



Department of Alternative  
Energy Development and Efficiency

**MINISTRY OF ENERGY**



**2007**

**THAILAND**



**ENERGY**



**STATISTICS**



[www.dede.go.th](http://www.dede.go.th)

## DEDE

The Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy has the main role and functions in research development and promotion of alternative energy, as well as energy conservation. DEDE also publishes the annual publications of "Oil and Thailand", "Electric Power in Thailand" and "Thailand Energy Situation", apart from the main duties, in order to disseminate data and information on statistics of crude oil, natural gas, petroleum products, electricity, coal & lignite, renewable and related details gathered during the calendar year.

In 2004, DEDE produced a handy, pocket - sized summary of key energy data. This new report is the First Issue of Thailand Energy Summary. Key Thailand Energy Statistics contains timely data on the statistics of energy production, import, export, transformation and consumption, energy & economy and related details, which may be useful for further studies and references.

In this regard, DEDE would like to take this opportunity to express our sincere appreciation to all government agencies and state enterprises as well as energy production and distribution companies for their excellent cooperation in providing useful data and information for this publication.

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## Abbreviations

|      |                             |
|------|-----------------------------|
| Com. | = Commercial                |
| GDP  | = Gross Domestic Product    |
| HSD  | = High Speed Diesel         |
| LPG  | = Liquefied Petroleum Gas   |
| NG.  | = Natural Gas               |
| NGL  | = Natural Gasoline          |
| Res. | = Residential               |
| ULG  | = Unleaded Premium Gasoline |

|        |                                       |
|--------|---------------------------------------|
| Bcf    | = Billion Cubic Feet                  |
| bil    | = Billion                             |
| Btu    | = British Thermal Unit                |
| e      | = Estimated Data                      |
| Gcal   | = Gigacalories                        |
| Gj     | = Gigajoules                          |
| Gwh    | = Gigawatt - Hour                     |
| kcal   | = Kilocalories ( $10^3$ Calories)     |
| ktoe   | = Kilo Ton of Oil Equivalent          |
| mil    | = Million                             |
| MMscf  | = Million Standard Cubic Feet         |
| MMscfd | = Million Standard Cubic Feet Per Day |
| scf    | = Standard Cubic Feet                 |
| toe    | = Ton of Oil Equivalent               |

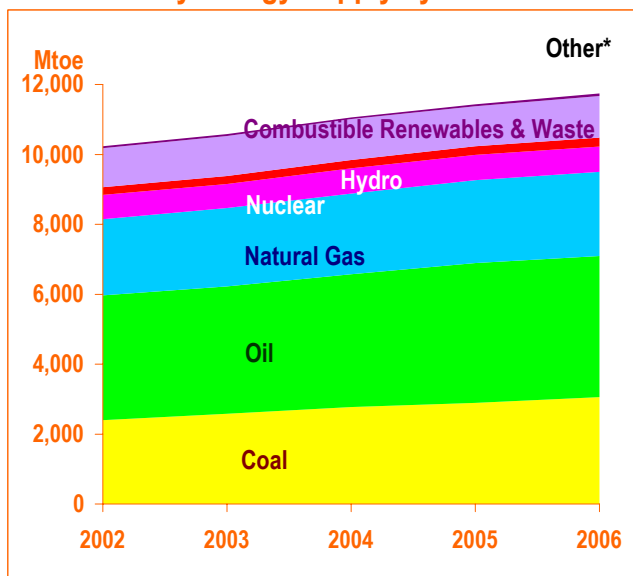
# General Information on Thailand 2007



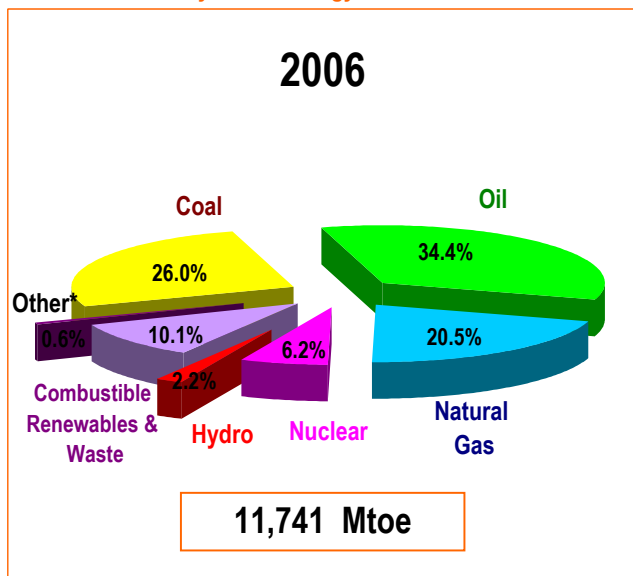
|                            |   |                            |
|----------------------------|---|----------------------------|
| Area                       | : | 513,115 km <sup>2</sup>    |
| Population                 | : | 63,038 thousand            |
| Number of Provinces        | : | 76                         |
| Number of Households       | : | 20,089,221                 |
| Average Size of Households | : | 3.1 persons                |
| GDP (1988 Prices)          | : | 4,245 10 <sup>9</sup> Baht |
| GDP Growth                 | : | 4.8 %                      |
| GDP per capita             | : | 67,334 Baht/capita         |
| GDP per household          | : | 211,288 Baht/household     |
| Export                     | : | 5,255 10 <sup>9</sup> Baht |
| Import                     | : | 4,872 10 <sup>9</sup> Baht |
| Currency                   | : | 1 USD = 34.68 Baht         |

# World Energy

## Total Primary Energy Supply by Fuel



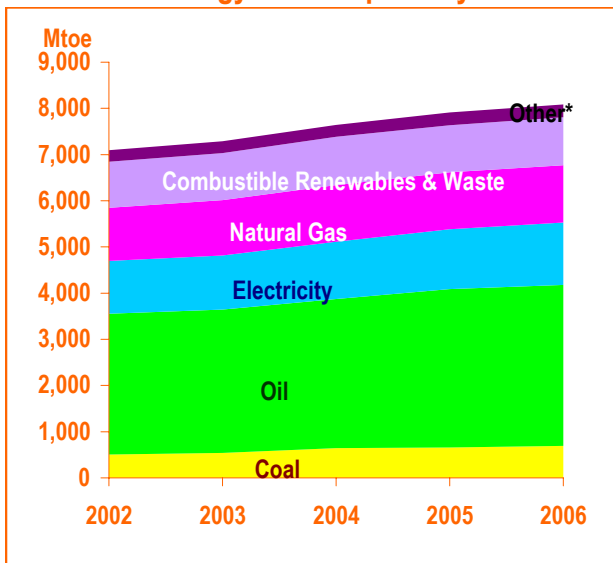
Source : IEA's Key World Energy Statistics 2008



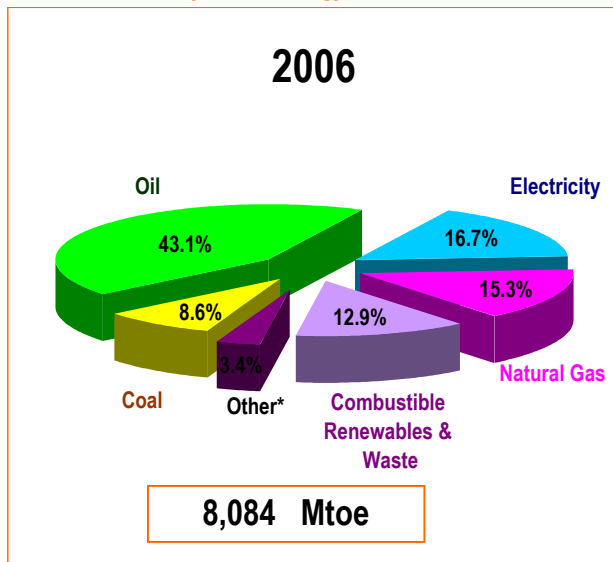
\* Other includes geothermal, solar, wind and heat, etc.

# World Energy

## Total Final Energy Consumption by Fuel



Source : IEA's Key World Energy Statistics 2008



\* Other includes geothermal, solar, wind and heat, etc.

# Production

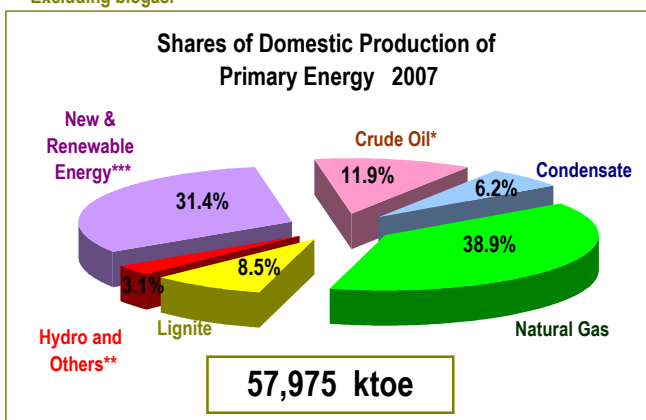
## Domestic Production of Primary Energy

| Domestic Production of Primary Energy (ktoe) | 2003          | 2004          | 2005          | 2006          | 2007          |
|----------------------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                                 | <b>48,149</b> | <b>49,838</b> | <b>53,369</b> | <b>55,196</b> | <b>57,975</b> |
| <b>Commercial Energy</b>                     | <b>33,345</b> | <b>33,808</b> | <b>36,712</b> | <b>38,169</b> | <b>39,748</b> |
| Crude Oil*                                   | 4,782         | 4,297         | 5,754         | 6,512         | 6,907         |
| Condensate                                   | 2,882         | 3,115         | 3,156         | 3,418         | 3,581         |
| Natural Gas                                  | 18,809        | 19,446        | 20,534        | 21,131        | 22,549        |
| Lignite                                      | 5,254         | 5,610         | 5,983         | 5,307         | 4,912         |
| Hydro and Others**                           | 1,618         | 1,340         | 1,285         | 1,801         | 1,799         |
| <b>New &amp; Renewable Energy***</b>         | <b>14,804</b> | <b>16,030</b> | <b>16,657</b> | <b>17,027</b> | <b>18,227</b> |

\*Including feedstocks, ethanol and biodiesel.

\*\*Others include geothermal, solar cell and wind power.

\*\*\*Excluding biogas.



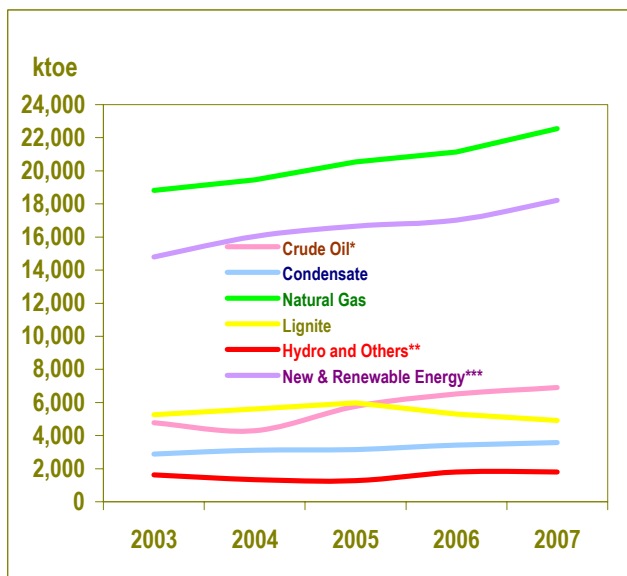
## Domestic Production of Primary Energy

(Physical unit)

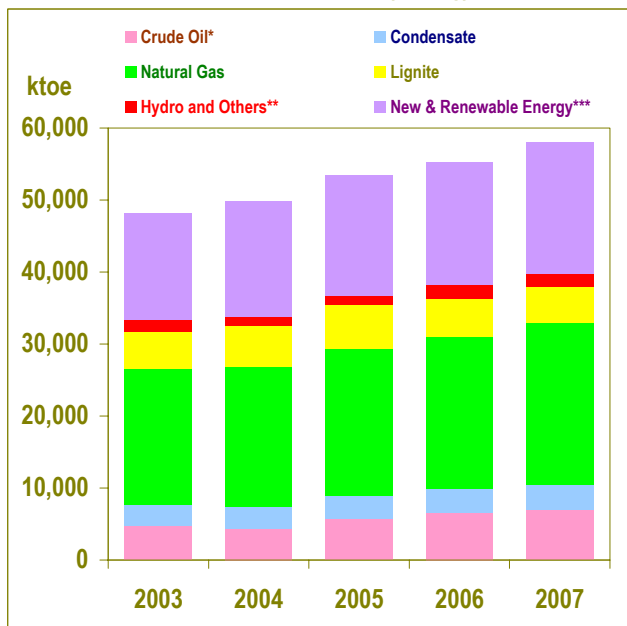
| Domestic Production of Primary Energy                     | 2003          | 2004          | 2005          | 2006          | 2007          |
|-----------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Commercial Energy</b>                                  |               |               |               |               |               |
| Crude Oil* (mil. litres)                                  | 5,561         | 4,997         | 6,700         | 7,585         | 8,057         |
| Condensate (mil. litres)                                  | 3,682         | 3,980         | 4,032         | 4,367         | 4,575         |
| Natural Gas (MMscf)                                       | 765,510       | 791,470       | 835,743       | 860,026       | 917,726       |
| Lignite (10 <sup>3</sup> ton)                             | 18,843        | 20,060        | 20,878        | 19,001        | 18,239        |
| Hydro and Others** (Gwh)                                  | 7,301         | 6,042         | 5,800         | 8,128         | 8,117         |
| <b>New &amp; Renewable Energy*** (10<sup>3</sup> ton)</b> | <b>45,156</b> | <b>49,258</b> | <b>54,880</b> | <b>55,013</b> | <b>59,572</b> |

