

THAILAND



ENERGY



STATISTICS

2009

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

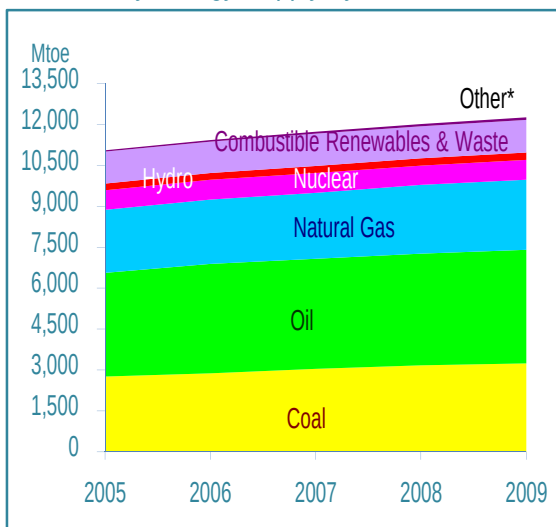
General Information on Thailand 2009



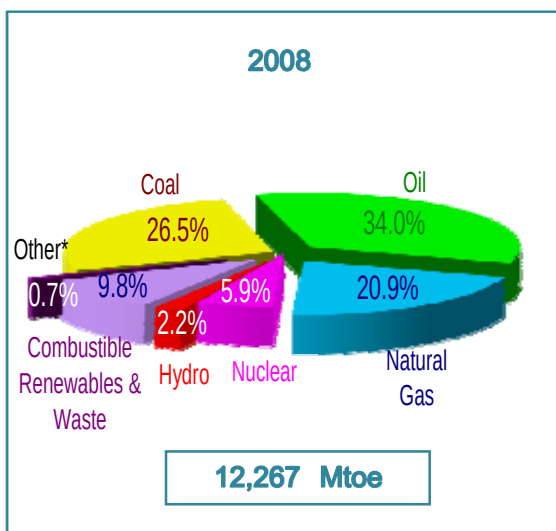
Area	:	513,115 km ²
Population	:	63,525 thousand
Number of Provinces	:	76
Number of Households	:	21,143,975
Average Size of Households	:	3.3 persons
GDP (1988 Prices)	:	4,262 10 ⁹ Baht
GDP Growth	:	2.3 %
GDP per capita	:	67,092 Baht/capita
GDP per household	:	201,372 Baht/household
Export	:	5,197 10 ⁹ Baht
Import	:	4,605 10 ⁹ Baht
Currency	:	1 USD = 34.47 Baht

World Energy

Total Primary Energy Supply by Fuel



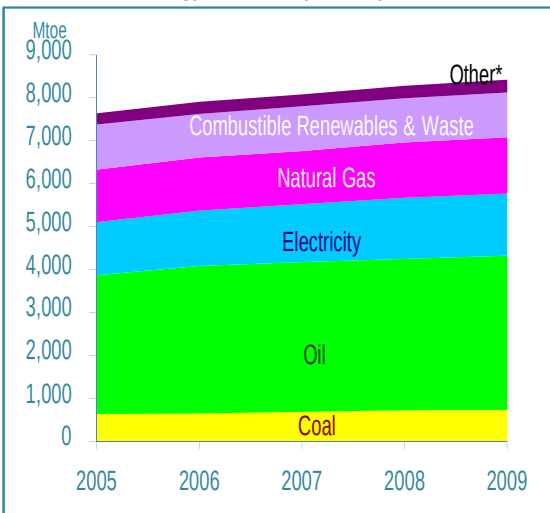
Source : IEA's Key World Energy Statistics 2010



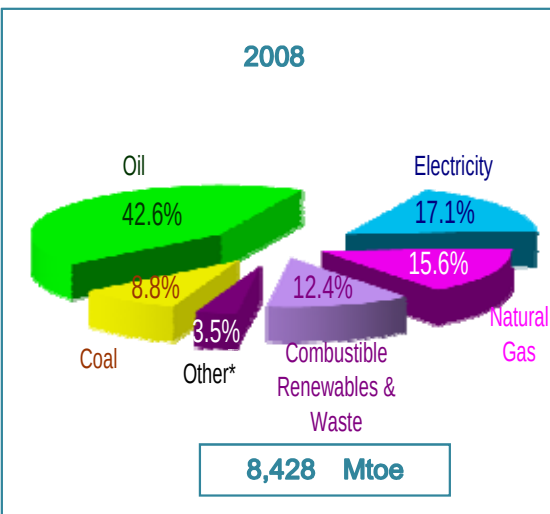
* Other includes geothermal, solar, wind and heat, etc.

World Energy

Total Final Energy Consumption by Fuel



Source : IEA's Key World Energy Statistics 2010



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

Production

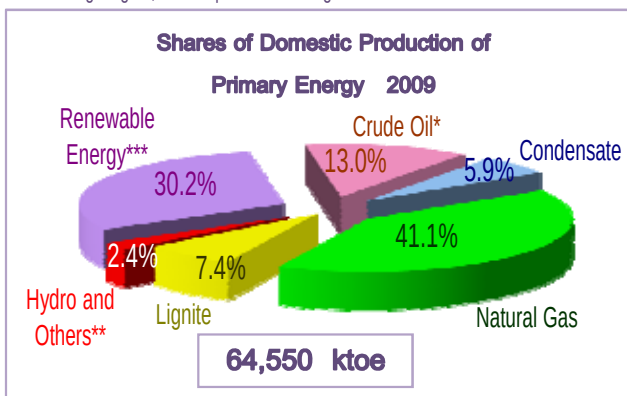
Domestic Production of Primary Energy

Domestic Production of Primary Energy (ktoe)	2005	2006	2007	2008	2009
Total	53,369	55,196	57,979	62,414	64,550
Commercial Energy	36,712	38,169	39,752	43,135	45,045
Crude Oil*	5,754	6,512	6,911	7,946	8,367
Condensate	3,156	3,418	3,581	3,900	3,792
Natural Gas	20,534	21,131	22,549	24,969	26,525
Lignite	5,983	5,307	4,912	4,743	4,775
Hydro and Others**	1,285	1,801	1,799	1,577	1,586
Renewable Energy***	16,657	17,027	18,227	19,279	19,505

*Including feedstocks, ethanol and biodiesel.

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

***Excluding biogas, black liquor & residual gas.



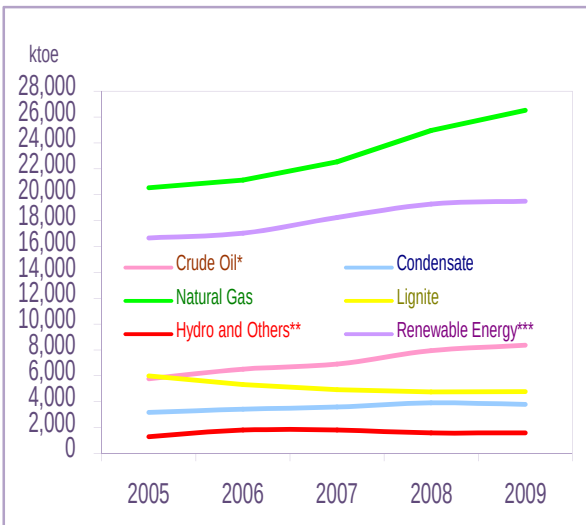
Domestic Production of Primary Energy

(Physical unit)

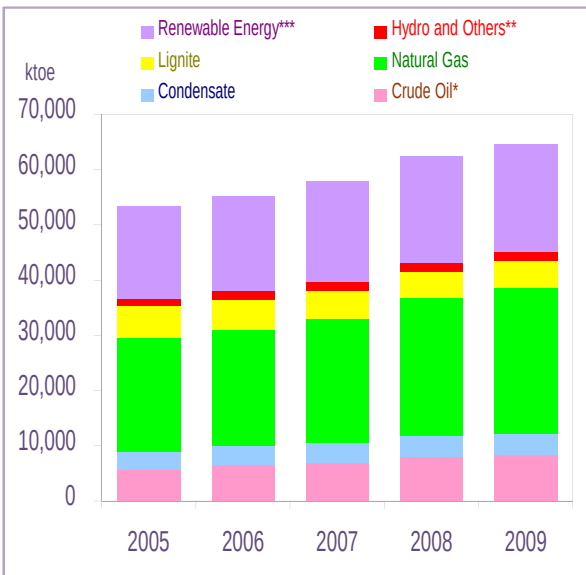
Domestic Production of Primary Energy	2005	2006	2007	2008	2009
Commercial Energy					
Crude Oil* (mil. litres)	6,700	7,585	8,062	9,282	9,781
Condensate (mil. litres)	4,032	4,367	4,575	4,983	4,845
Natural Gas (MMscf)	835,743	860,026	917,726	1,016,238	1,079,562
Lignite (10 ³ ton)	20,878	19,001	18,239	17,982	17,786
Hydro and Others** (Gwh)	5,800	8,128	8,117	7,118	7,160
Renewable Energy*** (10 ³ ton)	54,880	55,013	59,572	63,352	64,665

Production

Trends of Domestic Production of Primary Energy 2005 - 2009



Shares of Domestic Production of Primary Energy 2005 - 2009



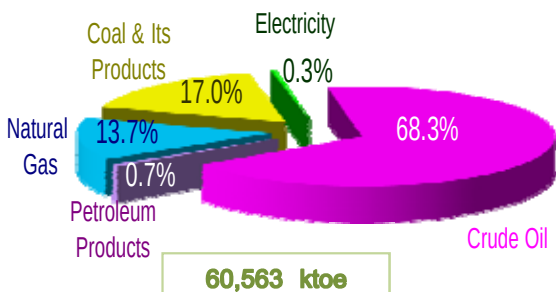
Imports & Exports

Energy Imports

Energy Imports* (ktoe)	2005	2006	2007	2008	2009
Commercial Energy	57,311	58,727	58,870	59,404	60,563
Crude Oil	41,308	41,388	39,846	40,516	41,362
Petroleum Products	1,980	1,383	825	364	429
Natural Gas	8,236	8,484	8,869	8,261	8,294
Coal & Its Products	5,410	7,032	8,947	10,026	10,270
Electricity	377	440	383	237	208

*Excluding renewable energy.

