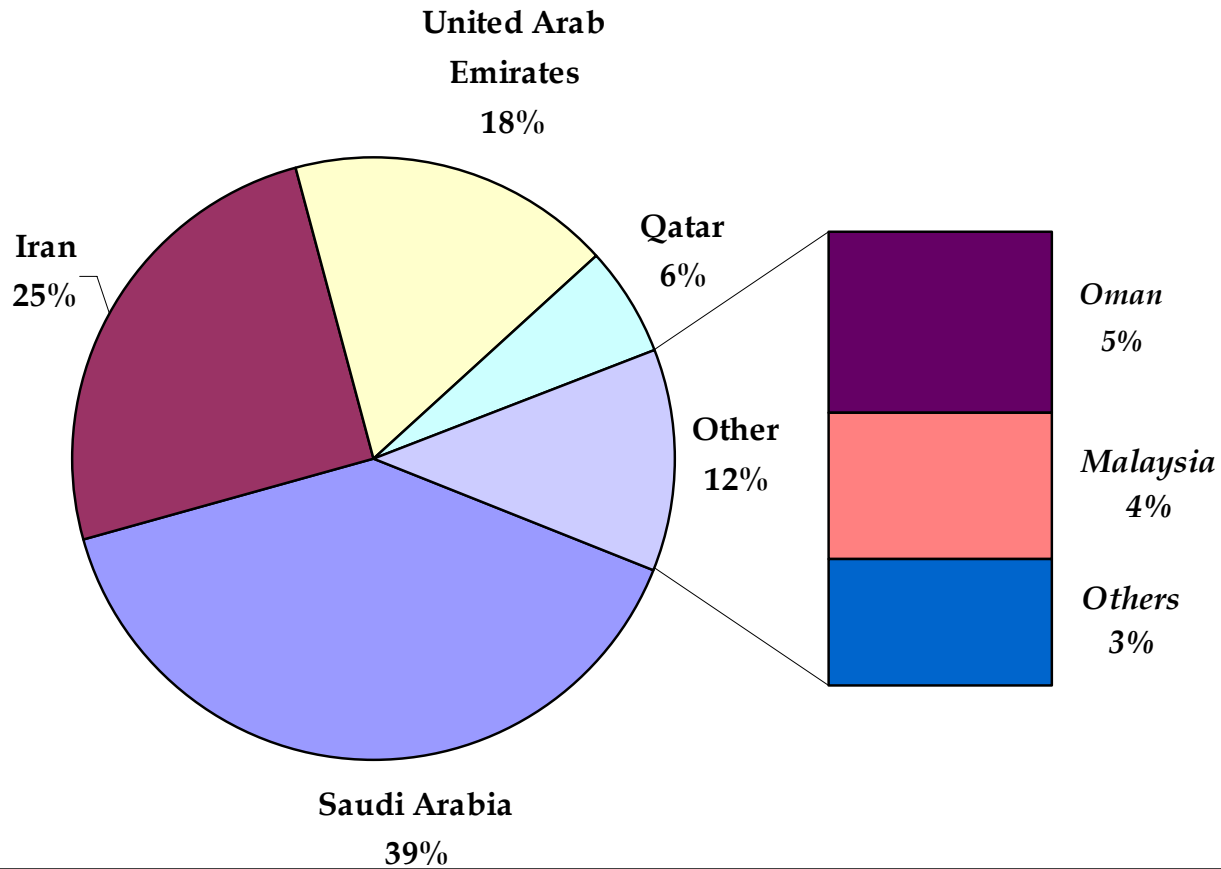
# Energy mix (in MMBFOE), Philippines, 1996-2025



YEAR	SELF-SUFFICIENCY
1996	43.72
2000	41.87
2005	47.4
2010	42.75
2015	41.25
2020	40.55
2025	41.25



*Average %share in crude oil importation by country of origin, Philippines, 2000-2004*





## Energy Supply-Demand

AREA	2001	2002	2003*	2004*
<b><i>PHILIPPINES</i></b>				
Demand	7,497	7,721	8,537	9,069
Existing Dependable Capacity	11,209	12,909	13,404	14,035
Reserve Margin**	33%	40%	36%	35%

\* Demand for 2003 and 2004 includes embedded generators.

\*\*Reserve margin is the percentage of existing dependable capacity above the peak demand.