# Production

Trends of Domestic Production of Primary Energy 2003 - 2007



Shares of Domestic Production of Primary Energy 2003 - 2007



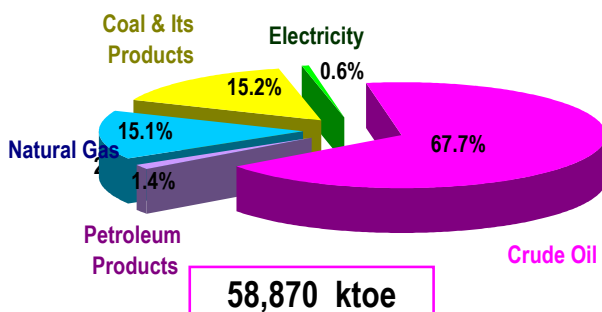
# Imports & Exports

## Energy Imports

| Energy Imports* (ktoe)   | 2003          | 2004          | 2005          | 2006          | 2007          |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Commercial Energy</b> | <b>51,299</b> | <b>57,691</b> | <b>57,311</b> | <b>58,727</b> | <b>58,870</b> |
| Crude Oil                | 38,721        | 43,535        | 41,308        | 41,388        | 39,846        |
| Petroleum Products       | 860           | 1,511         | 1,980         | 1,383         | 825           |
| Natural Gas              | 7,006         | 7,607         | 8,236         | 8,484         | 8,869         |
| Coal & Its Products      | 4,501         | 4,749         | 5,410         | 7,032         | 8,947         |
| Electricity              | 211           | 289           | 377           | 440           | 383           |

\*Excluding renewable energy.

## Shares of Energy Imports 2007



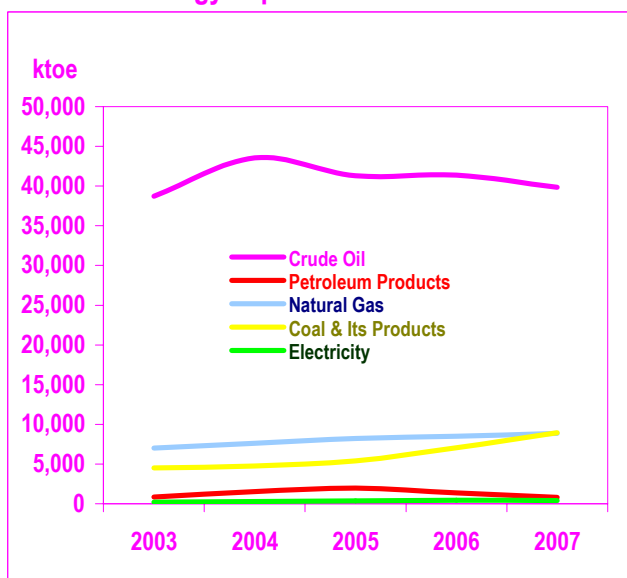
## Energy Imports

(Physical unit)

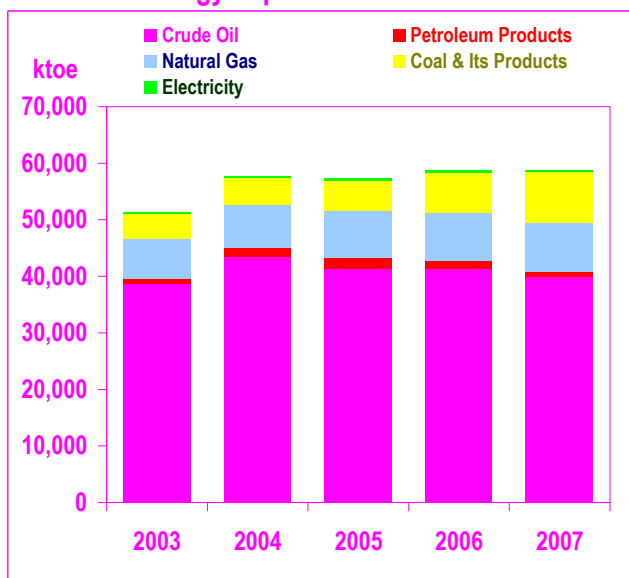
| Energy Imports*                           | 2003    | 2004    | 2005    | 2006    | 2007    |
|-------------------------------------------|---------|---------|---------|---------|---------|
| <b>Commercial Energy</b>                  |         |         |         |         |         |
| Crude Oil (mil. litres)                   | 45,025  | 50,622  | 48,033  | 48,126  | 46,333  |
| Petroleum Products (mil. litres)          | 998     | 1,715   | 2,165   | 1,504   | 932     |
| Natural Gas (MMscf)                       | 285,125 | 309,587 | 335,188 | 345,292 | 360,985 |
| Coal & Its Products (10 <sup>3</sup> ton) | 7,107   | 7,536   | 8,572   | 11,157  | 14,271  |
| Electricity (Gwh)                         | 2,479   | 3,388   | 4,419   | 5,159   | 4,491   |

# Imports & Exports

## Trends of Energy Imports 2003 - 2007



## Shares of Energy Imports 2003-2007



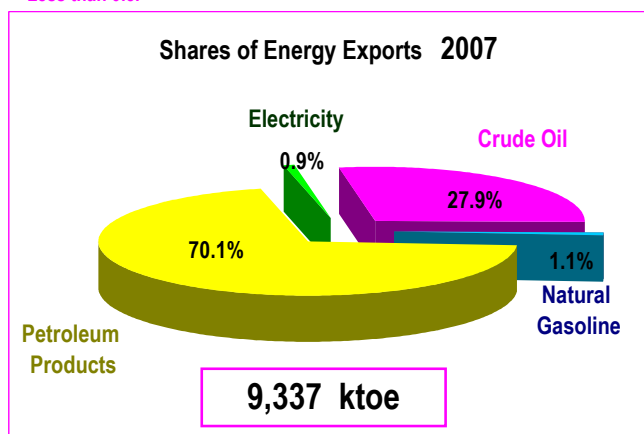
# Imports & Exports

## Energy Exports

| Energy Exports* (ktoe)   | 2003         | 2004         | 2005         | 2006          | 2007         |
|--------------------------|--------------|--------------|--------------|---------------|--------------|
| <b>Commercial Energy</b> | <b>7,945</b> | <b>8,385</b> | <b>8,981</b> | <b>10,315</b> | <b>9,337</b> |
| Coal & Its Products      | -            | -            | 3            | -             | **           |
| Crude Oil                | 3,026        | 2,827        | 3,273        | 3,318         | 2,607        |
| Condensate               | -            | -            | -            | -             | -            |
| Natural Gasoline         | 38           | 59           | 135          | 99            | 102          |
| Petroleum Products       | 4,856        | 5,467        | 5,515        | 6,834         | 6,549        |
| Electricity              | 25           | 32           | 55           | 64            | 79           |

\*Excluding renewable energy.

\*\*Less than 0.5.



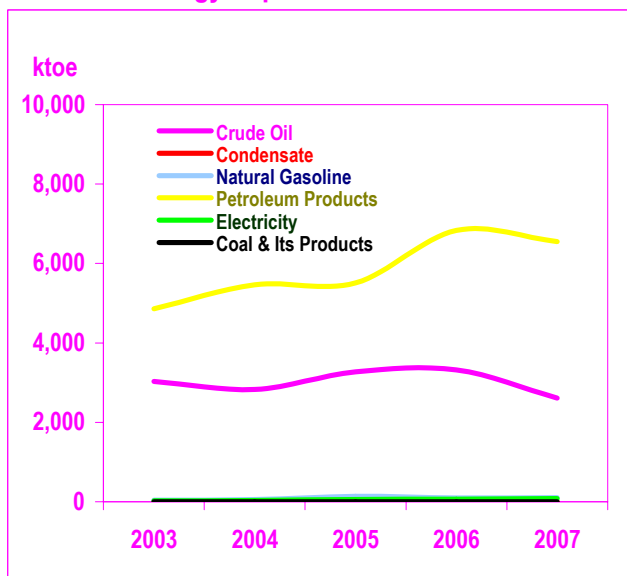
## Energy Exports

(Physical unit)

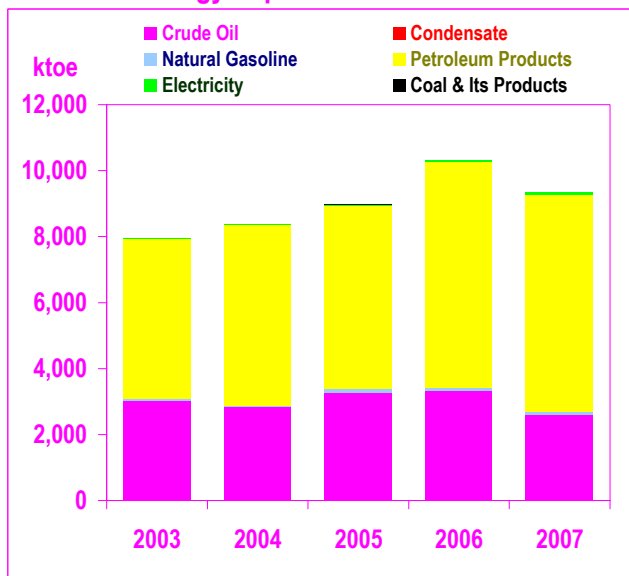
| Energy Exports*                           | 2003  | 2004  | 2005  | 2006  | 2007  |
|-------------------------------------------|-------|-------|-------|-------|-------|
| <b>Commercial Energy</b>                  |       |       |       |       |       |
| Coal & Its Products (10 <sup>3</sup> ton) | -     | -     | -     | -     | **    |
| Crude Oil (mil. litres)                   | 3,519 | 3,287 | 3,806 | 3,858 | 3,034 |
| Condensate (mil. litres)                  | -     | -     | -     | -     | -     |
| Natural Gasoline (MMscf)                  | 48    | 76    | 172   | 126   | 130   |
| Petroleum Products (mil. litres)          | 6,130 | 6,894 | 7,093 | 8,399 | 7,747 |
| Electricity (Gwh)                         | 296   | 372   | 642   | 750   | 926   |

# Imports & Exports

## Trends of Energy Exports 2003 - 2007



## Shares of Energy Exports 2003-2007



# Supply

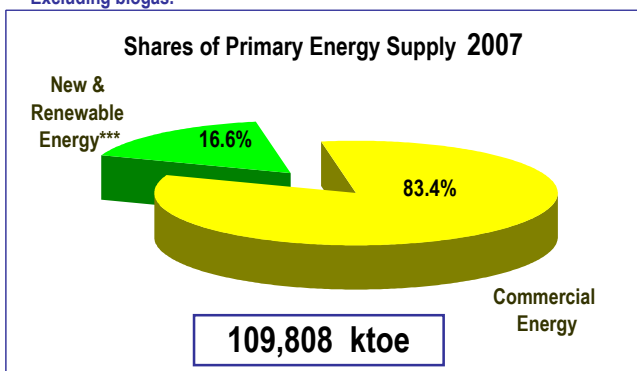
## Primary Energy Supply

| Primary Energy Supply (ktoe)         | 2003          | 2004           | 2005           | 2006           | 2007           |
|--------------------------------------|---------------|----------------|----------------|----------------|----------------|
| <b>Total*</b>                        | <b>92,491</b> | <b>100,193</b> | <b>103,041</b> | <b>105,640</b> | <b>109,808</b> |
| <b>Commercial Energy</b>             | <b>77,673</b> | <b>84,143</b>  | <b>86,363</b>  | <b>88,586</b>  | <b>91,587</b>  |
| Crude Oil**                          | 42,635        | 46,685         | 45,713         | 47,371         | 47,618         |
| Condensate & NGL                     | 2,618         | 2,712          | 2,674          | 2,963          | 2,991          |
| Natural Gas                          | 25,815        | 27,053         | 28,770         | 29,615         | 31,418         |
| Coal & Its Products                  | 9,405         | 10,575         | 11,457         | 12,263         | 13,866         |
| Petroleum Products                   | (4,604)       | (4,479)        | (3,858)        | (5,803)        | (6,409)        |
| Electricity                          | 1,804         | 1,597          | 1,607          | 2,177          | 2,103          |
| <b>New &amp; Renewable Energy***</b> | <b>14,818</b> | <b>16,050</b>  | <b>16,678</b>  | <b>17,054</b>  | <b>18,221</b>  |

\*Domestic Production + Import - Export +/- Stock Change

\*\*Including feedstocks, ethanol and biodiesel.

\*\*\*Excluding biogas.