Shares of Energy Imports 2009



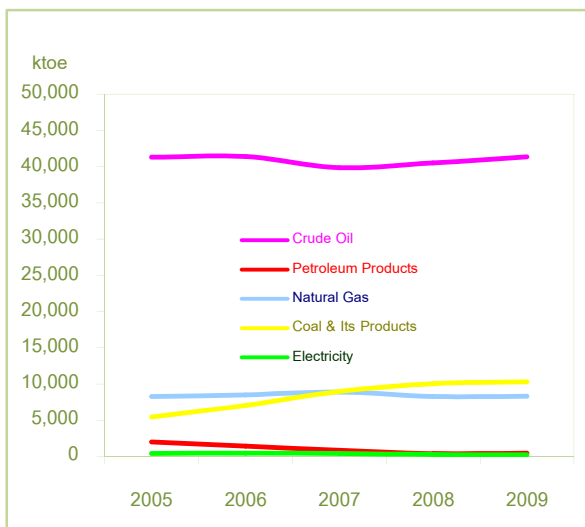
Energy Imports

(Physical unit)

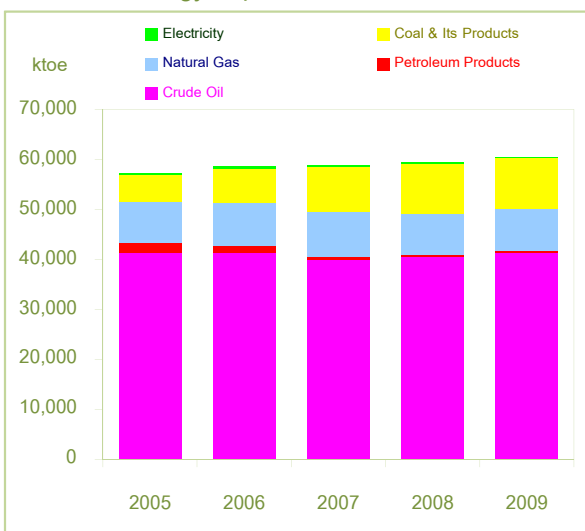
Energy Imports*	2005	2006	2007	2008	2009
Commercial Energy					
Crude Oil (mil. litres)	48,033	48,126	46,333	47,112	48,095
Petroleum Products (mil. litres)	2,165	1,504	932	404	493
Natural Gas (MMscf)	335,188	345,292	360,985	336,230	337,563
Coal & Its Products (10 ³ ton)	8,572	11,157	14,271	16,012	16,317
Electricity (Gwh)	4,419	5,159	4,491	2,785	2,439

Imports & Exports

Trends of Energy Imports 2005 - 2009



Shares of Energy Imports 2005 - 2009



Imports & Exports

Energy Exports

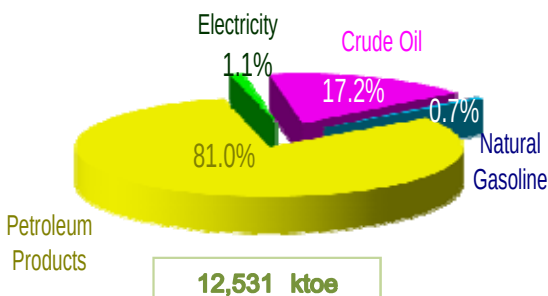
Energy Exports* (ktoe)	2005	2006	2007	2008	2009
Commercial Energy	8,981	10,315	9,337	11,703	12,531
Coal & Its Products	3	-	**	47	18
Crude Oil***	3,273	3,318	2,607	2,437	2,152
Condensate	-	-	-	-	-
Natural Gasoline	135	99	102	109	88
Petroleum Products	5,515	6,834	6,549	9,009	10,140
Electricity	55	64	79	101	133

*Excluding renewable energy.

**Less than 0.5.

***Including Ethanol.

Shares of Energy Exports 2009



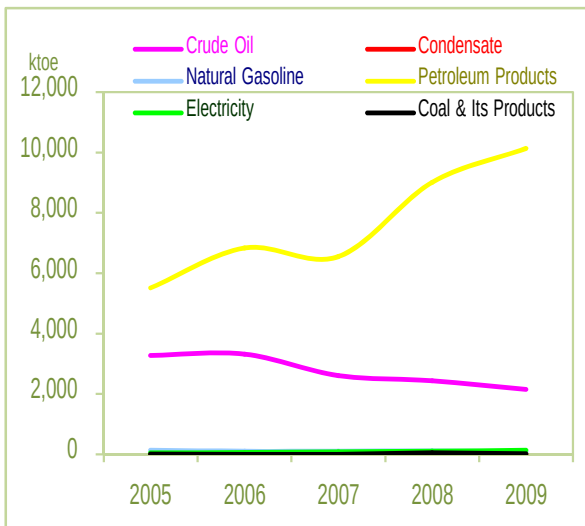
Energy Exports

(Physical unit)

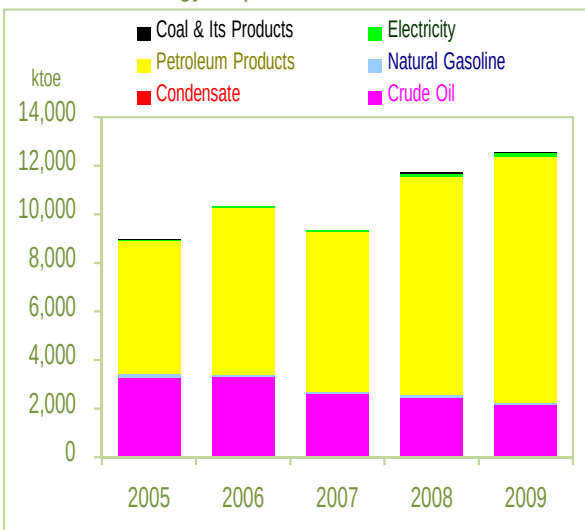
Energy Exports*	2005	2006	2007	2008	2009
Commercial Energy					
Coal & Its Products (10 ³ ton)	4	-	**	75	27
Crude Oil*** (mil. litres)	3,806	3,858	3,034	2,843	2,504
Condensate (mil. litres)	-	-	-	-	-
Natural Gasoline (MMscf)	172	126	130	139	112
Petroleum Products (mil. litres)	7,093	8,399	7,747	10,403	11,682
Electricity (Gwh)	642	750	926	1,180	1,560

Imports & Exports

Trends of Energy Exports 2005 - 2009



Shares of Energy Exports 2005 - 2009



Supply

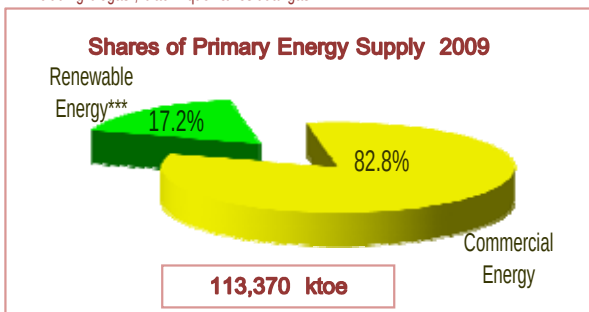
Primary Energy Supply

Primary Energy Supply (ktoe)	2005	2006	2007	2008	2009
Total*	103,041	104,682	108,478	110,605	113,370
Commercial Energy	86,363	87,628	90,257	91,291	93,828
Crude Oil**	45,713	46,413	46,308	47,260	48,531
Condensate & NGL	2,674	2,963	2,991	3,345	4,823
Natural Gas	28,770	29,615	31,418	33,230	34,819
Coal & Its Products	11,457	12,263	13,866	14,947	14,207
Petroleum Products	(3,858)	(5,803)	(6,429)	(9,204)	(10,213)
Electricity	1,607	2,177	2,103	1,713	1,661
Renewable Energy***	16,678	17,054	18,221	19,314	19,542

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

**Including feedstocks, ethanol and biodiesel.

***Excluding biogas, black liquor & residual gas.



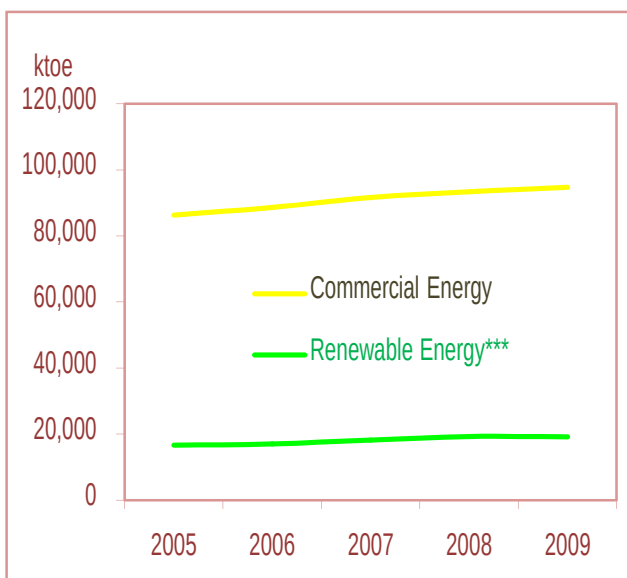
Primary Energy

(Physical unit)

