Les enjeux de la question energetique en Asie et dans l'Asean

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ASIA & ASEAN
ENERGY ISSUES: OUTLINE

- 1. ASIAN Energy Outlook towards 2050
- 2. ASEAN Energy Map
- 3. ASEAN Energy Outlook
- 4. ASEAN Energy Cooperation
- 5. ASIAN Energy Challenges

World Scenario – WEO 2009

- Below are 2 scenarios by the World Energy Outlook- 2009
- First scenario assumes no change in policy.
- Second scenario assumed concerted actions are taken by all countries to limit CO2 emissions to restrict global temperature increase to 2 C.
- Fossil fuel use decreases substantially but oil and gas still half of supply

World Primary Energy Demand by Fuel in the Reference Scenario

World Primary Energy Demand by Fuel in the Reference Scenario

Fuel	Primary Energy Demand (M.TOE)					2007-2030 Growth	
	1980	2000	2007	2015	2030	AAGR	Share
Coal	1,792	2,292	3,184	3,828	4,887	1.88%	35.66%
Oil	3,107	3,655	4,093	4,234	5,009	0.88%	19.18%
Gas	1,234	2,085	2,512	2,801	3,561	1.53%	21.96%
Nuclear	186	676	709	810	956	1.31%	5.17%
Hydro	148	225	265	317	402	1.83%	2.87%
Biomass & Waste	749	1,031	1,176	1,338	1,604	1.36%	8.96%
Other Renewables	12	55	74	160	370	7.25%	6.20%
Total	**7,228**	**10,019**	**12,013**	**13,488**	**16,789**	**1.47%**	**100.00%**

Source: WEO

World Primary Energy Demand by Fuel in the 450-Scenario

World Primary Energy Demand by Fuel in the 450-Scenario

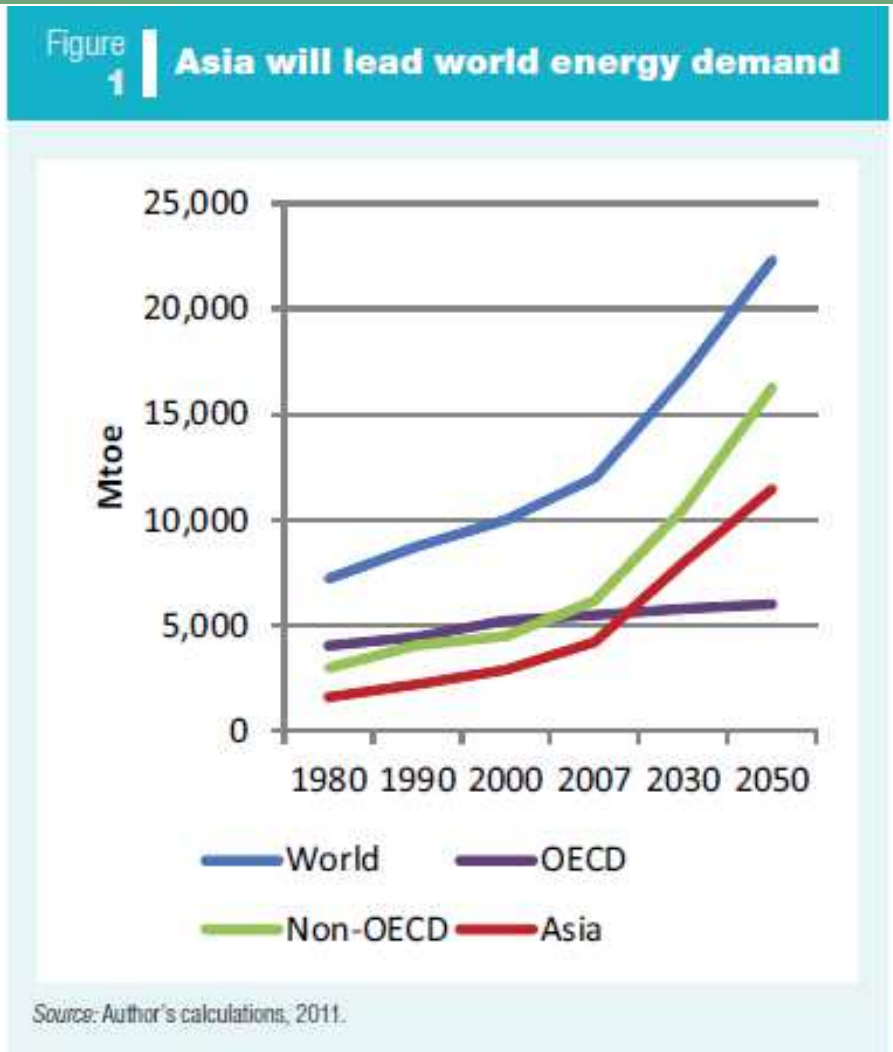
Fuel	Primary Energy Demand (M.TOE)				2007-2030 Growth	
	1990	2007	2020	2030	AAGR	Share
Coal	2,221	3,184	3,507	2,614	-0.85%	-23.98%
Oil	3,219	4,093	4,121	4,250	0.16%	6.60%
Gas	1,671	2,512	2,868	2,941	0.69%	18.05%
Nuclear	526	709	1,003	1,426	3.08%	30.16%
Hydro	184	265	362	487	2.68%	9.34%
Biomass & Waste	904	1,176	1,461	1,952	2.23%	32.65%
Other Renewables	36	74	277	720	10.40%	27.18%
Total	**8,761**	**12,013**	**13,599**	**14,390**	**0.79%**	**100.00%**