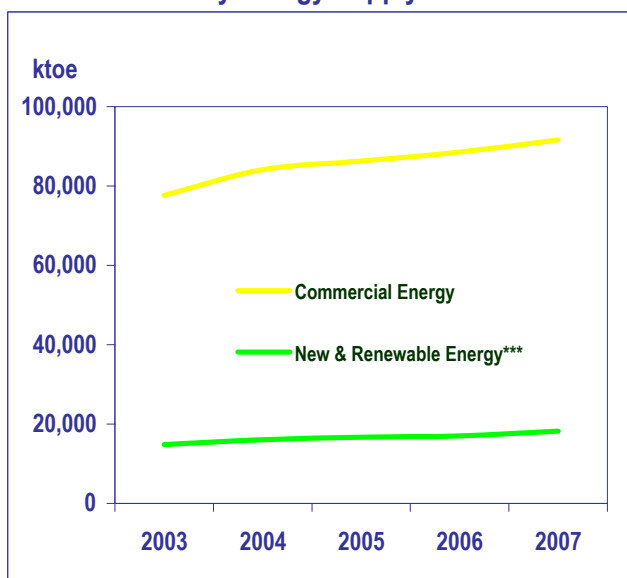
## Primary Energy

(Physical unit)

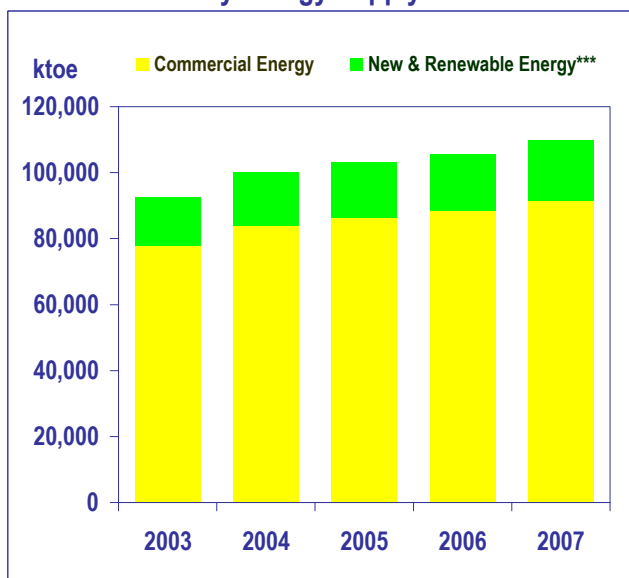
| Primary Energy Supply (ktoe)                              | 2003          | 2004          | 2005          | 2006          | 2007          |
|-----------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Commercial Energy</b>                                  |               |               |               |               |               |
| Crude Oil** (mil. litres)                                 | 49,576        | 54,285        | 53,164        | 55,099        | 55,393        |
| Condensate & NGL (mil. litres)                            | 3,345         | 3,464         | 3,257         | 3,786         | 3,821         |
| Natural Gas (Bcf)                                         | 1,051         | 1,101         | 1,171         | 1,205         | 1,279         |
| Coal & Its Products (10 <sup>3</sup> ton)                 | 25,071        | 28,084        | 29,614        | 30,009        | 32,392        |
| Petroleum Products (mil. litres)                          | (5,832)       | (5,869)       | (5,307)       | (7,400)       | (7,699)       |
| Electricity (Gwh)                                         | 9,484         | 9,058         | 9,577         | 12,537        | 11,682        |
| <b>New &amp; Renewable Energy*** (10<sup>3</sup> ton)</b> | <b>49,278</b> | <b>52,656</b> | <b>54,911</b> | <b>55,052</b> | <b>59,563</b> |

# Supply

## Trends of Primary Energy Supply 2003 - 2007



## Shares of Primary Energy Supply 2003-2007



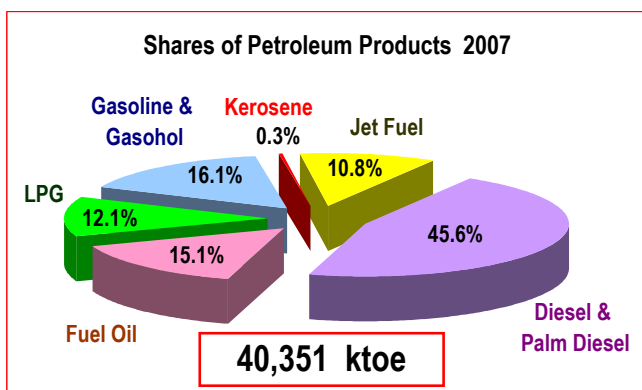
# Transformation

## Petroleum Products

| Petroleum Products*<br>(ktoe) | 2003          | 2004          | 2005          | 2006          | 2007          |
|-------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                  | <b>35,523</b> | <b>37,658</b> | <b>38,956</b> | <b>40,050</b> | <b>40,351</b> |
| LPG                           | 3,894         | 4,159         | 4,533         | 4,556         | 4,885         |
| Gasoline & Gasohol            | 6,435         | 6,674         | 6,878         | 6,774         | 6,485         |
| Kerosene                      | 575           | 920           | 835           | 857           | 107           |
| Jet Fuel                      | 3,464         | 3,774         | 3,952         | 4,578         | 4,351         |
| Diesel & Palm Diesel          | 16,110        | 17,407        | 16,951        | 17,325        | 18,421        |
| Fuel Oil                      | 5,045         | 4,724         | 5,807         | 5,960         | 6,102         |

\*Including petroleum products from petroleum refineries & NG.

processing plants



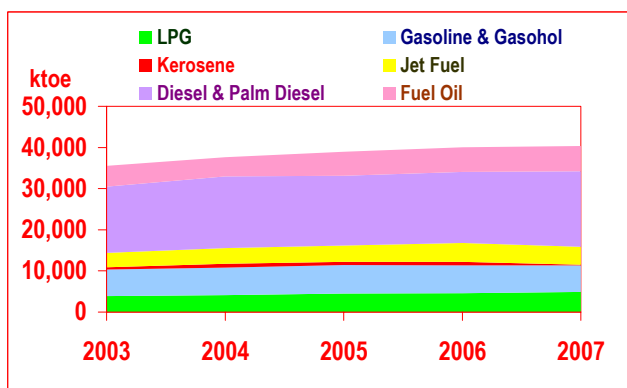
## Petroleum Products

(Physical unit)

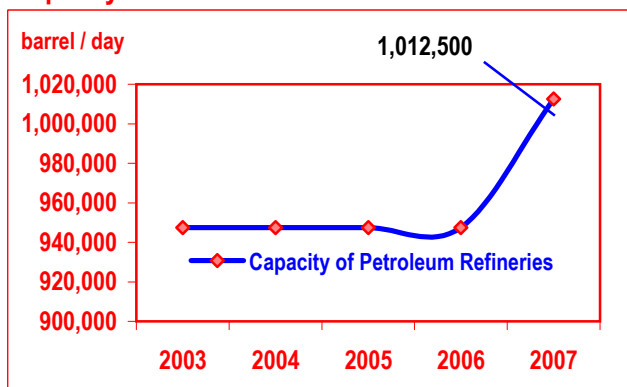
| Petroleum Products*<br>(mil.litres) | 2003          | 2004          | 2005          | 2006          | 2007          |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                        | <b>43,810</b> | <b>46,514</b> | <b>47,749</b> | <b>49,399</b> | <b>49,762</b> |
| LPG                                 | 6,180         | 6,601         | 6,825         | 7,230         | 7,752         |
| Gasoline & Gasohol                  | 8,638         | 8,958         | 9,231         | 9,091         | 8,703         |
| Kerosene                            | 704           | 1,125         | 1,022         | 1,048         | 131           |
| Jet Fuel                            | 4,238         | 4,617         | 4,835         | 5,601         | 5,323         |
| Diesel & Palm Diesel                | 18,690        | 20,194        | 19,666        | 20,097        | 21,370        |
| Fuel Oil                            | 5,360         | 5,019         | 6,170         | 6,332         | 6,483         |

# Transformation

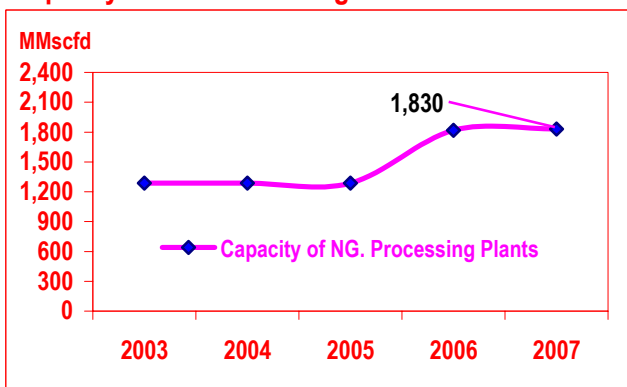
## Trends of Petroleum Products 2003 - 2007



## Capacity of Petroleum Refineries



## Capacity of NG. Processing Plants

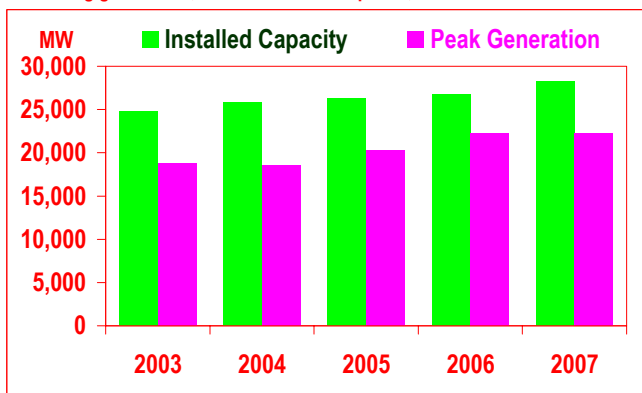


# Transformation

## Electricity (Installed Capacity)

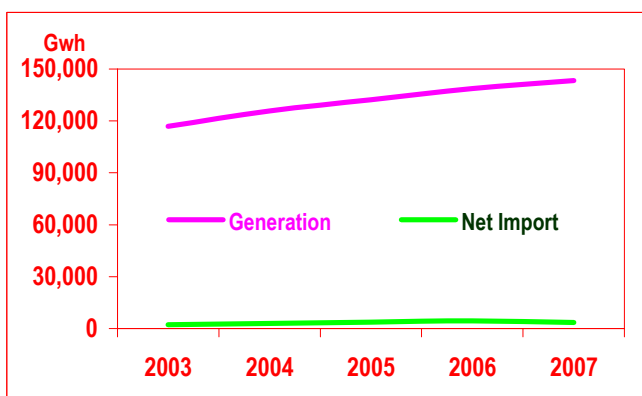
| Installed Capacity (MW) | 2003   | 2004   | 2005   | 2006   | 2007   |
|-------------------------|--------|--------|--------|--------|--------|
| Thermal Plants          | 21,789 | 22,388 | 22,792 | 23,338 | 24,807 |
| Hydro Power             | 2,973  | 3,476  | 3,476  | 3,476  | 3,475  |
| Other*                  | 1      | 1      | 1      | 1      | 3      |

\*Including geothermal, solar cell and wind power, etc.



## Electricity (National Grid Generation)

| Electricity (Gwh) | 2003    | 2004    | 2005    | 2006    | 2007    |
|-------------------|---------|---------|---------|---------|---------|
| Total             | 119,166 | 128,743 | 135,974 | 143,151 | 146,943 |
| Generation        | 116,983 | 125,727 | 132,197 | 138,742 | 143,378 |
| Net Import        | 2,183   | 3,016   | 3,777   | 4,409   | 3,565   |



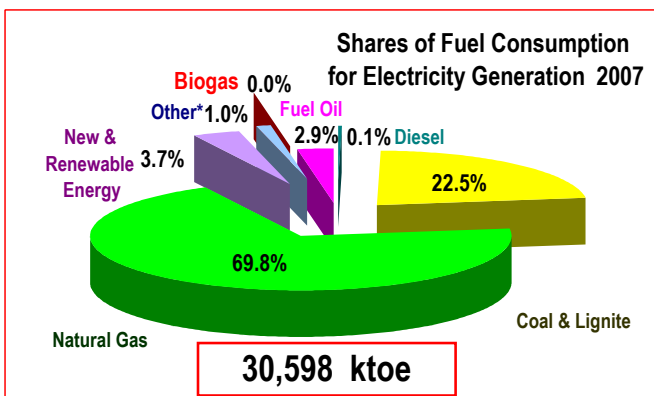
## Transformation

### Fuel Consumption for Electricity Generation

| Fuel Consumption (ktoe)      | 2003          | 2004          | 2005          | 2006          | 2007          |
|------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                 | <b>25,543</b> | <b>27,316</b> | <b>28,778</b> | <b>28,755</b> | <b>30,598</b> |
| Fuel Oil                     | 664           | 1,611         | 1,895         | 1,911         | 888           |
| Diesel                       | 45            | 104           | 72            | 35            | 21            |
| Coal & Lignite               | 4,418         | 4,657         | 4,700         | 4,774         | 6,885         |
| Natural Gas                  | 19,465        | 19,912        | 20,901        | 20,860        | 21,368        |
| New & Renewable Energy       | 712           | 730           | 889           | 916           | 1,138         |
| Other*                       | 239           | 302           | 320           | 255           | 292           |
| Biogas (mil.m <sup>3</sup> ) | -             | **            | 1             | 4             | 6             |

\*Including black liquor and residual gas from production processes, etc.

\*\*Less than 0.05.