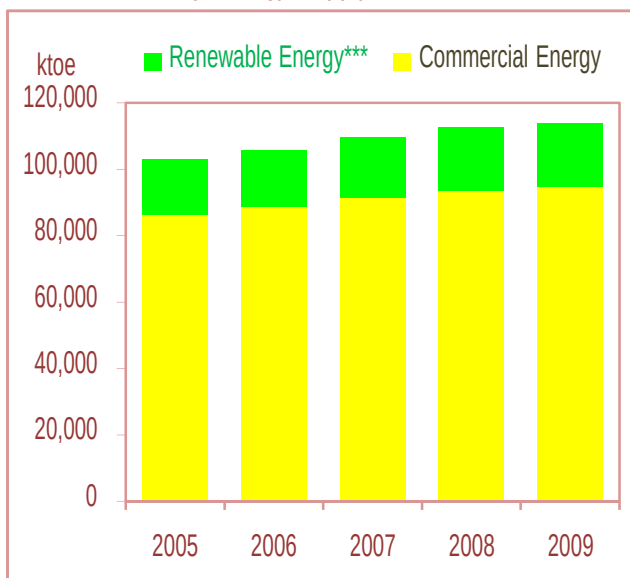
Primary Energy Supply (ktoe)	2005	2006	2007	2008	2009
Commercial Energy					
Crude Oil** (mil. litres)	53,164	53,985	53,870	54,998	56,490
Condensate & NGL (mil. litres)	3,257	3,786	3,821	4,273	6,163
Natural Gas (Bcf)	1,171	1,205	1,279	1,352	1,417
Coal & Its Products (10 ³ ton)	29,614	30,009	32,392	34,429	32,789
Petroleum Products (mil. litres)	(5,307)	(7,400)	(7,721)	(10,776)	(11,948)
Electricity (Gwh)	9,577	12,537	11,682	8,723	8,039
Renewable Energy*** (10 ³ ton)	54,911	55,052	59,563	63,403	64,719

Supply

Trends of Primary Energy Supply 2005 - 2009



Shares of Primary Energy Supply 2005 - 2009

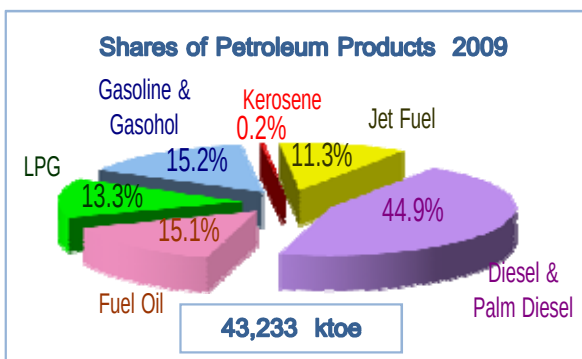


Transformation

Petroleum Products

Petroleum Products* (ktoe)	2005	2006	2007	2008	2009
Total	38,956	40,050	40,351	41,630	43,233
LPG	4,533	4,556	4,885	5,394	5,764
Gasoline & Gasohol	6,878	6,774	6,485	6,296	6,594
Kerosene	835	857	107	159	84
Jet Fuel	3,952	4,578	4,351	4,906	4,884
Diesel & Palm Diesel	16,951	17,325	18,421	18,375	19,394
Fuel Oil	5,807	5,960	6,102	6,500	6,513

*Including petroleum products from petroleum refineries & NG.
processing plants



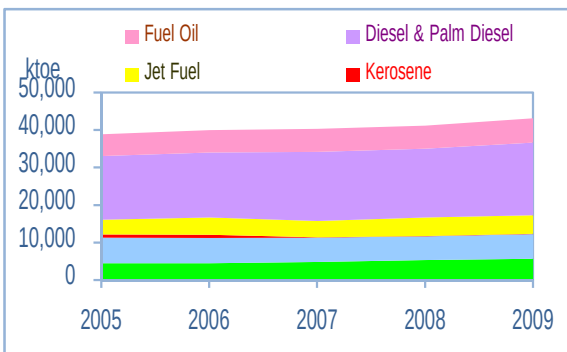
Petroleum Products

(Physical unit)

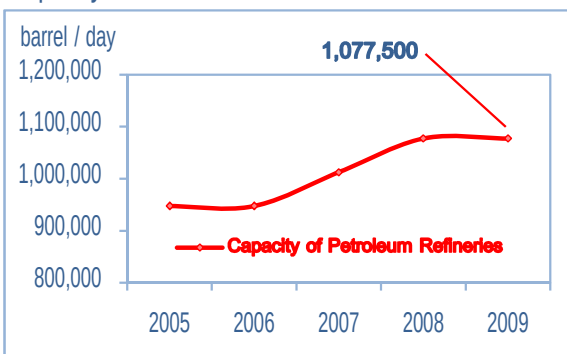
Petroleum Products* (mil.litres)	2005	2006	2007	2008	2009
Total	47,749	49,399	49,762	51,429	53,495
LPG	6,825	7,230	7,752	8,560	9,147
Gasoline & Gasohol	9,231	9,091	8,703	8,449	8,851
Kerosene	1,022	1,048	131	195	103
Jet Fuel	4,835	5,601	5,323	6,002	5,975
Diesel & Palm Diesel	19,666	20,097	21,370	21,317	22,499
Fuel Oil	6,170	6,332	6,483	6,906	6,920

Transformation

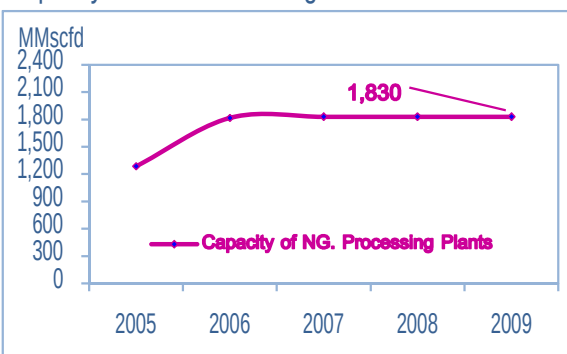
Trends of Petroleum Products 2005 - 2009



Capacity of Petroleum Refineries



Capacity of NG. Processing Plants

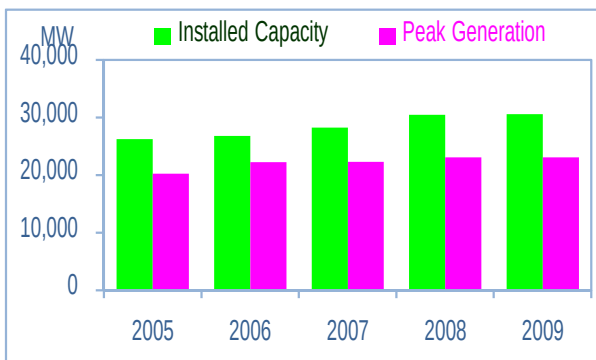


Transformation

Electricity (Installed Capacity)

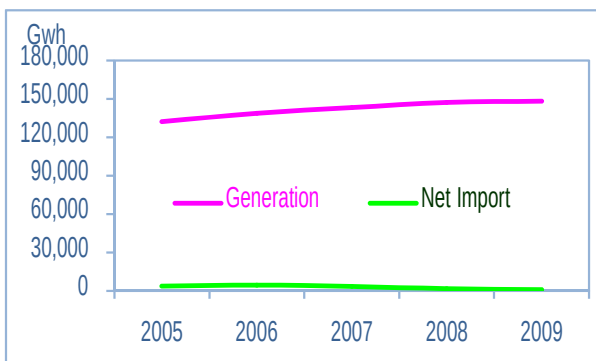
Installed Capacity (MW)	2005	2006	2007	2008	2009
Thermal Plants	22,792	23,338	24,807	27,024	27,106
Hydro Power	3,476	3,476	3,475	3,481	3,488
Other*	1	1	3	3	13

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



Electricity (National Grid Generation)

Electricity (Gwh)	2005	2006	2007	2008	2009
Total	135,974	143,151	146,943	149,032	149,269
Generation	132,197	138,742	143,378	147,427	148,390
Net Import	3,777	4,409	3,565	1,605	879



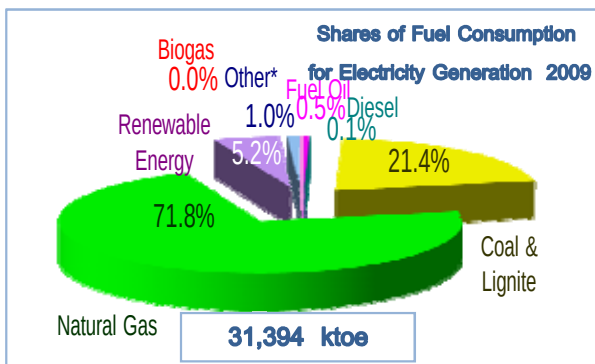
Transformation

Fuel Consumption for Electricity Generation

Fuel Consumption (ktoe)	2005	2006	2007	2008	2009
Total	28,778	28,755	30,598	31,373	31,394
Fuel Oil	1,895	1,911	888	337	149
Diesel	72	35	21	39	22
Coal & Lignite	4,700	4,774	6,885	7,203	6,714
Natural Gas	20,901	20,860	21,368	22,097	22,543
Renewable Energy	889	916	1,138	1,414	1,626
Other*	320	255	292	267	304
Biogas (mil.m ³)	1	4	6	16	36

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

**Less than 0.05.



Electricity (Fuel Consumption)

(Physical unit)

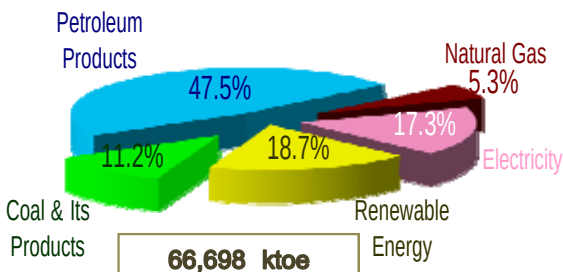
Fuel Consumption	2005	2006	2007	2008	2009
Fuel Oil (mil.litres)	2,013	2,030	943	358	158
Diesel (mil.litres)	84	41	24	45	25
Coal & Lignite (10 ³ ton)	17,488	17,166	20,549	21,435	20,218
Natural Gas (MMscf)	858,959	857,103	877,862	907,327	925,984
Renewable Energy (10 ³ ton)	3,839	3,916	4,995	6,102	7,061
Other* (TJ)	13,539	10,766	12,335	11,286	12,845
Biogas (mil.m ³)	1	8	12	32	73

Consumption

Final Energy Consumption by Fuel

Final Energy Consumption (ktoe)	2005	2006	2007	2008	2009
Total	62,397	63,257	64,866	65,890	66,698
Coal & Its Products	6,757	7,489	6,981	7,744	7,493
Petroleum Products	32,460	31,650	32,298	31,207	31,661
Natural Gas	2,026	2,234	2,594	3,153	3,568
Electricity	10,330	10,891	11,348	11,541	11,521
Renewable Energy	10,824	10,993	11,645	12,245	12,455