### Issues

*Reserve margin*

*Complacency*

*Implications of importation*



# Viability of Alternative Sources

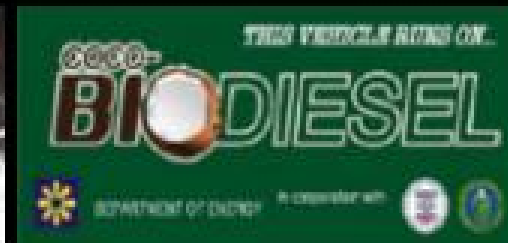
## *Biomass*

*viable alternative (ARRPEEC, 2002)*

*IRR of 12.7% to 15.4%*

## *Plantation biomass*

*could supply 2%-11% of the projected energy consumption of the country in 2010*



# *Viability of Alternative Sources*

*.... Continuation*

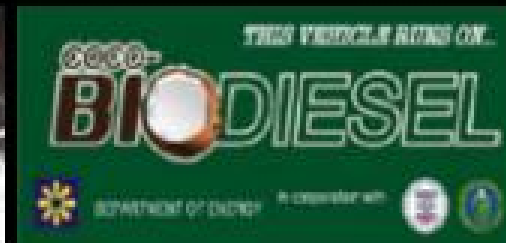
## *Biomass*

### *Non-plantation biomass*

*could supply 27% of the projected energy consumption of the country in 2010*

*abundance of untapped agricultural residues, animal wastes, municipal solid wastes, landfill gas, etc. in the country*

*Necessary condition: relevant policies, incentives and development of cost-effective/efficient technologies*



## *Resurrection of the use of alcogas and/or ethanol, etc*

### *Ethanol*

*go-signal for importation of ethanol*

*decrease in the taxes on ethanol (to 1%)*

*expected domestic production in 2007*

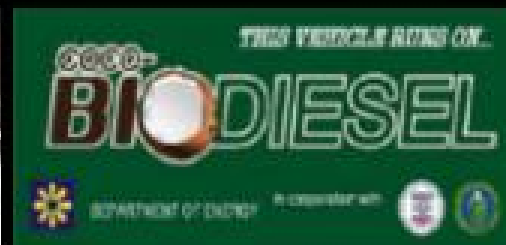
### *Coconut Methyl Ester (CME)*

*commissioning of more CME plants*

*R&D on CME*

### *Charcoal Briquette*

*acceptable substitute for LPG*



## *Barriers to Commercialization*

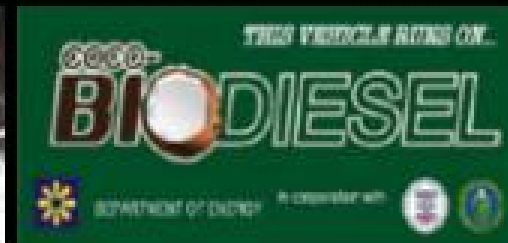
*High initial costs*

*High transaction and/or adoption costs*

*Poor access to relevant information*

*Lack of financing*

*Necessary condition: product standardization, testing and labeling of system parts/components, concessions on duty rates, attractive loan packages*



# Impacts and Adjustment Strategies

## *Supply-Demand Driving Forces*

*Pace of global activity*

*Global trading activities with US, etc.*

*Expansion in China and India*

*Severity of winter in the northern hemisphere*

*OPEC and Non-OPEC production*

*Sabotage activities on Iraqi pipelines*



# Impacts and Adjustment Strategies

## *Rule of thumb*

*US\$1 change in crude oil product costs*

*... results in corresponding adjustment of PHP0.38  
per liter in the Philippine pump prices*

*- (MTPDP, 2004-2010)*

*inflationary, employment, income effects*

## *Adjustments in Energy Conservation and Shifts to Other Sources of Energy*

*Joint ventures on bio-diesel production*

*Importation of ethanol*

*Conversion of gasoline-fed vehicles to LPG, bio-ethanol  
blended gasoline vehicles*

*Improvement in the power generation mix (cheaper fuel type)*



# Policy Response in Promoting Food System Efficiencies, Energy Conservation and Alternative Energy Sources

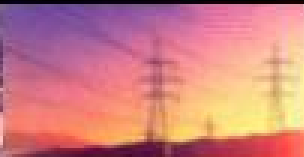
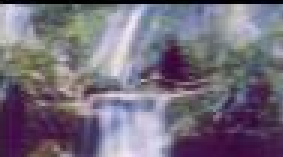
## *4-Pronged Program for the Energy Sector (MTPDP 2004-2010)*

*Energy Independence*

*Energy Efficiency and Conservation*

*Financial Assistance for Energy Sector Development*

*Legislative Support*





*DOE aims to expand domestic oil and gas reserves by 20% in the next 10 years (expansion of oil gas exploration and production activities, renewable energy development, strategic alliances) Alternative Sources*

## *Philippines*

*Geothermal Energy = 2,047 megawatt (Mw) proven reserves and 4,790 Mw potential reserves*

*Wind and solar Energy = very promising*

*Biomass Resources = abundance in bagasse, cane residues, woodchips*





## *Proposed Legislative Bills*

### *Alternative Fuels Utilization Bill*

*promote use of alternative fuel to expand the market for coconut oil and other agricultural products; fuel switching to coco-methyl ester, autogas and ethanol*

### *Natural Gas Bill*

*institutionalize regulatory mechanisms; liberalizing entry and fair trade measures*

### *Ethanol Bill*

*develop ethyl alcohol as an alternative transport fuel; provide credit facilities for mass production of raw materials for ethanol*

*Renewable Energy Bill*

*provide guidance and procedures for the preferential treatment of renewable resources in terms of interconnection and dispatch*

*LPG Bill*

*provide stringent safety standards and penalty/sanctions to violators*

# Thank you !