### Electricity (Fuel Consumption)

(Physical unit)

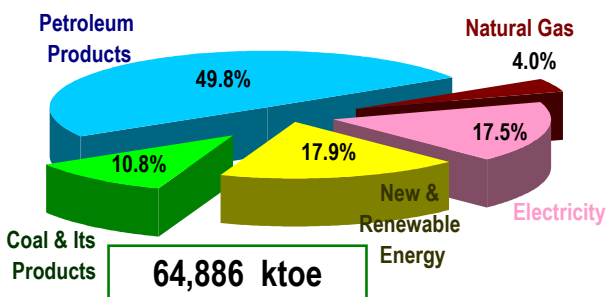
| Fuel Consumption                             | 2003    | 2004    | 2005    | 2006    | 2007    |
|----------------------------------------------|---------|---------|---------|---------|---------|
| Fuel Oil (mil.litres)                        | 705     | 1,711   | 2,013   | 2,030   | 943     |
| Diesel (mil.litres)                          | 52      | 121     | 84      | 41      | 24      |
| Coal & Lignite (10 <sup>3</sup> ton)         | 16,353  | 17,426  | 17,488  | 17,166  | 20,549  |
| Natural Gas (MMscf)                          | 796,614 | 818,264 | 858,959 | 857,103 | 877,862 |
| New & Renewable Energy (10 <sup>3</sup> ton) | 3,067   | 3,076   | 3,839   | 3,916   | 4,995   |
| Other* (TJ)                                  | 10,104  | 12,776  | 13,539  | 10,766  | 12,335  |
| Biogas (mil.m <sup>3</sup> )                 | -       | **      | 1       | 8       | 12      |

# Consumption

## Final Energy Consumption by Fuel

| Final Energy Consumption (ktoe) | 2003          | 2004          | 2005          | 2006          | 2007          |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                    | <b>56,289</b> | <b>61,262</b> | <b>62,397</b> | <b>63,257</b> | <b>64,886</b> |
| Coal & Its Products             | 4,987         | 5,918         | 6,757         | 7,489         | 6,981         |
| Petroleum Products              | 30,447        | 32,684        | 32,460        | 31,650        | 32,318        |
| Natural Gas                     | 1,990         | 2,341         | 2,026         | 2,234         | 2,594         |
| Electricity                     | 9,114         | 9,803         | 10,330        | 10,891        | 11,348        |
| New & Renewable Energy          | 9,751         | 10,516        | 10,824        | 10,993        | 11,645        |

## Shares of Final Energy Consumption by Fuel 2007



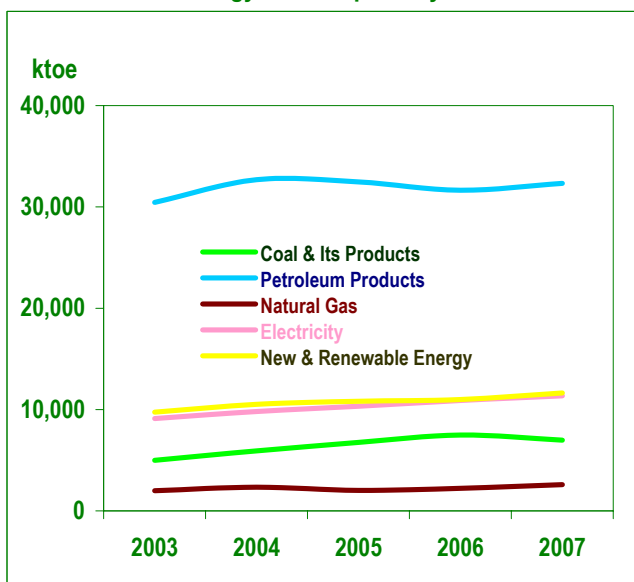
## Final Energy Consumption by Fuel

(Physical unit)

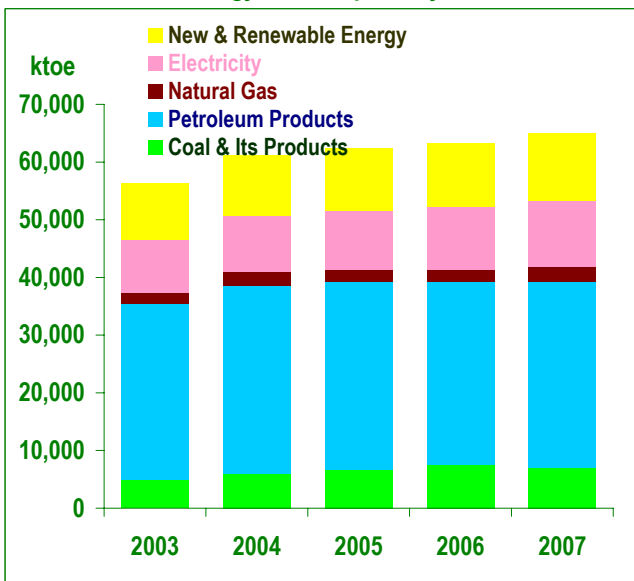
| Final Energy Consumption                     | 2003    | 2004    | 2005    | 2006    | 2007    |
|----------------------------------------------|---------|---------|---------|---------|---------|
| Coal & Its Products (10 <sup>3</sup> ton)    | 8,718   | 10,658  | 12,126  | 12,843  | 11,843  |
| Petroleum Products (mil. litres)             | 37,129  | 39,859  | 39,653  | 38,916  | 39,961  |
| Natural Gas (MMscf)                          | 82,280  | 96,825  | 83,814  | 92,416  | 107,293 |
| Electricity (Gwh)                            | 106,959 | 115,044 | 121,229 | 127,811 | 133,178 |
| New & Renewable Energy (10 <sup>3</sup> ton) | 31,888  | 33,769  | 34,231  | 34,744  | 36,664  |

# Consumption

## Trends of Final Energy Consumption by Fuel 2003 - 2007



## Shares of Final Energy Consumption by Fuel 2003 - 2007



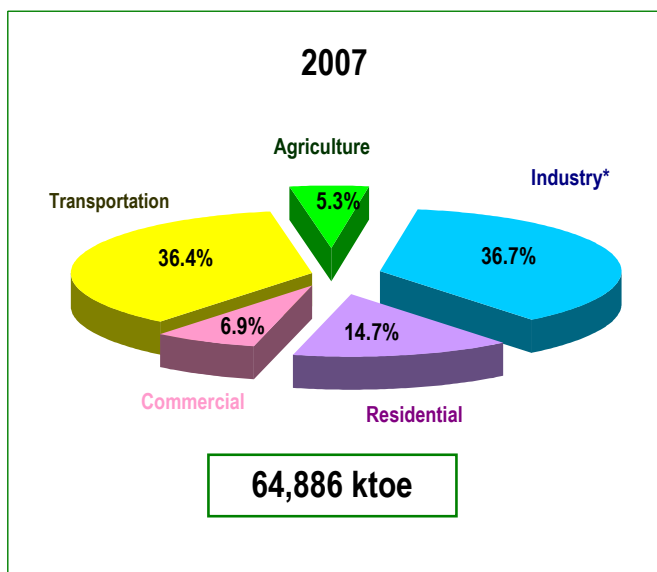
# Consumption

## Final Energy Consumption by Economic Sector

| Final Energy Consumption (ktoe) | 2003          | 2004          | 2005          | 2006          | 2007          |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                    | <b>56,289</b> | <b>61,262</b> | <b>62,397</b> | <b>63,257</b> | <b>64,886</b> |
| Agriculture                     | 3,308         | 3,520         | 3,207         | 3,312         | 3,448         |
| Industry*                       | 20,255        | 22,263        | 22,920        | 23,711        | 23,781        |
| Residential                     | 8,173         | 8,801         | 8,933         | 9,034         | 9,533         |
| Commercial                      | 3,626         | 3,866         | 3,846         | 4,215         | 4,482         |
| Transportation                  | 20,927        | 22,812        | 23,491        | 22,985        | 23,642        |

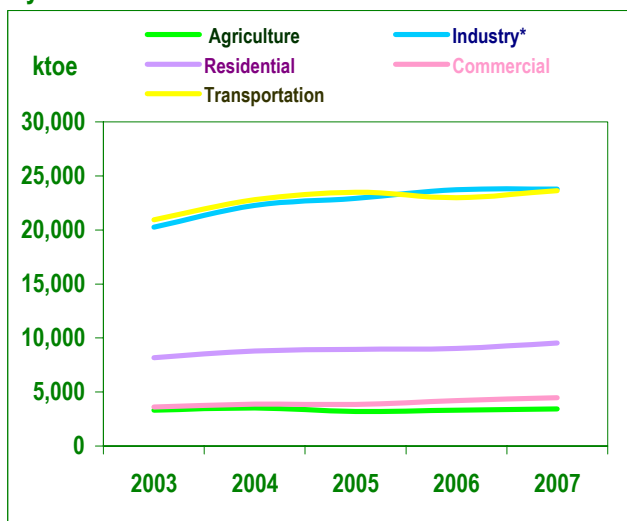
\*Industry = Manufacturing + Mining + Construction

## Shares of Final Energy Consumption by Economic Sector 2007

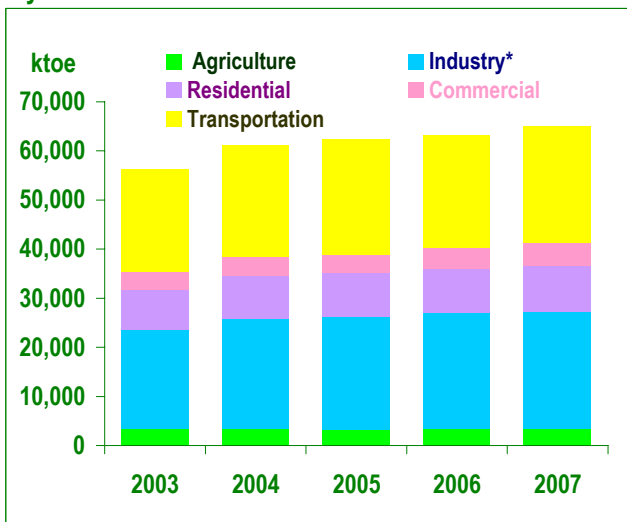


# Consumption

## Trends of Final Energy Consumption by Economic Sector 2003 - 2007



## Shares of Final Energy Consumption by Economic Sector 2003 - 2007



\*Industry = Manufacturing + Mining + Construction

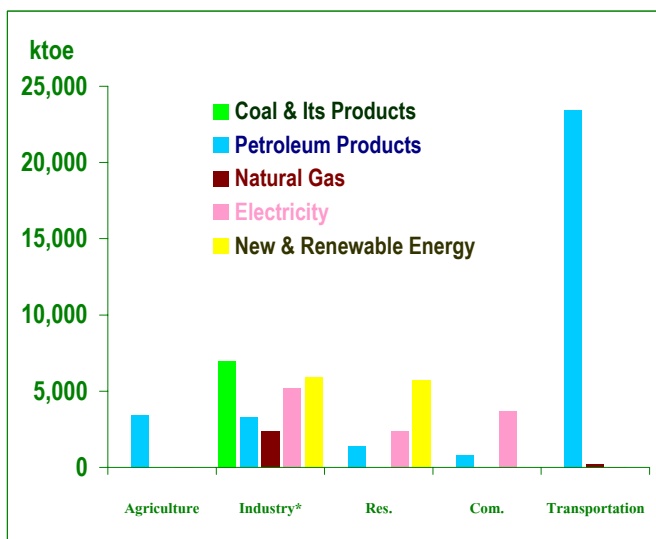
# Consumption

## Final Energy Consumption for Economic Sector by Fuel 2007

| Final Energy Consumption (ktoe) | Agriculture  | Industry*     | Res.         | Com.         | Transportation | Total         |
|---------------------------------|--------------|---------------|--------------|--------------|----------------|---------------|
| Coal & Its Products             | -            | 6,981         | -            | -            | -              | 6,981         |
| Petroleum Products              | 3,425        | 3,266         | 1,435        | 770          | 23,422         | 32,318        |
| Natural Gas                     | -            | 2,386         | -            | -            | 208            | 2,594         |
| Electricity                     | 23           | 5,212         | 2,389        | 3,712        | 12             | 11,348        |
| New & Renewable Energy          | -            | 5,936         | 5,709        | -            | -              | 11,645        |
| <b>Total</b>                    | <b>3,448</b> | <b>23,781</b> | <b>9,533</b> | <b>4,482</b> | <b>23,642</b>  | <b>64,886</b> |

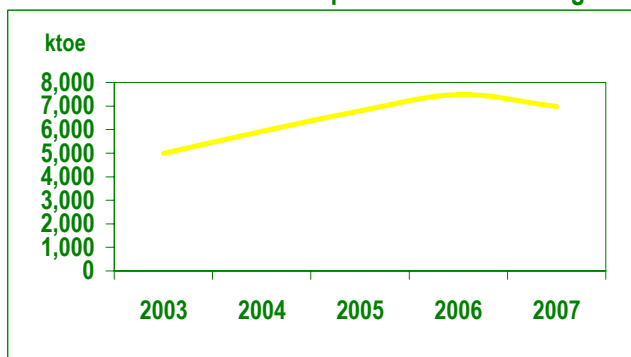
\*Industry = Manufacturing + Mining + Construction