Shares of Final Energy Consumption by Fuel 2009



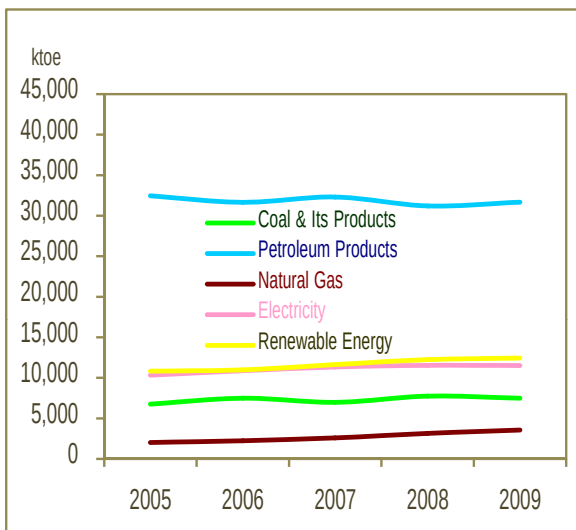
Final Energy Consumption by Fuel

(Physical unit)

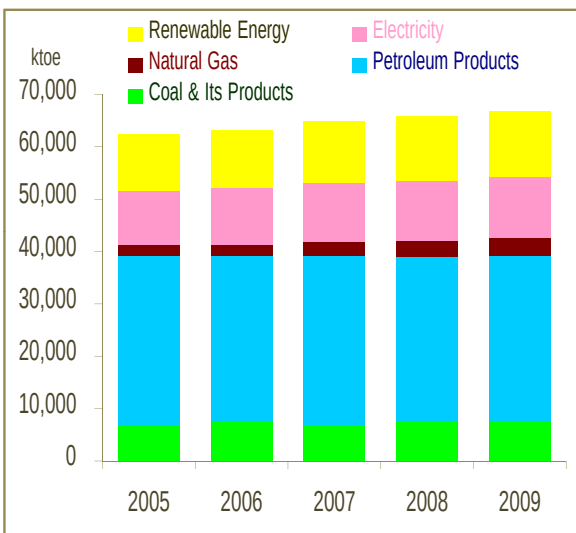
Final Energy Consumption	2005	2006	2007	2008	2009
Coal & Its Products (10 ³ ton)	12,126	12,843	11,843	12,994	12,571
Petroleum Products (mil. litres)	39,653	38,916	39,939	38,912	39,478
Natural Gas (MMscf)	83,814	92,416	107,293	130,403	147,568
Electricity (Gwh)	121,229	127,811	133,178	135,449	135,209
Renewable Energy (10 ³ ton)	34,231	34,744	36,664	38,677	39,670

Consumption

Trends of Final Energy Consumption by Fuel 2005 - 2009



Shares of Final Energy Consumption by Fuel 2005 - 2009



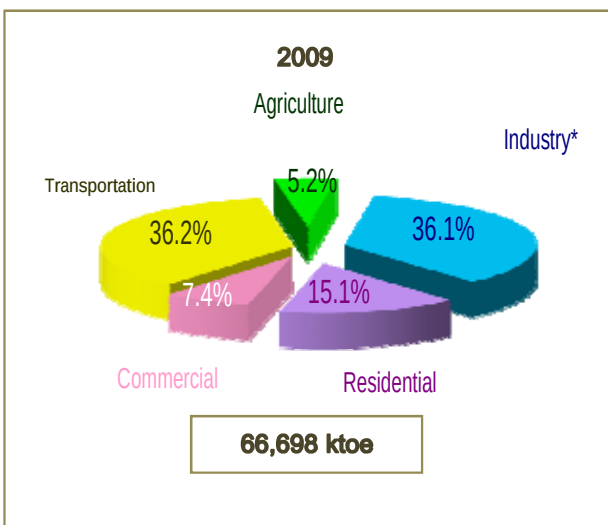
Consumption

Final Energy Consumption by Economic Sector

Final Energy Consumption (ktoe)	2005	2006	2007	2008	2009
Total	62,397	63,257	64,866	65,890	66,698
Agriculture	3,207	3,312	3,448	3,446	3,477
Industry*	22,920	23,711	23,781	24,421	24,060
Residential	8,933	9,034	9,533	9,958	10,089
Commercial	3,846	4,215	4,489	4,968	4,940
Transportation	23,491	22,985	23,615	23,097	24,132

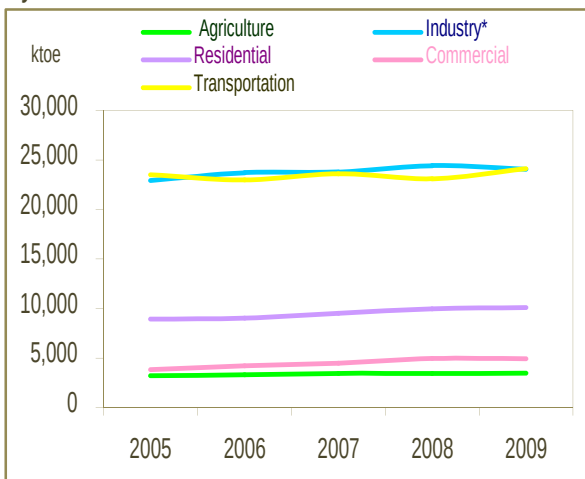
*Industry = Manufacturing + Mining + Construction

Shares of Final Energy Consumption by Economic Sector 2009

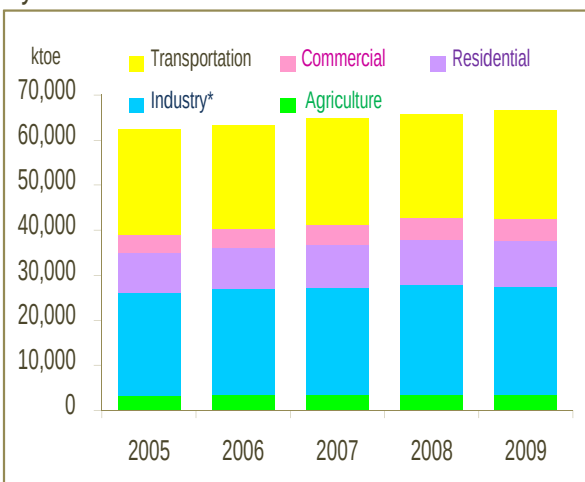


Consumption

Trends of Final Energy Consumption by Economic Sector 2005 - 2009



Shares of Final Energy Consumption by Economic Sector 2005 - 2009



*Industry = Manufacturing + Mining + Construction

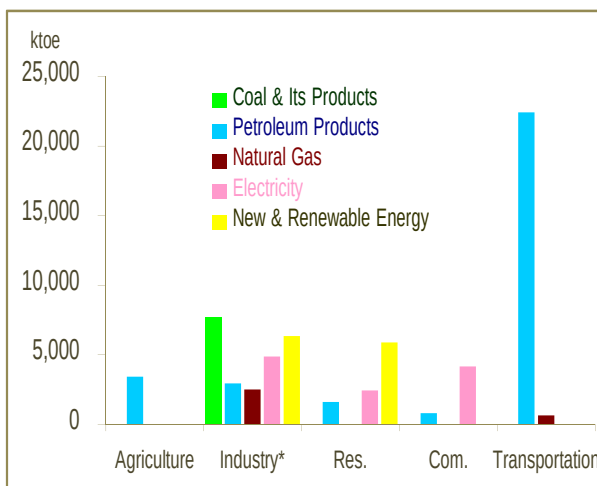
Consumption

Final Energy Consumption for Economic Sector by Fuel 2009

Final Energy Consumption (ktoe)	Agricul- ture	Indus- try*	Res.	Com.	Trans- porta- tion	Total
Coal & Its Products	-	7,493	-	-	-	7,493
Petroleum Products	3,450	2,736	1,740	868	22,867	31,661
Natural Gas	-	2,308	-	-	1,260	3,568
Electricity	27	4,829	2,588	4,072	5	11,521
Renewable Energy	-	6,694	5,761	-	-	12,455
Total	3,477	24,060	10,089	4,940	24,132	66,698

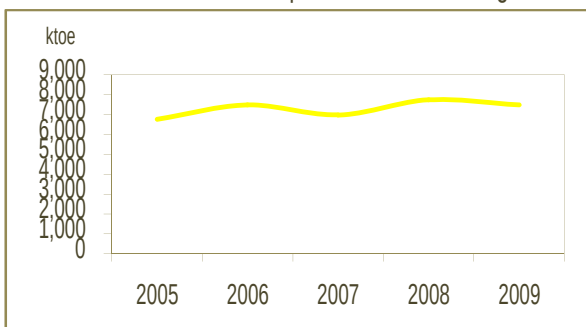
*Industry = Manufacturing + Mining + Construction

Shares of Final Energy Consumption for Economic Sector by Fuel 2009

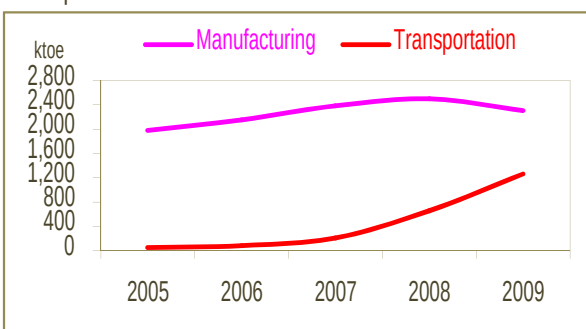


Consumption

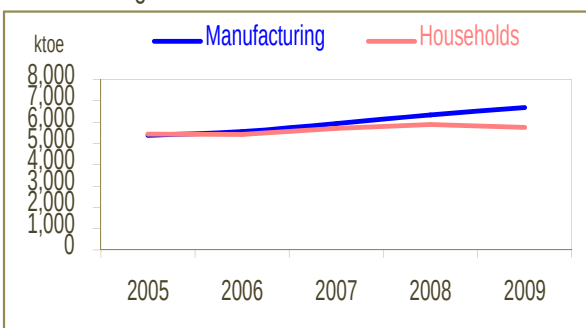
Coal & Its Products Consumption in Manufacturing