Source: WEO

1. ASIAN Energy Outlook Towards 2050

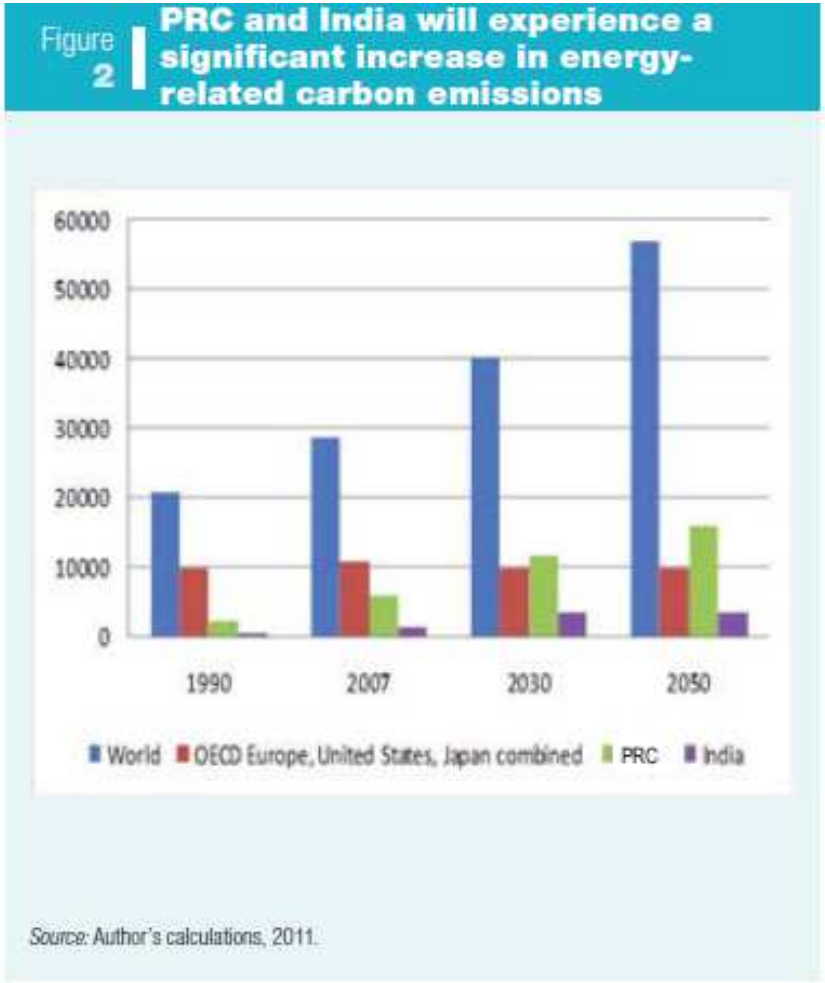
- Based on ADB study: Asia 2050- Realizing the Asian Century
- Asia 20% World energy consumption in 2000, 27% in 2007, 40% in 2050.
- PRC higher than US from 2010
- Asia above OECD before 2030
- Concerns: High dependence on imports and security issues; Carbon emissions issues
- Can a new growth-energy model emerge ? ????

Asia Will Lead World Energy Demand



Source: Asia 2050 Study, ADB 2011

PRC and India



Source: Asia 2050 Study, ADB 2011

Projection of Energy Demand and Supply in Asia

Table 1 **Projection of energy demand and supply in Asia**

	1980	1990	2000	2007	2030	2050
Asia Energy Demand (Mtoe)	1,625	2,220	2,910	4,242	7,980	11,480
PRC	603	872	1,105	1,970	3,637	5,011
India	207	318	457	622	1,341	2,389
ASEAN	149	243	389	513	903	1,177
Central Asia	95	198	128	159	256	385
Iran		46	120	185	373	565
High Income Asia	557	629	746	896	995	1,112
Asia Energy Supply Mix (%)						
Coal		40	42	47	48	50
Oil		16	17	20	21	20
Gas		9	10	11	12	11
Hydro		3	2	2	2	1
Biomass		26	24	15	10	7
Other (including nuclear)		6	5	5	7	11
Asia electricity consumption (TWh)		2,249	3,057	6,113	17,267	26,181
PRC	259	586	1,081	2,717	7,513	10,630
India	90	197	369	544	1,966	3,440
ASEAN	55	167	321	497	1,383	1,956
Central Asia	63	162	124	152	443	715
Iran	38	58	86	145	332	544
High Income Asia	831	976	1,012	1,128	1,411	1,746
Reference Energy Consumption (Mtoe)						
World	7,228	8,761	10,018	12,013	16,790	22,288
OECD	4,050	4,476	5,249	5,496	5,811	6,011
US	1,802	1,913	2,280	2,337	2,396	2,412
Non-OECD	3,003	4,087	4,507	6,187	10,529	16,277

Source: EIA (2010), IEA (2008), IEA (2009), IEA (2010a), IEA (2010 b), World Bank (2010) and Author's estimates, 2011.