## Shares of Final Energy Consumption for Economic Sector by Fuel 2007

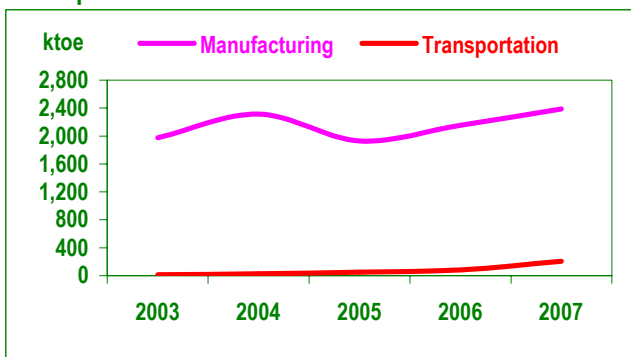


# Consumption

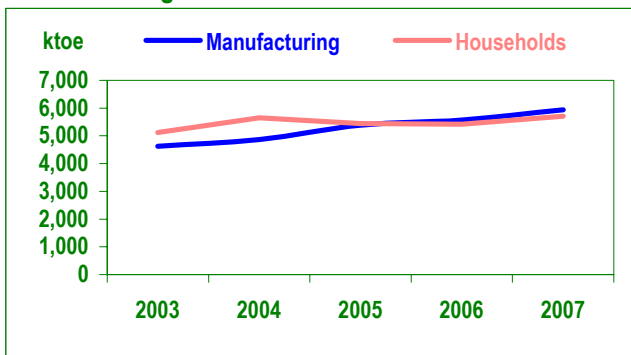
## Coal & Its Products Consumption in Manufacturing



## Natural Gas Consumption in Manufacturing and Transportation



## New & Renewable Energy Consumption in Manufacturing and Households



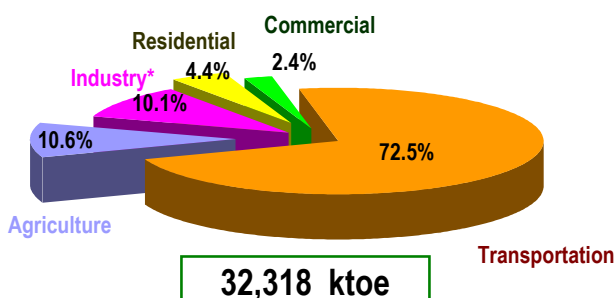
# Consumption

## Petroleum Products Consumption by Economic Sector

| Petroleum Products (ktoe) | 2003          | 2004          | 2005          | 2006          | 2007          |
|---------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>              | <b>30,447</b> | <b>32,684</b> | <b>32,460</b> | <b>31,650</b> | <b>32,318</b> |
| Agriculture               | 3,289         | 3,501         | 3,186         | 3,291         | 3,425         |
| Industry*                 | 4,485         | 4,626         | 3,957         | 3,446         | 3,266         |
| Residential               | 1,045         | 1,046         | 1,309         | 1,310         | 1,435         |
| Commercial                | 717           | 730           | 571           | 705           | 770           |
| Transportation            | 20,911        | 22,781        | 23,437        | 22,898        | 23,422        |

\*Industry = Manufacturing + Mining + Construction

## Shares of Petroleum Products Consumption by Economic Sector 2007



## Petroleum Products Consumption by Economic Sector

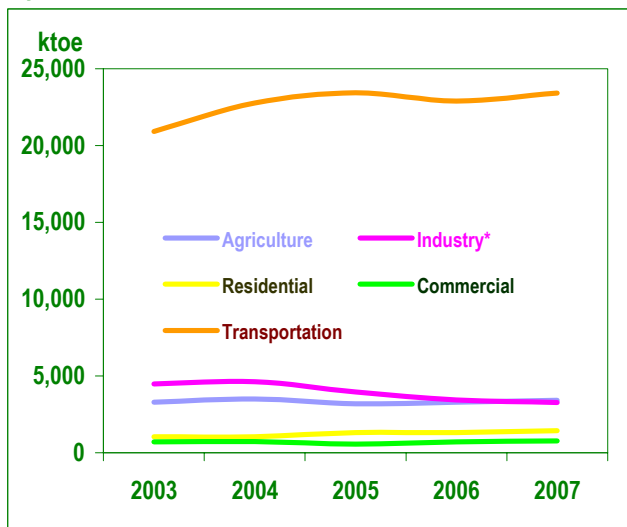
(Physical unit)

| Petroleum Products (million litres) | 2003          | 2004          | 2005          | 2006          | 2007          |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|
| <b>Total</b>                        | <b>37,229</b> | <b>39,859</b> | <b>39,653</b> | <b>38,916</b> | <b>39,961</b> |
| Agriculture                         | 3,827         | 3,982         | 3,707         | 3,827         | 3,984         |
| Industry*                           | 5,135         | 5,300         | 4,587         | 4,060         | 3,940         |
| Residential                         | 1,657         | 1,659         | 2,075         | 2,077         | 2,273         |
| Commercial                          | 1,135         | 1,154         | 904           | 1,118         | 1,222         |
| Transportation                      | 25,475        | 27,764        | 28,380        | 27,834        | 28,542        |

# Consumption

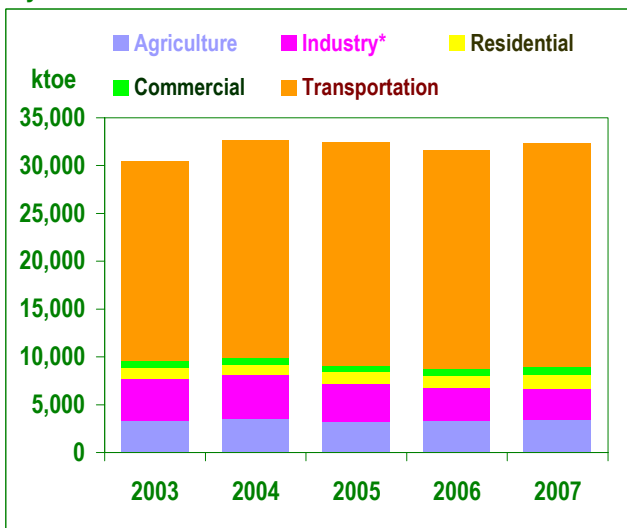
## Trends of Petroleum Products Consumption

by Economic Sector 2003 - 2007



## Shares of Petroleum Products Consumption

by Economic Sector 2003 - 2007



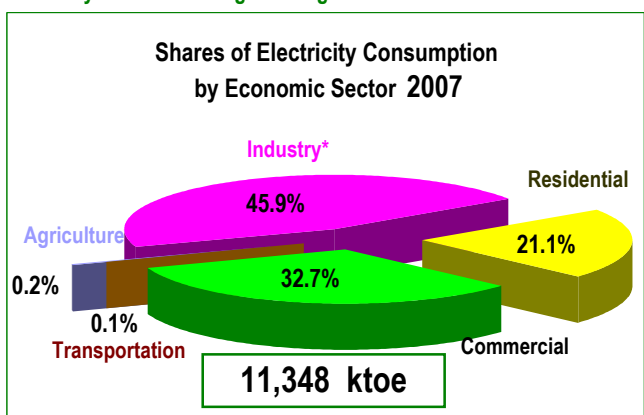
\*Industry = Manufacturing + Mining + Construction

# Consumption

## Electricity Consumption by Economic Sector

| Electricity Consumption (ktoe) | 2003         | 2004         | 2005          | 2006          | 2007          |
|--------------------------------|--------------|--------------|---------------|---------------|---------------|
| <b>Total</b>                   | <b>9,114</b> | <b>9,803</b> | <b>10,330</b> | <b>10,891</b> | <b>11,348</b> |
| Agriculture                    | 19           | 19           | 21            | 21            | 23            |
| Industry*                      | 4,181        | 4,536        | 4,847         | 5,054         | 5,212         |
| Residential                    | 2,002        | 2,108        | 2,182         | 2,301         | 2,389         |
| Commercial                     | 2,909        | 3,136        | 3,275         | 3,510         | 3,712         |
| Transportation                 | 3            | 4            | 5             | 5             | 12            |

\*Industry = Manufacturing + Mining + Construction



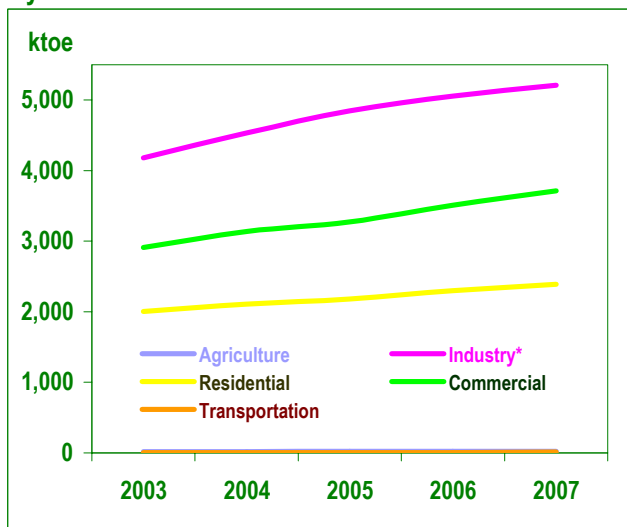
## Electricity Consumption by Economic Sector

(Physical unit)

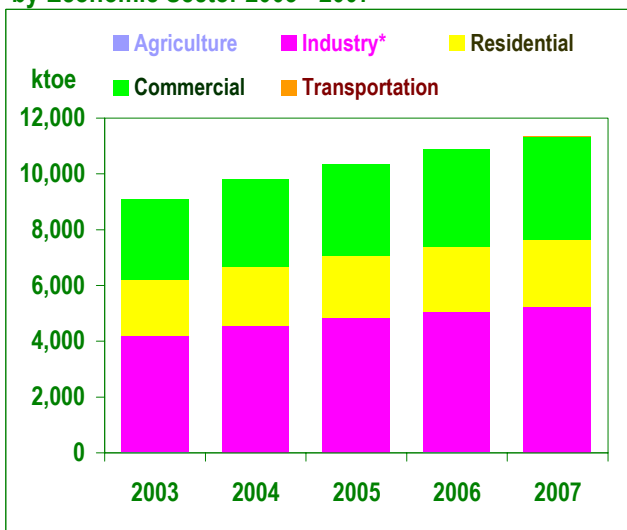
| Electricity Consumption (Gwh) | 2003           | 2004           | 2005           | 2006           | 2007           |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|
| <b>Total</b>                  | <b>106,959</b> | <b>115,044</b> | <b>121,229</b> | <b>127,811</b> | <b>133,178</b> |
| Agriculture                   | 223            | 224            | 245            | 240            | 268            |
| Industry*                     | 49,062         | 53,232         | 56,885         | 59,315         | 61,168         |
| Residential                   | 23,499         | 24,734         | 25,613         | 27,005         | 28,041         |
| Commercial                    | 34,141         | 36,808         | 38,430         | 41,193         | 43,558         |
| Transportation                | 34             | 46             | 56             | 58             | 143            |

# Consumption

## Trends of Electricity Consumption by Economic Sector 2003 - 2007



## Shares of Electricity Consumption by Economic Sector 2003 - 2007



\*Industry = Manufacturing + Mining + Construction

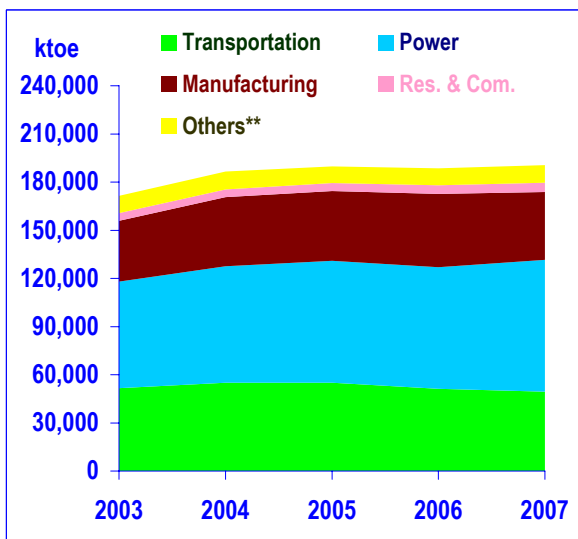
# Emissions

## CO<sub>2</sub> Emissions\*

| CO <sub>2</sub> Emissions<br>(10 <sup>3</sup> ton) | 2003           | 2004           | 2005           | 2006           | 2007           |
|----------------------------------------------------|----------------|----------------|----------------|----------------|----------------|
| <b>Total</b>                                       | <b>171,370</b> | <b>186,593</b> | <b>189,803</b> | <b>188,663</b> | <b>190,655</b> |
| Transportation                                     | 51,626         | 55,029         | 54,986         | 51,212         | 49,530         |
| Power                                              | 66,299         | 72,637         | 75,956         | 75,839         | 82,087         |
| Manufacturing                                      | 38,043         | 42,973         | 43,450         | 45,555         | 42,151         |
| Res. & Com.                                        | 4,675          | 4,713          | 4,988          | 5,345          | 5,848          |
| Others**                                           | 10,727         | 11,241         | 10,423         | 10,712         | 11,039         |

\*Excluding emission from renewable energy and international bunker oil, diesel and jet fuel.

\*\*Including agriculture, construction and mining.