Natural Gas Consumption in Manufacturing and Transportation



New & Renewable Energy Consumption in Manufacturing and Households



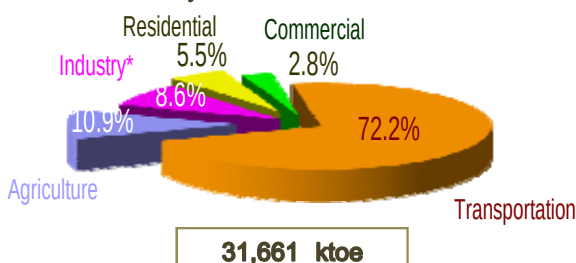
Consumption

Petroleum Products Consumption by Economic Sector

Petroleum Products (ktoe)	2005	2006	2007	2008	2009
Total	32,460	31,650	32,298	31,207	31,661
Agriculture	3,186	3,291	3,425	3,422	3,450
Industry*	3,957	3,446	3,266	2,938	2,736
Residential	1,309	1,310	1,435	1,607	1,740
Commercial	571	705	770	802	868
Transportation	23,437	22,898	23,402	22,438	22,867

*Industry = Manufacturing + Mining + Construction

Shares of Petroleum Products Consumption by Economic Sector 2009



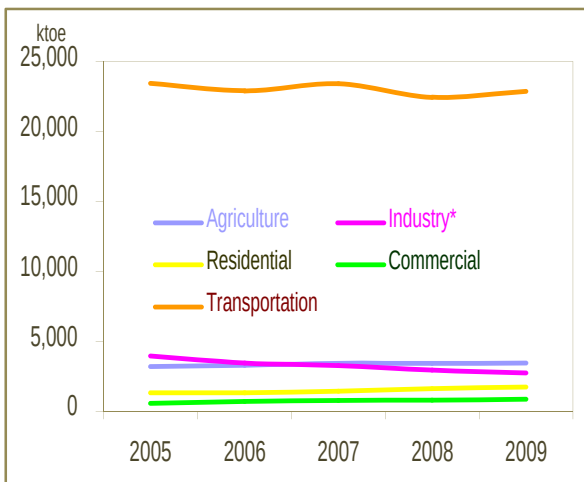
Petroleum Products Consumption by Economic Sector

(Physical unit)

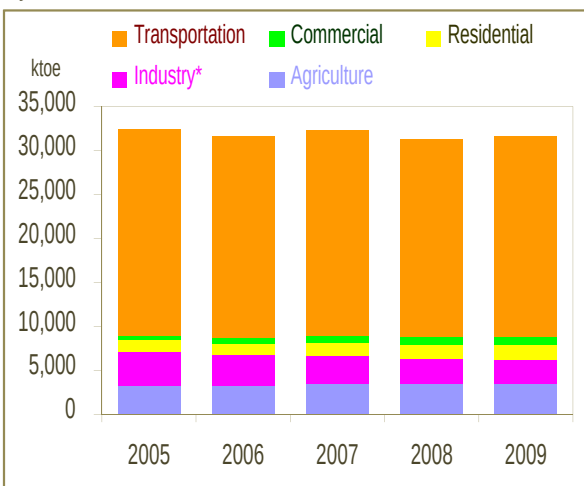
Petroleum Products (million litres)	2005	2006	2007	2008	2009
Total	39,653	38,916	39,939	38,912	39,478
Agriculture	3,707	3,827	3,984	3,979	4,014
Industry*	4,587	4,060	3,940	3,624	3,373
Residential	2,075	2,077	2,273	2,548	2,758
Commercial	904	1,118	1,222	1,273	1,377
Transportation	28,380	27,834	28,520	27,488	27,956

Consumption

Trends of Petroleum Products Consumption by Economic Sector 2005 - 2009



Shares of Petroleum Products Consumption by Economic Sector 2005 - 2009



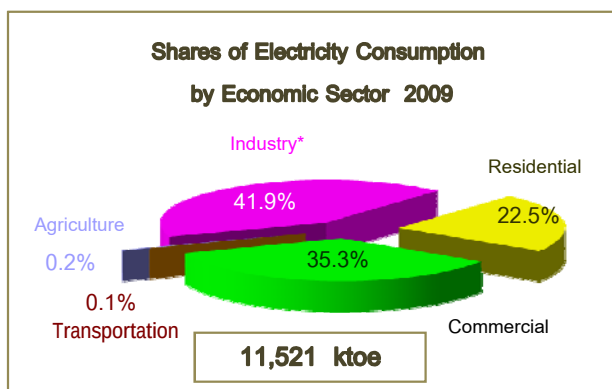
*Industry = Manufacturing + Mining + Construction

Consumption

Electricity Consumption by Economic Sector

Electricity Consumption (ktoe)	2005	2006	2007	2008	2009
Total	10,330	10,891	11,348	11,541	11,521
Agriculture	21	21	23	24	27
Industry*	4,847	5,054	5,212	4,893	4,829
Residential	2,182	2,301	2,389	2,453	2,588
Commercial	3,275	3,510	3,719	4,166	4,072
Transportation	5	5	5	5	5

*Industry = Manufacturing + Mining + Construction



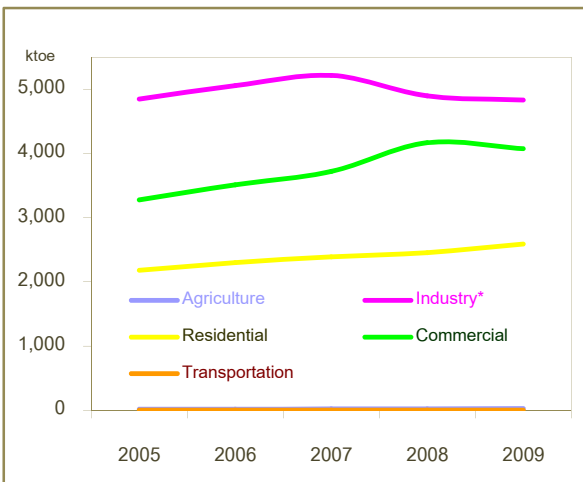
Electricity Consumption by Economic Sector

(Physical unit)

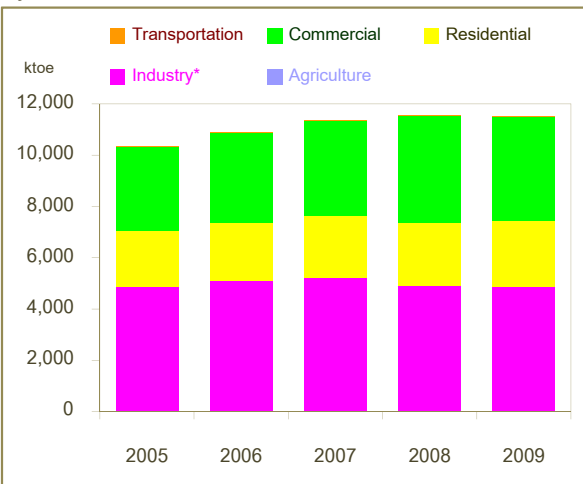
Electricity Consumption (Gwh)	2005	2006	2007	2008	2009
Total	121,229	127,811	133,178	135,449	135,209
Agriculture	245	240	268	282	318
Industry*	56,885	59,315	61,168	57,429	56,670
Residential	25,613	27,005	28,041	28,785	30,371
Commercial	38,430	41,193	43,643	48,893	47,788
Transportation	56	58	58	60	62

Consumption

Trends of Electricity Consumption by Economic Sector 2005 - 2009



Shares of Electricity Consumption by Economic Sector 2005 - 2009

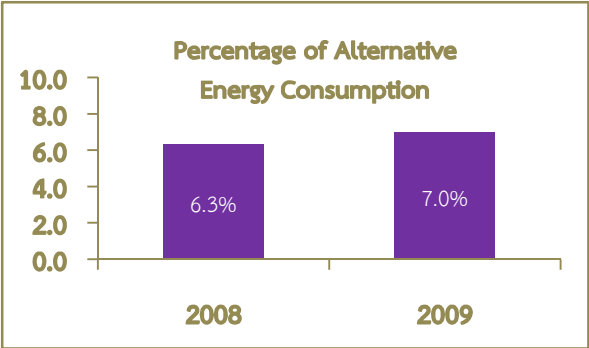
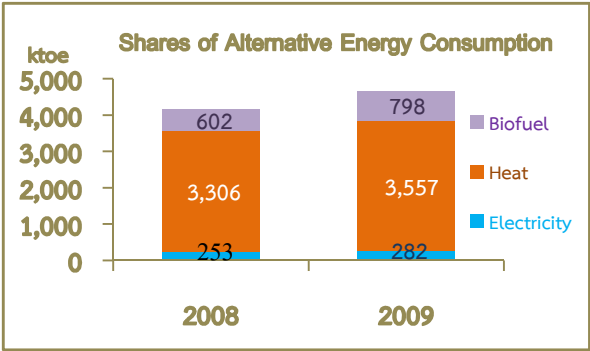