## Energy Balances

Thailand Energy Commodity Account 2006

Unit : physical - unit

| SUPPLY AND CONSUMPTION                | Coal & Its Products   | Crude Oil*              | Natural Gas | Condensate & NGL        | Petroleum Products      | Hydro   | Electricity | New & Renewable and Waste** | Others*** | Black Liquor & Residual Gas | Total |
|---------------------------------------|-----------------------|-------------------------|-------------|-------------------------|-------------------------|---------|-------------|-----------------------------|-----------|-----------------------------|-------|
|                                       | (10 <sup>3</sup> ton) | (10 <sup>6</sup> litre) | (MMscf)     | (10 <sup>6</sup> litre) | (10 <sup>6</sup> litre) | (Gwh)   | (Gwh)       | (10 <sup>3</sup> ton)       | (Gwh)     | (GJ)                        |       |
| Domestic Production                   | 19,001                | 7,585                   | 860,026     | 4,367                   | -                       | 8,125   | -           | 55,013                      | 3         | 10,765,858                  |       |
| Imports                               | 11,157                | 48,126                  | 345,292     | -                       | 1,504                   | -       | 5,159       | 41                          | -         | -                           |       |
| Exports                               | -                     | (3,858)                 | -           | (126)                   | (8,399)                 | -       | (750)       | (2)                         | -         | -                           |       |
| Stock Changes/Statistical Differences | (149)                 | 3,246                   | -           | (455)                   | (505)                   | -       | -           | -                           | -         | -                           |       |
| Total Primary Energy Supply           | 30,009                | 55,099                  | 1,205,318   | 3,786                   | (7,400)                 | 8,125   | 4,409       | 55,052                      | 3         | 10,765,858                  |       |
| Petroleum Refineries                  | -                     | (54,884)                | -           | (705)                   | 45,057                  | -       | -           | -                           | -         | -                           |       |
| NG. Processing Plants                 | -                     | -                       | -           | 743                     | 3,892                   | -       | -           | -                           | -         | -                           |       |
| Power Plants                          | (17,166)              | -                       | (857,103)   | -                       | (2,071)                 | (8,125) | 138,742     | (3,916)                     | (3)       | (10,765,858)                |       |
| Other Transformation                  | -                     | -                       | -           | -                       | 403                     | -       | -           | (16,939)                    | -         | -                           |       |
| Total Transformation                  | (17,166)              | (54,884)                | (857,103)   | 38                      | 47,281                  | (8,125) | 138,742     | (20,855)                    | (3)       | (10,765,858)                |       |
| Own Uses                              | -                     | -                       | (255,799)   | -                       | -                       | -       | (4,160)     | -                           | -         | -                           |       |
| Losses                                | -                     | (215)                   | -           | -                       | -                       | -       | (11,180)    | -                           | -         | -                           |       |
| Total Final Energy Consumption        | 12,843                | -                       | 92,416      | 3,824                   | 39,881                  | -       | 127,811     | 34,197                      | -         | -                           |       |
| Non - Energy Uses                     | -                     | -                       | -           | 3,824                   | 965                     | -       | -           | -                           | -         | -                           |       |
| Final Energy Consumption              | 12,843                | -                       | 92,416      | -                       | 38,916                  | -       | 127,811     | 34,197                      | -         | -                           |       |
| Agriculture                           | -                     | -                       | -           | -                       | 3,827                   | -       | 240         | -                           | -         | -                           |       |
| Industry ****                         | 12,843                | -                       | 88,999      | -                       | 4,060                   | -       | 59,315      | 23,169                      | -         | -                           |       |
| Residential                           | -                     | -                       | -           | -                       | 2,077                   | -       | 27,005      | 11,028                      | -         | -                           |       |
| Commercial                            | -                     | -                       | -           | -                       | 1,118                   | -       | 41,193      | -                           | -         | -                           |       |
| Transportation                        | -                     | -                       | 3,417       | -                       | 27,834                  | -       | 58          | -                           | -         | -                           |       |
| CO <sub>2</sub> emission (unit : Mt)  |                       |                         |             |                         |                         |         |             |                             |           |                             | 189   |

\* Including feedstocks, ethanol and biodiesel.

\*\* Excluding biogas.

\*\*\* Including geothermal, solar cell and wind power, etc.

\*\*\*\* Including manufacturing, mining and construction.

## Energy Balances

Thailand Energy Balance 2006

Unit : ktoe

| SUPPLY AND CONSUMPTION                | Coal & Its Products | Crude Oil* | Natural Gas | Condensate & NGL | Petroleum Products | Hydro   | Electricity | New & Renewable and Waste** | Others*** | Black Liquor & Residual Gas | Total    |
|---------------------------------------|---------------------|------------|-------------|------------------|--------------------|---------|-------------|-----------------------------|-----------|-----------------------------|----------|
| Domestic Production                   | 5,307               | 6,512      | 21,131      | 3,418            | -                  | 1,799   | -           | 17,027                      | 2         | 255                         | 55,451   |
| Imports                               | 7,032               | 41,388     | 8,484       | -                | 1,383              | -       | 440         | 28                          | -         | -                           | 58,755   |
| Exports                               | -                   | (3,318)    | -           | (99)             | (6,834)            | -       | (64)        | (1)                         | -         | -                           | (10,316) |
| Stock Changes/Statistical Differences | (76)                | 2,789      | -           | (356)            | (352)              | -       | -           | -                           | -         | -                           | 2,005    |
| Total Primary Energy Supply           | 12,263              | 47,371     | 29,615      | 2,963            | (5,803)            | 1,799   | 376         | 17,054                      | 2         | 255                         | 105,895  |
| Petroleum Refineries                  | -                   | (47,186)   | -           | (552)            | 37,300             | -       | -           | -                           | -         | -                           | (10,438) |
| NG. Processing Plants                 | -                   | -          | (289) ****  | 582              | 2,453              | -       | -           | -                           | -         | -                           | 2,746    |
| Power Plants                          | (4,774)             | -          | (20,860)    | -                | (1,946)            | (1,799) | 11,822      | (916)                       | (2)       | (255)                       | (18,730) |
| Other Transformation                  | -                   | -          | -           | -                | 254                | -       | -           | (5,145)                     | -         | -                           | (4,891)  |
| Total Transformation                  | (4,774)             | (47,186)   | (21,149)    | 30               | 38,061             | (1,799) | 11,822      | (6,061)                     | (2)       | (255)                       | (31,313) |
| Own Uses                              | -                   | -          | (6,232)     | -                | -                  | -       | (354)       | -                           | -         | -                           | (6,586)  |
| Losses                                | -                   | (185)      | -           | -                | -                  | -       | (953)       | -                           | -         | -                           | (1,138)  |
| Total Final Energy Consumption        | 7,489               | -          | 2,234       | 2,993            | 32,258             | -       | 10,891      | 10,993                      | -         | -                           | 66,858   |
| Non - Energy Uses                     | -                   | -          | -           | 2,993            | 608                | -       | -           | -                           | -         | -                           | 3,601    |
| Final Energy Consumption              | 7,489               | -          | 2,234       | -                | 31,650             | -       | 10,891      | 10,993                      | -         | -                           | 63,257   |
| Agriculture                           | -                   | -          | -           | -                | 3,291              | -       | 21          | -                           | -         | -                           | 3,312    |
| Industry *****                        | 7,489               | -          | 2,152       | -                | 3,446              | -       | 5,054       | 5,570                       | -         | -                           | 23,711   |
| Residential                           | -                   | -          | -           | -                | 1,310              | -       | 2,301       | 5,423                       | -         | -                           | 9,034    |
| Commercial                            | -                   | -          | -           | -                | 705                | -       | 3,510       | -                           | -         | -                           | 4,215    |
| Transportation                        | -                   | -          | 82          | -                | 22,898             | -       | 5           | -                           | -         | -                           | 22,985   |
| CO <sub>2</sub> emission (unit : Mt)  |                     |            |             |                  |                    |         |             |                             |           |                             | 189      |

\*Including feedstocks, ethanol and biodiesel.

\*\*Excluding biogas.

\*\*\*Including geothermal, solar cell and wind power, etc.

\*\*\*\*Statistical Differences from wet and dry of NG.

\*\*\*\*\*Including manufacturing, mining and construction.

## Energy Balances

Thailand Energy Commodity Account 2007

Unit : physical - unit

| SUPPLY AND CONSUMPTION                | Coal & Its Products   | Crude Oil*              | Natural Gas | Condensate & NGL        | Petroleum Products      | Hydro   | Electricity | New & Renewable and Waste** | Others*** | Black Liquor & Residual Gas | Total |
|---------------------------------------|-----------------------|-------------------------|-------------|-------------------------|-------------------------|---------|-------------|-----------------------------|-----------|-----------------------------|-------|
|                                       | (10 <sup>3</sup> ton) | (10 <sup>6</sup> litre) | MMscf       | (10 <sup>6</sup> litre) | (10 <sup>6</sup> litre) | (Gwh)   | (Gwh)       | (10 <sup>3</sup> ton)       | (Gwh)     | (GJ)                        |       |
| Domestic Production                   | 18,239                | 8,057                   | 917,726     | 4,575                   | -                       | 8,114   | -           | 59,572                      | 3         | 12,334,604                  |       |
| Imports                               | 14,271                | 46,333                  | 360,985     | -                       | 932                     | -       | 4,491       | 31                          | -         | -                           |       |
| Exports                               | (0)                   | (3,034)                 | -           | (130)                   | (7,747)                 | -       | (926)       | (40)                        | -         | -                           |       |
| Stock Changes/Statistical Differences | (118)                 | 4,037                   | -           | (624)                   | (884)                   | -       | -           | -                           | -         | -                           |       |
| Total Primary Energy Supply           | 32,392                | 55,393                  | 1,278,711   | 3,821                   | (7,699)                 | 8,114   | 3,565       | 59,563                      | 3         | 12,334,604                  |       |
| Petroleum Refineries                  | -                     | (55,185)                | -           | (376)                   | 44,905                  | -       | -           | -                           | -         | -                           |       |
| NG. Processing Plants                 | -                     | -                       | -           | 789                     | 4,414                   | -       | -           | -                           | -         | -                           |       |
| Power Plants                          | (20,549)              | -                       | (877,862)   | -                       | (967)                   | (8,114) | 143,378     | (4,995)                     | (3)       | (12,334,604)                |       |
| Other Transformation                  | -                     | -                       | -           | -                       | 443                     | -       | -           | (17,904)                    | -         | -                           |       |
| Total Transformation                  | (20,549)              | (55,185)                | (877,862)   | 413                     | 48,795                  | (8,114) | 143,378     | (22,899)                    | (3)       | (12,334,604)                |       |
| Own Uses                              | -                     | -                       | (293,556)   | -                       | -                       | -       | (4,496)     | -                           | -         | -                           |       |
| Losses                                | -                     | (208)                   | -           | -                       | -                       | -       | (9,269)     | -                           | -         | -                           |       |
| Total Final Energy Consumption        | 11,843                | -                       | 107,293     | 4,234                   | 41,096                  | -       | 133,178     | 36,664                      | -         | -                           |       |
| Non - Energy Uses                     | -                     | -                       | -           | 4,234                   | 1,135                   | -       | -           | -                           | -         | -                           |       |
| Final Energy Consumption              | 11,843                | -                       | 107,293     | -                       | 39,961                  | -       | 133,178     | 36,664                      | -         | -                           |       |
| Agriculture                           | -                     | -                       | -           | -                       | 3,984                   | -       | 268         | -                           | -         | -                           |       |
| Industry ****                         | 11,843                | -                       | 98,677      | -                       | 3,940                   | -       | 61,168      | 25,028                      | -         | -                           |       |
| Residential                           | -                     | -                       | -           | -                       | 2,273                   | -       | 28,041      | 11,636                      | -         | -                           |       |
| Commercial                            | -                     | -                       | -           | -                       | 1,222                   | -       | 43,558      | -                           | -         | -                           |       |
| Transportation                        | -                     | -                       | 8,616       | -                       | 28,542                  | -       | 143         | -                           | -         | -                           |       |
| CO <sub>2</sub> emission (unit : Mt)  |                       |                         |             |                         |                         |         |             |                             |           |                             | 191   |

\*Including feedstocks, ethanol and biodiesel.

\*\*Excluding biogas.

\*\*\*Including geothermal, solar cell and wind power, etc.

\*\*\*\*Including manufacturing, mining and construction.

(0) Less than 0.5.