*Industry = Manufacturing + Mining + Construction

Consumption

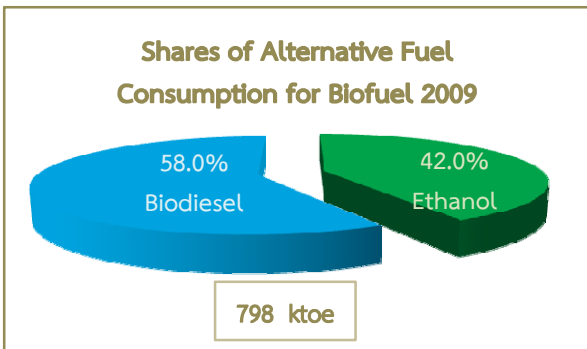
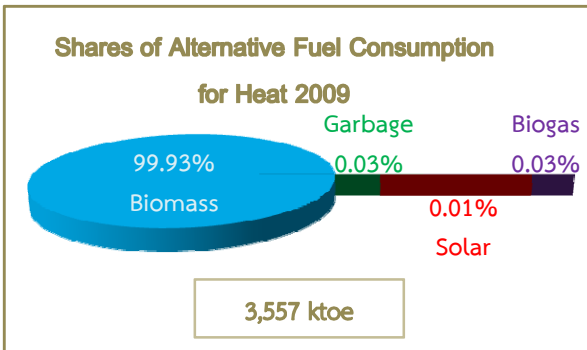
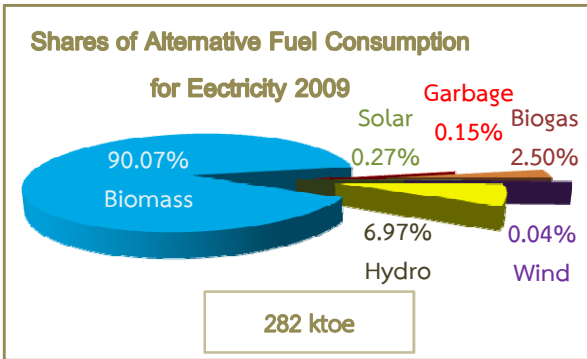
Alternative Energy Consumption

Alternative Energy Consumption (ktoe)	2008	2009
Electricity (Solar Wind Hydro Biomass Garbage and Biogas)	253	282
Heat (Solar Biomass Garbage and Biogas)	3,306	3,557
Biofuel (Ethanol and Biodiese)	602	798
Total	4,161	4,637
Final Energy Consumption	65,890	66,698
Percentage of Alternative Energy Consumption	6.3	7.0



Consumption

Shares of Alternative Energy Fuel Consumption 2009



Emissions

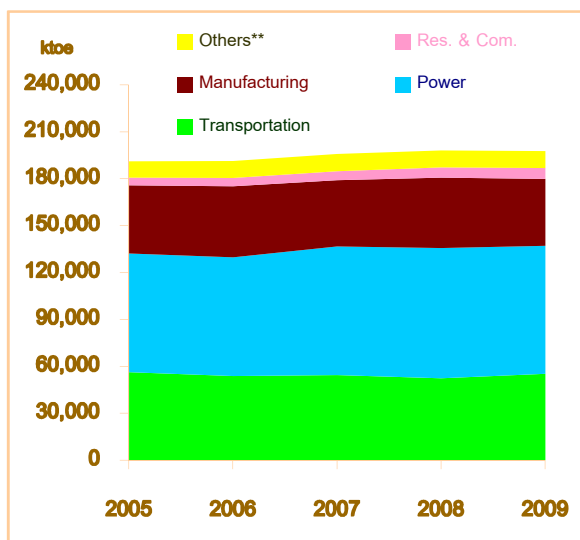
CO₂ Emissions*

CO ₂ Emissions (10 ³ ton)	2005	2006	2007	2008	2009
Total	191,158	191,281	195,847	198,146	197,657
Transportation	56,318	53,818	54,554	52,380	55,342
Power	75,950	75,839	82,087	83,370	81,797
Manufacturing	43,479	45,567	42,318	45,023	42,786
Res. & Com.	4,988	5,345	5,849	6,389	6,916
Others**	10,423	10,712	11,039	10,984	10,816

*Excluding emission from renewable energy and

international bunker oil, diesel and jet fuel.

**Including agriculture, construction and mining.



Energy Balances

Thailand Energy Commodity Account 2008

Unit : physical - unit

SUPPLY AND CONSUMPTION	Coal & Its Products	Crude Oil*	Natural Gas	Condensate & NGL	Petroleum Products	Hydro	Electricity	Renewable and Waste	Others***	Black Liquor & Residual Gas	Total
	(10 ³ ton)	(10 ⁶ litre)	MMscf	(10 ⁶ litre)	(10 ⁶ litre)	(Gwh)	(Gwh)	(10 ³ ton)	(Gwh)	(GJ)	
Domestic Production	17,982	9,282	1,016,238	4,983	-	7,113	-	63,352**	5	11,286,122	
Imports	16,012	47,112	336,230	-	404	-	2,785	62	-	-	
Exports	(75)	(2,843)	-	(139)	(10,403)	-	(1,180)	(11)	-	-	
Stock Changes/Statistical Differences	(510)	1,447	-	(571)	(777)	-	-	-	-	-	
Total Primary Energy Supply	34,429	54,998	1,352,468	4,273	(10,776)	7,113	1,605	63,403**	5	11,286,122	
Petroleum Refineries	-	(54,784)	-	(579)	46,354	-	-	-	-	-	
NG. Processing Plants	-	-	-	805	4,623	-	-	-	-	-	
Power Plants	(21,435)	-	(907,327)	-	(403)	(7,113)	147,427	(6,102)**	(5)	(11,286,122)	
Other Transformation	-	-	-	-	452	-	-	(18,624)	-	-	
Total Transformation	(21,435)	(54,784)	(907,327)	226	51,026	(7,113)	147,427	(24,726)**	(5)	(11,286,122)	
Own Uses	-	-	(314,738)	-	-	-	(4,629)	-	-	-	
Losses	-	(214)	-	-	-	-	(8,954)	-	-	-	
Total Final Energy Consumption	12,994	-	130,403	4,499	40,250	-	135,449	38,677	-	-	
Non - Energy Uses	-	-	-	4,499	1,338	-	-	-	-	-	
Final Energy Consumption	12,994	-	130,403	-	38,912	-	135,449	38,677	-	-	
Agriculture	-	-	-	-	3,979	-	282	-	-	-	
Industry ****	12,994	-	103,360	-	3,624	-	57,429	26,731	-	-	
Residential	-	-	-	-	2,548	-	28,785	-	-	-	
Commercial	-	-	-	-	1,388	-	48,893	11,946	-	-	
Transportation	-	-	27,043	-	27,373	-	60	-	-	-	
CO ₂ emission (unit : Mt)											182

*Including feedstocks, ethanol and biodiesel.

**Excluding biogas 32,001,003 m³.

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

****Including manufacturing, mining and construction.

(0) Less than 0.5.

Energy Balances

Thailand Energy Balance 2008

Unit : ktOE

SUPPLY AND CONSUMPTION	Coal & Its Products	Crude Oil*	Natural Gas	Condensate & NGL	Petroleum Products	Hydro	Electricity	Renewable and Waste	Others***	Black Liquor & Residual Gas	Total
Domestic Production	4,743	7,946	24,969	3,900	-	1,573	-	19,279**	4	267	62,681
Imports	10,026	40,516	8,261	-	364	-	237	43	-	-	59,447
Exports	(47)	(2,437)	-	(109)	(9,009)	-	(101)	(8)	-	-	(11,711)
Stock Changes/Statistical Differences	225	1,235	-	(446)	(559)	-	-	-	-	-	455
Total Primary Energy Supply	14,947	47,260	33,230	3,345	(9,204)	1,573	136	19,314**	4	267	110,872
Petroleum Refineries	-	(47,076)	-	(453)	38,432	-	-	-	-	-	(9,097)
NG. Processing Plants	-	-	(307)	630	2,913	-	-	-	-	-	3,236
Power Plants	(7,203)	-	(22,097)	-	(376)	(1,573)	12,562	(1,414)**	(4)	(267)	(20,372)
Other Transformation	-	-	-	-	285	-	-	(5,655)	-	-	(5,370)
Total Transformation	(7,203)	(47,076)	(22,404)	177	41,254	(1,573)	12,562	(7,069)**	(4)	(267)	(31,603)
Own Uses	-	-	(7,673)	-	-	-	(394)	-	-	-	(8,067)
Losses	-	(184)	-	-	-	-	(763)	-	-	-	(947)
Total Final Energy Consumption	7,744	-	3,153	3,522	32,050	-	11,541	12,245	-	-	70,255
Non - Energy Uses	-	-	-	3,522	843	-	-	-	-	-	4,365
Final Energy Consumption	7,744	-	3,153	-	31,207	-	11,541	12,245	-	-	65,890
Agriculture	-	-	-	-	3,422	-	24	-	-	-	3,446
Industry ****	7,744	-	2,499	-	2,938	-	4,893	6,347	-	-	24,421
Residential	-	-	-	-	1,607	-	2,453	5,898	-	-	9,958
Commercial	-	-	-	-	875	-	4,166	-	-	-	5,041
Transportation	-	-	654	-	22,365	-	5	-	-	-	23,024
CO ₂ emission (unit : Mt)											182

*Including feedstocks, ethanol and biodiesel.

**Excluding biogas 16 ktOE.

***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 2009

Unit : physical - unit

SUPPLY AND CONSUMPTION	Coal & Its Products (10 ³ ton)	Crude Oil* (10 ⁶ litre)	Natural Gas MMscf	Condensate & NGL (10 ⁶ litre)	Petroleum Products (10 ⁶ litre)	Hydro (Gwh)	Electricity (Gwh)	Renewable and Waste (10 ³ ton)	Others*** (Gwh)	Black Liquor & Residual Gas (GJ)	Total
Domestic Production	17,786	9,781	1,079,562	4,845	-	7,148	-	64,665**	12	12,845,095	
Imports	16,317	48,095	337,563	1,776	493	-	2,439	78	-	-	
Exports	(27)	(2,504)	-	(112)	(11,682)	-	(1,560)	(24)	-	-	
Stock Changes/Statistical Differences	(1,287)	1,118	-	(346)	(759)	-	-	-	-	-	
Total Primary Energy Supply	32,789	56,490	1,417,125	6,163	(11,948)	7,148	879	64,719**	12	12,845,095	
Petroleum Refineries	-	(56,277)	-	(469)	48,336	-	-	-	-	-	
NG. Processing Plants	-	-	(165,125)	792	4,492	-	-	-	-	-	
Power Plants	(20,218)	-	(925,984)	-	(183)	(7,148)	148,390	(7,061)**	(12)	(12,845,095)	
Other Transformation	-	-	-	-	667	-	-	(17,988)	-	-	
Total Transformation	(20,218)	(56,277)	(1,091,109)	323	53,312	(7,148)	148,390	(25,049)**	(12)	(12,845,095)	
Own Uses	-	-	(129,754)	-	-	-	(5,284)	-	-	-	
Losses	-	(213)	-	-	-	-	(8,776)	-	-	-	
Total Final Energy Consumption	12,571	-	196,262	6,486	41,364	-	135,209	39,670	-	-	
Non - Energy Uses	-	-	48,694	6,486	1,886	-	-	-	-	-	
Final Energy Consumption	12,571	-	147,568	-	39,478	-	135,209	39,670	-	-	
Agriculture	-	-	-	-	4,014	-	318	-	-	-	
Industry ****	12,571	-	95,465	-	3,373	-	56,670	27,972	-	-	
Residential	-	-	-	-	2,758	-	30,371	-	-	-	
Commercial	-	-	15	-	1,377	-	47,788	11,698	-	-	
Transportation	-	-	52,088	-	27,956	-	62	-	-	-	
CO ₂ emission (unit : Mt)											198

*Including feedstocks, ethanol and biodiesel.

**Excluding biogas 72,952,533 m³.

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

****Including manufacturing, mining and construction.

(0) Less than 0.5.

Energy Balances

Thailand Energy Balance 2009

Unit : ktOE

SUPPLY AND CONSUMPTION	Coal & Its Products	Crude Oil*	Natural Gas	Condensate & NGL	Petroleum Products	Hydro	Electricity	Renewable and Waste	Others***	Black Liquor & Residual Gas	Total
Domestic Production	4,775	8,367	26,525	3,792	-	1,583	-	19,505**	3	304	64,854
Imports	10,270	41,362	8,294	1,390	429	-	208	53	-	-	62,006
Exports	(18)	(2,152)	-	(88)	(10,140)	-	(133)	(16)	-	-	(12,547)
Stock Changes/Statistical Differences	(820)	954	-	(271)	(502)	-	-	-	-	-	(639)
Total Primary Energy Supply	14,207	48,531	34,819	4,823	(10,213)	1,583	75	19,542**	3	304	113,674
Petroleum Refineries	-	(48,348)	-	(367)	39,982	-	-	-	-	-	(8,733)
NG. Processing Plants	-	-	(4,377)	620	2,831	-	-	-	-	-	(926)
Power Plants	(6,714)	-	(22,543)	-	(171)	(1,583)	12,644	(1,626)**	(3)	(304)	(20,300)
Other Transformation	-	-	-	-	420	-	-	(5,461)	-	-	(5,041)
Total Transformation	(6,714)	(48,348)	(26,920)	253	43,062	(1,583)	12,644	(7,087)**	(3)	(304)	(35,000)
Own Uses	-	-	(3,153)	-	-	-	(450)	-	-	-	(3,603)
Losses	-	(183)	-	-	-	-	(748)	-	-	-	(931)
Total Final Energy Consumption	7,493	-	4,746	5,076	32,849	-	11,521	12,455	-	-	74,140
Non - Energy Uses	-	-	1,178	5,076	1,188	-	-	-	-	-	7,442
Final Energy Consumption	7,493	-	3,568	-	31,661	-	11,521	12,455	-	-	66,698
Agriculture	-	-	-	-	3,450	-	27	-	-	-	3,477
Industry ****	7,493	-	2,308	-	2,736	-	4,829	6,694	-	-	24,060
Residential	-	-	-	-	1,740	-	2,588	5,761	-	-	10,089
Commercial	-	-	0	-	868	-	4,072	-	-	-	4,940
Transportation	-	-	1,260	-	22,867	-	5	-	-	-	24,132
CO ₂ emission (unit : Mt)											198

*Including feedstocks, ethanol and biodiesel.

**Excluding biogas 36 ktOE.

***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	2005	2006	2007	2008	2009
Crude Oil					
1,000 Baht / toe	15.61	18.19	17.95	24.68	15.46
US.\$ / toe	386.79	478.41	517.39	736.98	448.38
US.\$ / bbl	52.89	65.41	70.77	100.77	61.31
Condensate					
1,000 Baht / toe	-	-	-	-	17.76
US.\$ / toe	-	-	-	-	515.32
US.\$ / bbl	-	-	-	-	64.13
Natural Gas					
1,000 Baht / toe	6.91	8.24	7.94	10.22	9.93
US.\$ / toe	171.32	216.61	228.80	305.34	287.97
US.\$ / 1,000 scf	4.21	5.32	5.62	7.50	7.08
Petroleum Products					
1,000 Baht / toe	14.83	17.01	18.68	24.09	15.76
US.\$ / toe	367.39	447.33	538.41	719.44	457.13
US.\$ / bbl	53.43	65.38	75.77	102.94	63.31
Coal & Its Products*					
1,000 Baht / toe	2.84	2.66	2.99	3.64	3.59
US.\$ / toe	70.48	70.03	86.10	108.65	104.18
US.\$ / ton	44.49	44.13	53.18	68.03	65.57
Electricity					
1,000 Baht / toe	19.18	19.01	19.68	18.24	16.98
US.\$ / toe	475.30	499.82	567.42	544.77	492.71
US.\$ / kWh	1.63	1.62	1.68	1.55	1.45

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

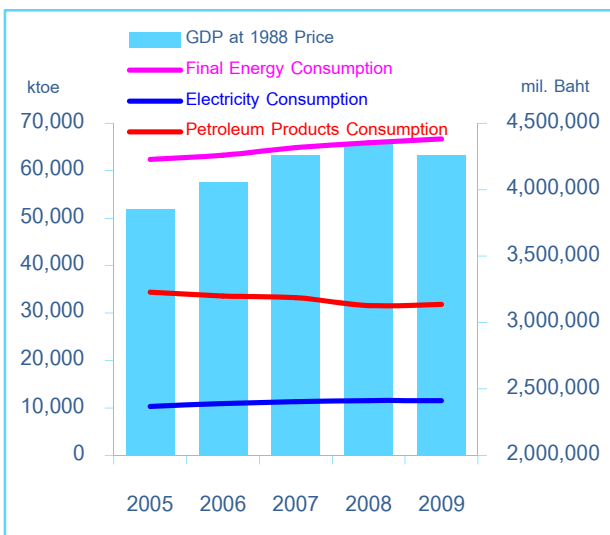
Energy and Economy

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

Year	Final Energy Consump- tion (ktoe)	Electricity Consump- tion (ktoe)	Petroleum Products Consumption* (ktoe)	GDP at 1988 Prices (mil. Baht)
2005	62,397	10,330	34,427	3,858,019
2006	63,257	10,891	33,596	4,056,550
2007	64,886	11,348	33,227	4,256,564
2008	65,890	11,541	31,583	4,361,396 ^P
2009	66,698	11,521	31,832	4,262,041 ^P

*Including petroleum products consumption for electricity generation.

Relations of Energy and Economy

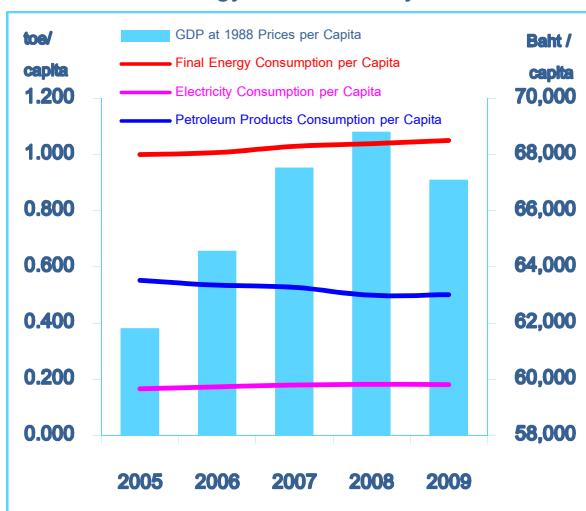


Energy and Economy

Energy Consumption Per Capita

Year	GDP at 1988 Prices per Capita (Baht/capita)	Final Energy Consumption per Capita (toe/capita)	Electricity Consumption per Capita (toe/capita)	Petroleum Products Consumption per Capita (toe/capita)
2005	61,809	1.000	0.166	0.552
2006	64,565	1.007	0.173	0.535
2007	67,524	1.029	0.180	0.527
2008	68,803	1.039	0.182	0.498
2009	67,092	1.050	0.181	0.501

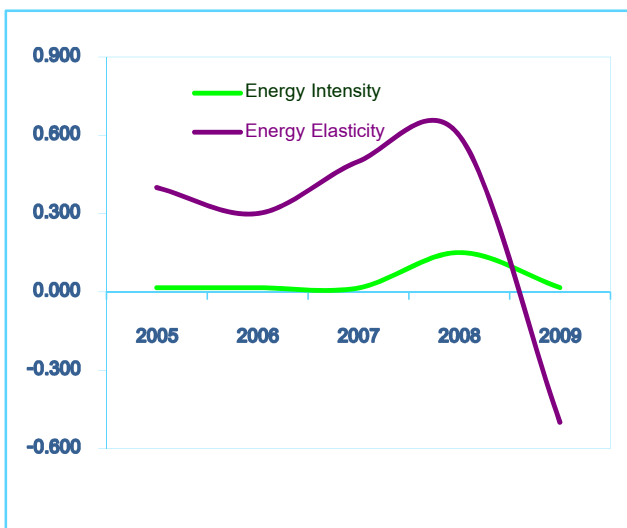
Relations of Energy and Economy



Energy and Economy

Energy Intensity & Elasticity

Year	GDP at 1988 Prices (million Baht)	Final Energy Consump- tion (ktoe)	Energy Intensity (ktoe / million Baht)	Energy Elasticity	% Change of GDP	% Change of Consump- tion
2005	3,858,019	62,397	0.016	0.4	4.6	1.9
2006	4,056,550	63,257	0.016	0.3	5.2	1.4
2007	4,256,564	64,866	0.015	0.5	4.9	2.6
2008	4,361,396 ^P	65,890	0.015	0.6	2.5	1.6
2009	4,262,041 ^P	66,698	0.016	(0.5)	(2.3)	1.2