## Energy Balances

| Thailand Energy Balance 2007          |                     |            |             |                  |                    |         |             |                             |           |                             | Unit : ktoe |
|---------------------------------------|---------------------|------------|-------------|------------------|--------------------|---------|-------------|-----------------------------|-----------|-----------------------------|-------------|
| SUPPLY AND CONSUMPTION                | Coal & Its Products | Crude Oil* | Natural Gas | Condensate & NGL | Petroleum Products | Hydro   | Electricity | New & Renewable and Waste** | Others*** | Black Liquor & Residual Gas | Total       |
| Domestic Production                   | 4,912               | 6,907      | 22,549      | 3,581            | -                  | 1,797   | -           | 18,227                      | 2         | 292                         | 58,267      |
| Imports                               | 8,947               | 39,846     | 8,869       | -                | 825                | -       | 383         | 21                          | -         | -                           | 58,891      |
| Exports                               | (0)                 | (2,607)    | -           | (102)            | (6,549)            | -       | (79)        | (27)                        | -         | -                           | (9,364)     |
| Stock Changes/Statistical Differences | 7                   | 3,472      | -           | (488)            | (685)              | -       | -           | -                           | -         | -                           | 2,306       |
| Total Primary Energy Supply           | 13,866              | 47,618     | 31,418      | 2,991            | (6,409)            | 1,797   | 304         | 18,221                      | 2         | 292                         | 110,100     |
| Petroleum Refineries                  | -                   | (47,439)   | -           | (295)            | 37,290             | -       | -           | -                           | -         | -                           | (10,444)    |
| NG. Processing Plants                 | -                   | -          | (304) ****  | 618              | 2,782              | -       | -           | -                           | -         | -                           | 3,096       |
| Power Plants                          | (6,885)             | -          | (21,368)    | -                | (909)              | (1,797) | 12,217      | (1,138)                     | (2)       | (292)                       | (20,174)    |
| Other Transformation                  | -                   | -          | -           | -                | 279                | -       | -           | (5,438)                     | -         | -                           | (5,159)     |
| Total Transformation                  | (6,885)             | (47,439)   | (21,672)    | 323              | 39,442             | (1,797) | 12,217      | (6,576)                     | (2)       | (292)                       | (32,681)    |
| Own Uses                              | -                   | -          | (7,152)     | -                | -                  | -       | (383)       | -                           | -         | -                           | (7,535)     |
| Losses                                | -                   | (179)      | -           | -                | -                  | -       | (790)       | -                           | -         | -                           | (969)       |
| Total Final Energy Consumption        | 6,981               | -          | 2,594       | 3,314            | 33,033             | -       | 11,348      | 11,645                      | -         | -                           | 68,915      |
| Non - Energy Uses                     | -                   | -          | -           | 3,314            | 715                | -       | -           | -                           | -         | -                           | 4,029       |
| Final Energy Consumption              | 6,981               | -          | 2,594       | -                | 32,318             | -       | 11,348      | 11,645                      | -         | -                           | 64,886      |
| Agriculture                           | -                   | -          | -           | -                | 3,425              | -       | 23          | -                           | -         | -                           | 3,448       |
| Industry *****                        | 6,981               | -          | 2,386       | -                | 3,266              | -       | 5,212       | 5,936                       | -         | -                           | 23,781      |
| Residential                           | -                   | -          | -           | -                | 1,435              | -       | 2,389       | 5,709                       | -         | -                           | 9,533       |
| Commercial                            | -                   | -          | -           | -                | 770                | -       | 3,712       | -                           | -         | -                           | 4,482       |
| Transportation                        | -                   | -          | 208         | -                | 23,422             | -       | 12          | -                           | -         | -                           | 23,642      |
| CO2 emission (unit : Mt)              |                     |            |             |                  |                    |         |             |                             |           |                             | 191         |

\*Including feedstocks, ethanol and biodiesel.

\*\*Excluding biogas.

\*\*\*Including geothermal, solar cell and wind power, etc.

\*\*\*\*Statistical Differences from wet and dry of NG.

\*\*\*\*\*Including manufacturing, mining and construction.

# Imported Prices

## Average Prices of Energy Imports

| TYPE                            | 2003   | 2004   | 2005   | 2006   | 2007   |
|---------------------------------|--------|--------|--------|--------|--------|
| <b>Crude Oil</b>                |        |        |        |        |        |
| 1,000 Baht / toe                | 8.93   | 11.18  | 15.61  | 18.19  | 17.95  |
| US.\$ / toe                     | 214.41 | 276.93 | 386.79 | 478.41 | 517.39 |
| US.\$ / bbl                     | 29.32  | 37.86  | 52.89  | 65.41  | 70.77  |
| <b>Natural Gas</b>              |        |        |        |        |        |
| 1,000 Baht / toe                | 5.66   | 5.32   | 6.91   | 8.24   | 7.94   |
| US.\$ / toe                     | 136.04 | 131.74 | 171.32 | 216.61 | 228.80 |
| US.\$ / 1,000 scf               | 3.34   | 3.24   | 4.21   | 5.32   | 5.62   |
| <b>Petroleum Products</b>       |        |        |        |        |        |
| 1,000 Baht / toe                | 10.36  | 10.40  | 14.83  | 17.01  | 18.68  |
| US.\$ / toe                     | 248.95 | 257.58 | 367.39 | 447.33 | 538.41 |
| US.\$ / bbl                     | 34.06  | 36.10  | 53.43  | 65.38  | 75.77  |
| <b>Coal &amp; Its Products*</b> |        |        |        |        |        |
| 1,000 Baht / toe                | 2.07   | 2.57   | 2.84   | 2.66   | 2.99   |
| US.\$ / toe                     | 49.63  | 63.54  | 70.48  | 70.03  | 86.10  |
| US.\$ / ton                     | 31.44  | 40.05  | 44.49  | 44.13  | 53.18  |
| <b>Electricity</b>              |        |        |        |        |        |
| 1,000 Baht / toe                | 18.47  | 19.53  | 19.18  | 19.01  | 19.68  |
| US.\$ / toe                     | 443.68 | 483.78 | 475.30 | 499.82 | 567.42 |
| US.\$ / kWh                     | 1.57   | 1.66   | 1.63   | 1.62   | 1.68   |

\*Average from anthracite, bituminous, coke, briquettes, and other coal.

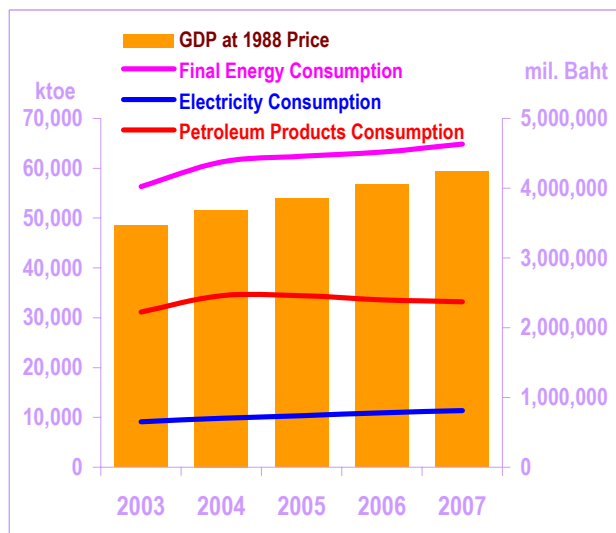
## Energy and Economy

Final Energy Consumption, Electricity Consumption,  
Petroleum Products Consumption and GDP

| Year | Final Energy<br>Consump-<br>tion<br>(ktoe) | Electricity<br>Consump-<br>tion<br>(ktoe) | Petroleum<br>Products<br>Consumption*<br>(ktoe) | GDP<br>at 1988<br>Prices<br>(mil. Baht) |
|------|--------------------------------------------|-------------------------------------------|-------------------------------------------------|-----------------------------------------|
| 2003 | 56,289                                     | 9,114                                     | 31,156                                          | 3,468,166                               |
| 2004 | 61,262                                     | 9,803                                     | 34,399                                          | 3,688,189                               |
| 2005 | 62,397                                     | 10,330                                    | 34,427                                          | 3,855,111                               |
| 2006 | 63,257                                     | 10,891                                    | 33,596                                          | 4,052,006 <sup>D</sup>                  |
| 2007 | 64,886                                     | 11,348                                    | 33,227                                          | 4,244,607 <sup>D</sup>                  |

\*Including petroleum products consumption for electricity generation.

## Relations of Energy and Economy

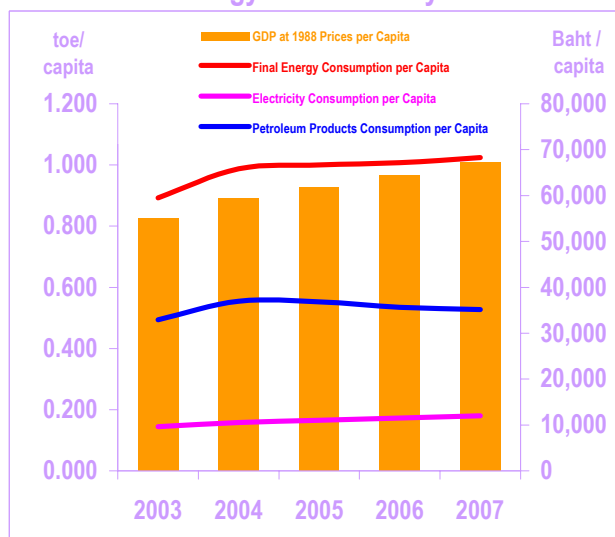


# Energy and Economy

## Energy Consumption Per Capita

| Year | GDP<br>at 1988<br>Prices<br>per Capita<br>(Baht/capita) | Final Energy<br>Consumption<br>per Capita<br>(toe/capita) | Electricity<br>Consumption<br>per Capita<br>(toe/capita) | Petroleum<br>Products<br>Consumption<br>per Capita<br>(toe/capita) |
|------|---------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------|
| 2003 | 54,980                                                  | 0.892                                                     | 0.144                                                    | 0.494                                                              |
| 2004 | 59,513                                                  | 0.988                                                     | 0.158                                                    | 0.555                                                              |
| 2005 | 61,763                                                  | 1.000                                                     | 0.165                                                    | 0.552                                                              |
| 2006 | 64,493                                                  | 1.007                                                     | 0.173                                                    | 0.535                                                              |
| 2007 | 67,334                                                  | 1.024                                                     | 0.180                                                    | 0.527                                                              |

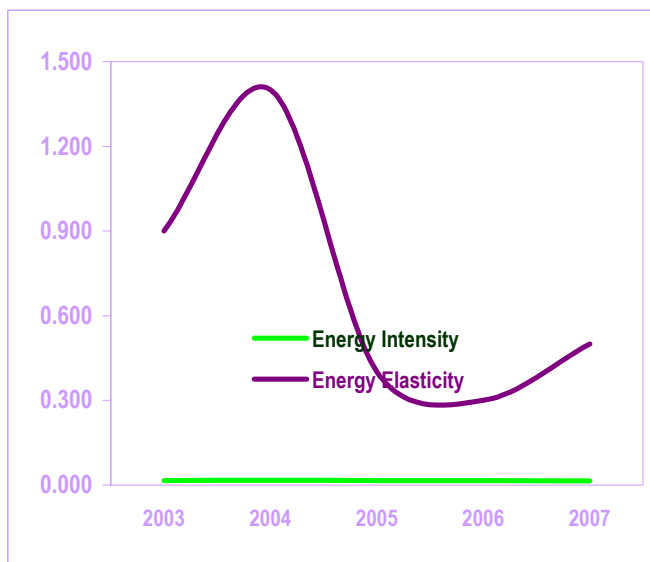
## Relations of Energy and Economy



# Energy and Economy

## Energy Intensity & Elasticity

| Year | GDP<br>at 1988<br>Prices<br>(million<br>Baht) | Final<br>Energy<br>Consump-<br>tion<br>(ktoe) | Energy<br>Intensity<br>(ktoe<br>/ million<br>Baht) | Energy<br>Elasticity | %<br>Change<br>of<br>GDP | %<br>Change<br>of<br>Consump-<br>tion |
|------|-----------------------------------------------|-----------------------------------------------|----------------------------------------------------|----------------------|--------------------------|---------------------------------------|
| 2003 | 3,468,166                                     | 56,289                                        | 0.016                                              | 0.9                  | 7.1                      | 6.2                                   |
| 2004 | 3,688,189                                     | 61,262                                        | 0.017                                              | 1.4                  | 6.3                      | 8.8                                   |
| 2005 | 3,855,111 <sup>D</sup>                        | 62,397                                        | 0.016                                              | 0.4                  | 4.5                      | 1.9                                   |
| 2006 | 4,052,006 <sup>D</sup>                        | 63,257                                        | 0.016                                              | 0.3                  | 5.1                      | 1.4                                   |
| 2007 | 4,244,607 <sup>D</sup>                        | 64,886                                        | 0.015                                              | 0.5                  | 4.8                      | 2.6                                   |



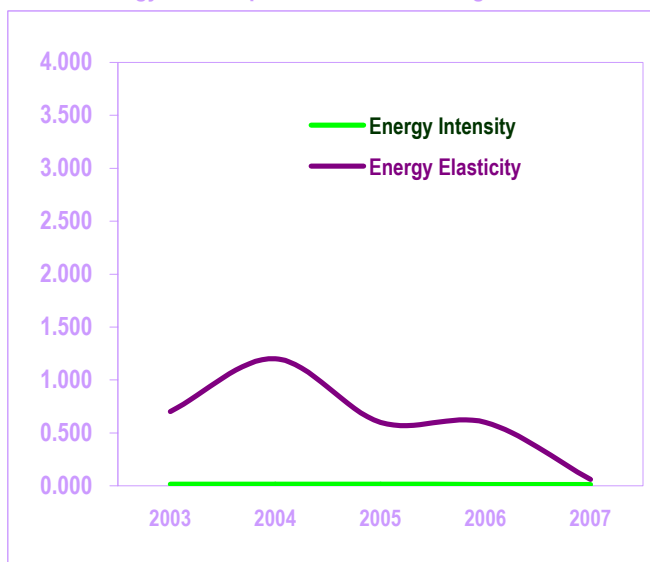
# Energy and Economy

## Energy Intensity & Elasticity (Manufacturing)

| Year | GDP<br>at 1988<br>Prices*<br>(million<br>Baht) | Final<br>Energy<br>Consump-<br>tion**<br>(ktoe) | Energy<br>Intensity<br>(ktoe<br>/ million<br>Baht) | Energy<br>Elasticity | %<br>Change<br>of<br>GDP* | %<br>Change<br>of<br>Consump-<br>tion** |
|------|------------------------------------------------|-------------------------------------------------|----------------------------------------------------|----------------------|---------------------------|-----------------------------------------|
| 2003 | 1,477,732                                      | 20,255                                          | 0.014                                              | 0.7                  | 10.7                      | 7.0                                     |
| 2004 | 1,595,965                                      | 22,263                                          | 0.014                                              | 1.2                  | 8.0                       | 9.9                                     |
| 2005 | 1,682,590 <sup>D</sup>                         | 22,920                                          | 0.014                                              | 0.6                  | 5.4                       | 3.0                                     |
| 2006 | 1,778,837 <sup>D</sup>                         | 23,711                                          | 0.013                                              | 0.6                  | 5.7                       | 3.5                                     |
| 2007 | 1,875,494 <sup>D</sup>                         | 23,781                                          | 0.013                                              | 0.1                  | 5.4                       | 0.3                                     |

\*GDP at 1988 prices for Manufacturing.