Energy and Economy

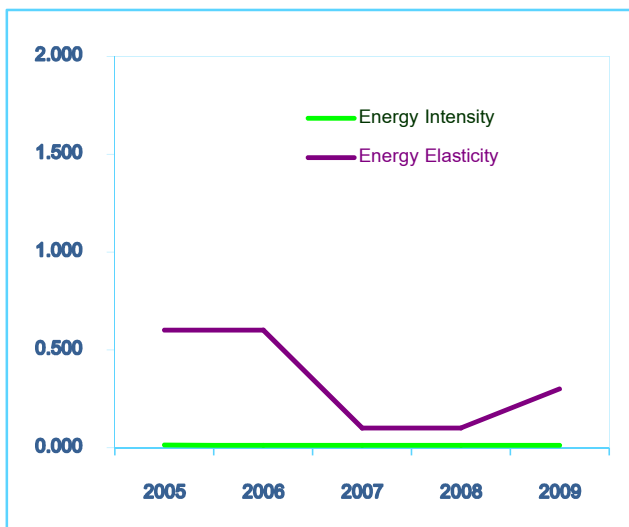
Energy Intensity & Elasticity (Industry)

Year	GDP at 1988 Prices** (million Baht)	Final Energy Consump- tion*** (ktoe)	Energy Intensity (ktoe / million Baht)	Energy Elasticity	% Change of GDP*	% Change of Consump- tion**
2005	1,681,772	22,920	0.014	0.6	5.4	3.0
2006	1,777,379	23,711	0.013	0.6	5.7	3.5
2007	1,882,882	23,781	0.013	0.1	5.9	0.3
2008	1,944,753 ^P	24,421	0.013	0.1	3.3	0.3
2009	1,854,026 ^P	24,060	0.013	0.3	(4.7)	(1.5)

*Including manufacturing , mining and construction.

**GDP at 1988 prices for Industry.

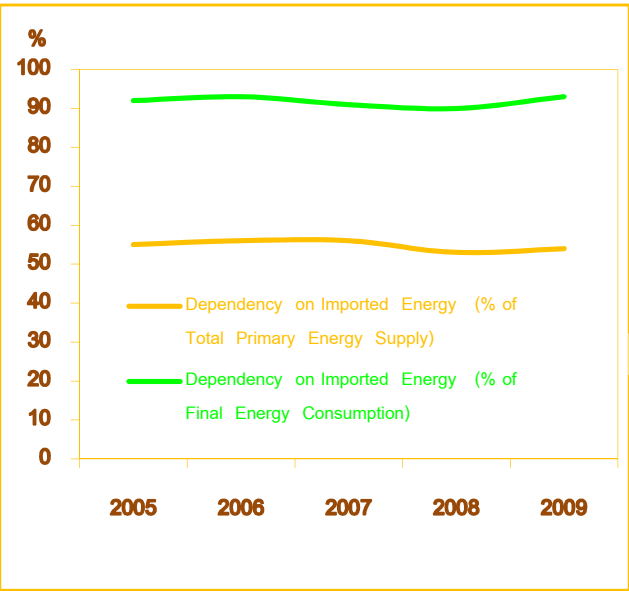
** Final Energy Consumption for Industry.



Energy Indicators

Proportion of Imported Energy Dependency

Year	Total Primary Energy Supply (ktoe)	Final Energy Consum- ption (ktoe)	Energy Imports (ktoe)	Dependency on Imported Energy (% of Total Primary Energy Supply) (%)	Dependency on Imported Energy (% of Final Energy Consum- ption) (%)
2005	103,362	62,397	57,333	55	92
2006	104,941	63,257	58,755	56	93
2007	108,776	64,886	58,891	56	91
2008	110,888	65,890	59,447	53	90
2009	113,710	66,698	62,006	54	93



Energy Indicators

Energy Values

Energy Values (thousand mil. Baht)	2005	2006	2007	2008	2009
1. Energy Imports	753	874	835	1,134	794
Petroleum	731	847	801	1,093	753
Coal & Its Products	15	19	26	37	37
Electricity	7	8	8	4	4
Renewable Energy	0	0	0	0	0
2. Energy Exports	154	197	177	284	208
Petroleum	153	195	175	281	205
Coal & Its Products	0	0	0	0	0
Electricity	1	2	2	3	3
Renewable Energy	0	0	0	0	0
3. Net Energy Imports	599	677	657	850	586
4. Commodity Imports	4,754	4,943	4,870	5,962	4,605
5. Commodity Exports	4,439	4,937	5,302	5,851	5,197
6. GDP (at Current Market Prices)	7,093	7,850	8,530	9,075 ^p	9,048 ^p
7. Energy Import Value as a Percentage of					
GDP	10.6	11.1	9.8	12.5	8.8
Commodity Import	15.8	17.7	17.1	19.0	17.2
Commodity Export	17.0	17.7	15.7	19.4	15.3
8. Final Energy Consumption Value	1,184	1,357	1,383	1,593	1,426

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

Energy Indicators

Key Energy Indicators

	2005	2006	2007	2008	2009
1. Primary Energy Supply (ktoe)	103,362	104,941	108,776	110,888	113,710
Growth(%)	2.9	1.5	3.7	1.9	2.5
Per capita(ktoe/capita)	1.7	1.7	1.8	1.8	1.8
2. Final Energy Consumption (ktoe)	62,397	63,257	64,866	65,890	66,698
Growth(%)	1.9	1.4	2.5	1.6	1.2
Per capita(ktoe/capita)	1.0	1.0	1.0	1.0	1.1
3. GDP at 1988 prices (thousand mil. Baht)	3,858	4,057	4,257	4,361	4,262
Growth(%)	4.6	5.2	4.9	2.5	(2.3)
Per capita(Baht/capita)	61,809	64,565	67,524	68,803	67,092
4. Petroleum Products (million litres)	39,653	38,916	39,961	38,912	39,478
Growth(%)	(0.5)	(1.9)	2.7	(2.6)	1.5
Per capita(litres/capita)	635	619	634	614	622
5. Electricity (Gwh)	121,229	127,811	133,178	135,449	135,209
Growth(%)	5.4	5.4	4.2	1.7	(0.2)
Per capita(kwh/capita)	1,942	2,034	2,113	2,137	2,128
6. Value of Net Energy Imports(mil. Baht)	599,303	676,869	658,175	850,066	585,590
Growth(%)	32.9	12.9	(2.8)	29.2	(31.1)
Per capita(Baht/capita)	9,607	10,773	10,441	13,410	9,218
7. Value of Final Energy Consumption(mil. Baht)	1,184,407	1,357,411	1,382,692	1,592,675	1,426,465
Growth(%)	22.1	14.6	1.9	15.2	(10.4)
Per capita(Baht/capita)	18,975	21,605	21,934	25,125	22,455
8. Energy Intensity (ktoe / mil. Baht)	0.016	0.016	0.015	0.015	0.016
9. Energy Elasticity	0.413	0.269	0.510	0.667	(0.522)
10. Populations(thousand inhabitants)	62,418	62,829	63,038	63,390	63,525

International Comparisons

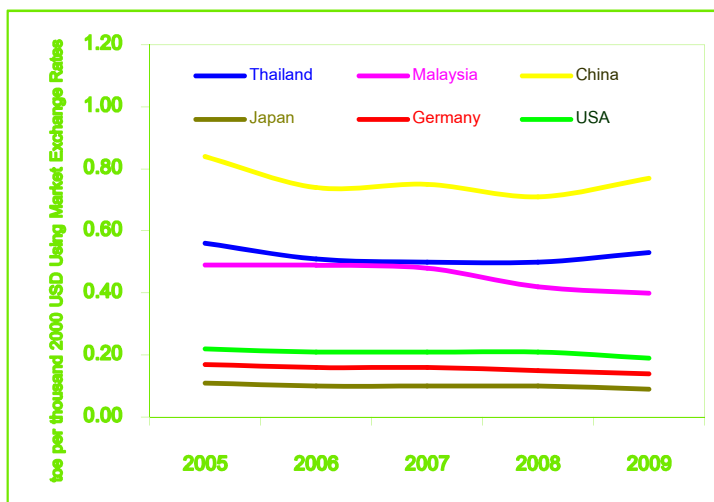
International Comparisons 2008

	Thailand	Malaysia	China	Japan	Germany	USA
Population mil. Inhabitants	67.4	27.0	1,333.0	127.7	82.1	304.5
Gross Domestic Products (GDP) in bil 2000 USD	178.3	139.2	2,844.0	5,166.3	2,095.2	11,742.3
Primary Energy Consumption Mtoe	95.1	55.7	2,177.0	463.9	289.8	2,182.0
Primary Energy Consumption/GDP toe/ thousand 2000 USD	0.53	0.40	0.77	0.09	0.14	0.19
Primary Energy Consumption toe/capita	1.4	2.1	1.6	3.6	3.5	7.2
Electricity Consumption kWh/capita	2,079.0	3,493.0	2,471.0	8,072.0	7,148.0	13,647.0
CO ₂ Emission tons/capita	3.4	6.7	4.9	9.0	9.8	18.4

Source : IEA's Key World Energy Statistics 2010.

Bp Statistical Review of World Energy 2010.

Primary Energy Consumption per USD of GDP



Conversion Factors

TYPE OF ENERGY AND FUEL		UNIT	toe/ 10 ⁶ unit
COMMERCIAL ENERGY			
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
RENEWABLE ENERGY			
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
General			
1 kcal	=	4186	Joules
	=	3.968	Btu
1 toe	=	10.093	Gcal
	=	42.244	GJ
	=	40.047 x 10 ⁶	Btu
1 barrel	=	158.99	Litres

This report is published by
Energy Statistics Section, Work Plan Division,
Department of Alternative Energy Development and Efficiency,
Ministry of Energy
17 Rama I Road, Kasatsuk Bridge,
Pathumwan, Bangkok 10330, THAILAND
E - mail Address : wpdsts@dede.go.th
Website : www.dede.go.th



Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY



17 Rama I Road, Kasetsuk Bridge, Pathumwan, Bangkok 10330, THAILAND

Tel. : 0 22211475, 0 2225 8919, 0 2224102 - 9 Ext. 1202, 1279, 1519

Fax : 0 22211475