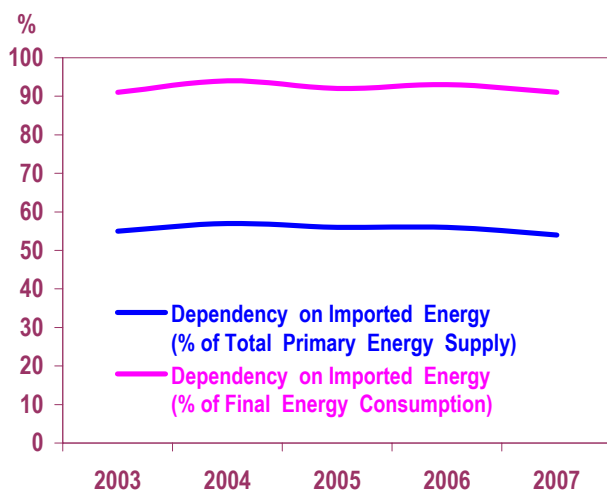
\*\* Final Energy Consumption for Manufacturing.



# Energy Indicators

## Proportion of Imported Energy Dependency

| Year | Total Primary Energy Supply<br>(ktoe) | Final Energy Consumption<br>(ktoe) | Energy Imports<br>(ktoe) | Dependency on Imported Energy<br>(% of Total Primary Energy Supply)<br>(%) | Dependency on Imported Energy<br>(% of Final Energy Consumption)<br>(%) |
|------|---------------------------------------|------------------------------------|--------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 2003 | 92,491                                | 56,289                             | 51,316                   | 55                                                                         | 91                                                                      |
| 2004 | 100,501                               | 61,262                             | 57,714                   | 57                                                                         | 94                                                                      |
| 2005 | 103,362                               | 62,397                             | 57,333                   | 56                                                                         | 92                                                                      |
| 2006 | 105,899                               | 63,257                             | 58,755                   | 56                                                                         | 93                                                                      |
| 2007 | 110,106                               | 64,886                             | 58,891                   | 54                                                                         | 91                                                                      |



## Energy Indicators

### Energy Values

| Energy Values<br>(thousand mil. Baht)     | 2003  | 2004  | 2005  | 2006  | 2007  |
|-------------------------------------------|-------|-------|-------|-------|-------|
| 1. Energy Imports                         | 407   | 561   | 753   | 873   | 835   |
| Petroleum                                 | 394   | 543   | 731   | 846   | 801   |
| Coal & Its Products                       | 9     | 12    | 15    | 19    | 26    |
| Electricity                               | 4     | 6     | 7     | 8     | 8     |
| New & Renewable Energy                    | 0     | 0     | 0     | 0     | 0     |
| 2. Energy Exports                         | 78    | 110   | 154   | 197   | 177   |
| Petroleum                                 | 77    | 109   | 153   | 195   | 175   |
| Electricity                               | 1     | 1     | 1     | 2     | 2     |
| New & Renewable Energy                    | 0     | 0     | 0     | 0     | 0     |
| 3. Net Energy Imports                     | 329   | 451   | 599   | 676   | 658   |
| 4. Commodity Imports                      | 3,139 | 3,801 | 4,754 | 4,943 | 4,872 |
| 5. Commodity Exports                      | 3,326 | 3,875 | 4,439 | 4,937 | 5,255 |
| 6. GDP (at Current Market Prices)         | 5,917 | 6,489 | 7,096 | 7,830 | 8,485 |
| 7. Energy Import Value as a Percentage of |       |       |       |       |       |
| GDP                                       | 6.9   | 8.6   | 10.6  | 11.1  | 9.8   |
| Commodity Import                          | 13.0  | 14.8  | 15.8  | 17.7  | 17.1  |
| Commodity Export                          | 12.2  | 14.5  | 17.0  | 17.7  | 15.9  |
| 8. Final Energy Consumption Value         | 849   | 970   | 1,184 | 1,357 | 1,383 |

Note : Data shown as "0" means figure is less than 0.5.

# Energy Indicators

## Key Energy Indicators

|                                                 | 2003    | 2004    | 2005      | 2006      | 2007      |
|-------------------------------------------------|---------|---------|-----------|-----------|-----------|
| 1. Primary Energy Supply (ktoe)                 | 92,491  | 100,501 | 103,362   | 105,899   | 110,106   |
| Growth(%)                                       | 7.7     | 8.7     | 2.8       | 2.4       | 4.0       |
| Per capita(ktoe/capita)                         | 1.5     | 1.6     | 1.7       | 1.7       | 1.8       |
| 2. Final Energy Consumption (ktoe)              | 56,289  | 61,262  | 62,397    | 63,257    | 64,886    |
| Growth(%)                                       | 6.2     | 8.8     | 1.9       | 1.4       | 2.6       |
| Per capita(ktoe/capita)                         | 0.9     | 1.0     | 1.0       | 1.0       | 1.0       |
| 3. GDP at 1988 prices (thousand mil. Baht)      | 3,468   | 3,688   | 3,855     | 4,052     | 4,244     |
| Growth(%)                                       | 7.1     | 6.3     | 4.5       | 5.1       | 4.8       |
| Per capita(Baht/capita)                         | 54,978  | 59,510  | 61,761    | 64,493    | 67,325    |
| 4. Petroleum Products (million litres)          | 37,229  | 39,859  | 39,653    | 38,916    | 39,961    |
| Growth(%)                                       | 5.7     | 7.1     | (0.5)     | (1.9)     | 2.7       |
| Per capita(litres/capita)                       | 590     | 643     | 635       | 619       | 634       |
| 5. Electricity (Gwh)                            | 106,959 | 115,044 | 121,229   | 127,811   | 133,178   |
| Growth(%)                                       | 6.8     | 7.6     | 5.4       | 5.4       | 4.2       |
| Per capita(kwh/capita)                          | 1,696   | 1,856   | 1,942     | 2,034     | 2,113     |
| 6. Value of Net Energy Imports(mil. Baht)       | 329,298 | 451,182 | 599,705   | 676,869   | 658,175   |
| Growth(%)                                       | 23.5    | 37.0    | 32.9      | 12.9      | (2.8)     |
| Per capita(Baht/capita)                         | 5,221   | 7,280   | 9,607     | 10,773    | 10,441    |
| 7. Value of Final Energy Consumption(mil. Baht) | 848,669 | 969,953 | 1,184,407 | 1,357,411 | 1,382,692 |
| Growth(%)                                       | 11.8    | 14.3    | 22.1      | 14.6      | 1.9       |
| Per capita(Baht/capita)                         | 13,454  | 15,651  | 18,975    | 21,605    | 21,934    |
| 8. Energy Intensity (ktoe / mil. Baht)          | 0.016   | 0.017   | 0.016     | 0.016     | 0.015     |
| 9. Energy Elasticity                            | 0.912   | 1.419   | 0.422     | 0.280     | 0.553     |
| 10. Populations(mil. inhabitants)               | 63,080  | 61,973  | 62,418    | 62,829    | 63,038    |

## International Comparisons

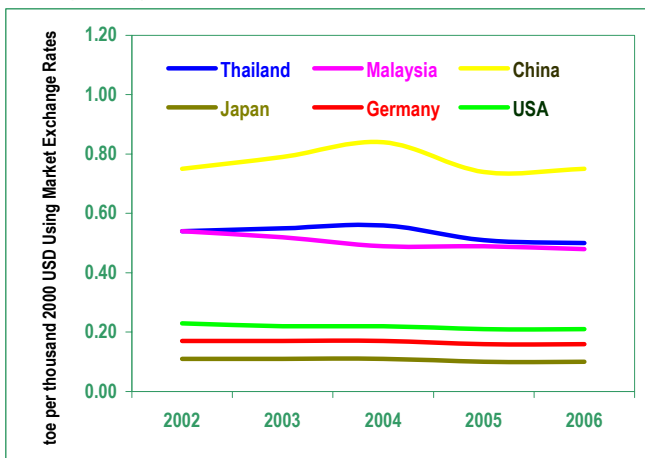
### International Comparisons 2006

|                                                             | Thailand | Malaysia | China   | Japan   | Germany | USA      |
|-------------------------------------------------------------|----------|----------|---------|---------|---------|----------|
| Population<br>mil.Inhabitants                               | 63.4     | 26.1     | 1,319.0 | 127.8   | 82.4    | 299.8    |
| Gross Domestic<br>Products (GDP)<br>in bil 2000 USD         | 164.9    | 119.1    | 2,315.0 | 5,087.1 | 2,011.2 | 11,265.2 |
| Primary Energy<br>Consumption<br>Mtoe                       | 82.7     | 58.1     | 1,729.8 | 522.3   | 329.5   | 2,322.3  |
| Primary Energy<br>Consumption/GDP<br>toe/ thousand 2000 USD | 0.50     | 0.48     | 0.75    | 0.10    | 0.16    | 0.21     |
| Primary Energy<br>Consumption<br>toe/capita                 | 1.3      | 2.2      | 1.3     | 4.1     | 4.0     | 7.7      |
| Electricity<br>Consumption<br>kWh/capita                    | 2,080.0  | 3,388.0  | 2,060.0 | 8,220.0 | 7,175.0 | 13,515.0 |
| CO <sub>2</sub> Emission<br>tons/capita                     | 3.4      | 5.9      | 4.3     | 9.5     | 10.0    | 19.0     |

Source : IEA's Key World Energy Statistics 2008

Bp Statistical Review of World Energy 2008

### Primary Energy Consumption per USD of GDP



# Conversion Factors

| TYPE OF ENERGY AND FUEL  |                    | UNIT                     | toe/ 10 <sup>6</sup> unit |
|--------------------------|--------------------|--------------------------|---------------------------|
| <b>COMMERCIAL ENERGY</b> |                    |                          |                           |
| 1.                       | Crude Oil          | litre                    | 860.00                    |
| 2.                       | Condensate         | litre                    | 782.72                    |
| 3.                       | Natural Gas        | scf.                     | 24.18                     |
| 4.                       | Petroleum Products |                          |                           |
| 4.1                      | LPG                | litre                    | 630.14                    |
| 4.2                      | Gasoline           | litre                    | 745.07                    |
| 4.3                      | Kerosene           | litre                    | 817.40                    |
| 4.4                      | Aviation Fuel      | litre                    | 817.40                    |
| 4.5                      | Diesel             | litre                    | 861.98                    |
| 4.6                      | Fuel Oil           | litre                    | 941.24                    |
| 4.7                      | Bitumen            | litre                    | 974.93                    |
| 5.                       | Electricity        | kWh                      | 85.21                     |
| 6.                       | Coal (Import)      | kg.                      | 624.19                    |
| 7.                       | Coke               | kg.                      | 653.92                    |
| 8.                       | Anthracite         | kg.                      | 743.09                    |
| 9.                       | Lignite            | kg.                      | 247.70                    |
| <b>RENEWABLE ENERGY</b>  |                    |                          |                           |
| 1.                       | Fuel Wood          | kg.                      | 378.48                    |
| 2.                       | Charcoal           | kg.                      | 683.64                    |
| 3.                       | Paddy Husk         | kg.                      | 340.83                    |
| 4.                       | Bagasse            | kg.                      | 178.34                    |
| 5.                       | Garbage            | kg.                      | 114.93                    |
| 6.                       | Saw Dust           | kg.                      | 257.60                    |
| 7.                       | Agricultural Waste | kg.                      | 300.21                    |
| <b>General</b>           |                    |                          |                           |
| 1 kcal                   | =                  | 4186                     | Joules                    |
|                          | =                  | 3.968                    | Btu                       |
| 1 toe                    | =                  | 10.093                   | Gcal                      |
|                          | =                  | 42.244                   | GJ                        |
|                          | =                  | 40.047 x 10 <sup>6</sup> | Btu                       |
| 1 barrel                 | =                  | 158.99                   | Litres                    |

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