Source: Asia 2050 Study, ADB 2011

1. ASIA Energy Outlook (cont.)

- Higher energy dependency and imports for oil in particular will raise security issues in Asia and ROW
- PRC oil imports to increase from about 4 mb/d in 2009 to 20 mb/d in 2050; LNG imports started in 2006 and may reach 174 billion cubic meters (bcm) by 2050
- India oil imports at 1.6 mb/d in 2000, 2.5 mb/d in 2009 and 14 mb/d in 2050; LNG imports could be 140mcb by 2050
- ASEAN energy demand to grow fast also.

2. ASEAN Energy Map

- ASEAN: An energy surplus region
- ASEAN has substantial and diversified energy resources ranging from fossil fuels, hydro, geo-thermal, bio-fuel, biomass, and solar.
- Fossil fuel reserves important in Indonesia, Malaysia, Myanmar, Thailand and Viet Nam
- Hydro and hydro potential important in Cambodia, Indonesia, Lao PDR, Myanmar.

Coal, Oil and Gas in ASEAN Countries (Reserves and Production)

Coal, oil and gas in ASEAN countries (reserves and production), at end of 2011

Countries	Coal Reserves (Million tonnes)	Coal Production (MTOE)	Oil Reserves (1,000 Million Barrels)	Oil Production 1,000 B/D	Gas Reserves (Trillion Cubic Metres)	Gas Production (MTOE)
Brunei	-	-	1.1	166.0	0.3	11.5
Indonesia	5,529.0	199.8	4.0	942.0	3.0	68.0
Malaysia	-	-	5.9	573.0	2.4	55.6
Myanmar	-	-	-	-	0.2	11.2
Thailand	1,239.0	6.0	0.4	345.0	0.3	33.3
Vietnam	150.0	24.9	4.4	328.0	0.6	7.7
China	114,500.0	1,956.0	14.7	4,090.0	3.1	92.3
World Total	860,938.0	3,955.5	1,652.6	83,576.0	208.4	2,954.8

Source: BP Statistical Review of World Energy 2012

ASEAN Hydro Potential

- Besides fossil fuels, large hydro potential mainly in GMS, some installed
- GMS potential is 250,000 MW but only less than half feasible.
- Lower Mekong Basin potential 50,000-64,750 MW
- Yunnan and Myanmar: 70% total. Major potential in Myanmar
- Overall 6,000 MW built or under construction
- Viet Nam: 34,000 MW (+/- 20,000 feasible)
- Laos: 26,500 MW
- Myanmar: 108,000 MW (25,000 MW exploitable)
- Cambodia:10,000 MW in North East
- Malaysia: Sarawak
- Yunnan: 71,168 MW

ASEAN Other Energy Sources

- Geothermal: Large in Indonesia 27.510 MW; Philippines: 14,502 GWh/y (over 17% of electricity supply in 2009)
- Renewables: biomass (all ASEAN countries except Singapore) and solar (all ASEAN countries).
- Bio-fuels: big potential in Laos, Myanmar and Thailand but conflict with agriculture

3. ASEAN ENERGY OUTLOOK

- ASEAN is energy intensive region much dependent on fossil fuels
- ASEAN consumption increases at average rates of over 3% over past decade compared to a decline in Japan and Europe.
- Consumption per capita has also been increasing fast at average around 1 % (7.8 % for China) compared to fall in Japan and Europe. Give Asian demographics, this is worrisome !
- Data shows some improvement in energy efficiency (GDP per unit of energy) over last decade but much slower than in Europe.

Energy Use in ASEAN – Per Capita

Energy use in ASEAN

Countries	Energy Consumption per Capita			
	Kilograms of Oil Equivalent			Average Annual Growth Rate (%)
	1995	2000	2009	00 -09
Brunei	7,984.1	7,502.7	7,971.3	1.3%
Cambodia	302.0	319.6	370.7	1.7%
Indonesia	676.9	729.6	850.8	1.7%
Lao PDR	-	-	-	-
Malaysia	1,791.1	2,018.8	2,391.0	2.1%
Myanmar	279.3	278.0	316.4	1.6%
Philippines	490.7	522.9	423.6	-2.3%
Singapore	5,289.1	4,778.2	3,704.4	-1.6%
Thailand	1,037.9	1,145.9	1,503.7	3.1%
Vietnam	416.4	475.6	744.5	5.2%
China	869.2	867.1	1,695.3	7.8%
Japan	3,956.1	4,090.4	3,700.2	-1.1%
Europe	3,544.9	3,730.3	3,534.5	-0.6%

Source: World Bank Database, 2012

Energy Use in ASEAN – Total Consumption

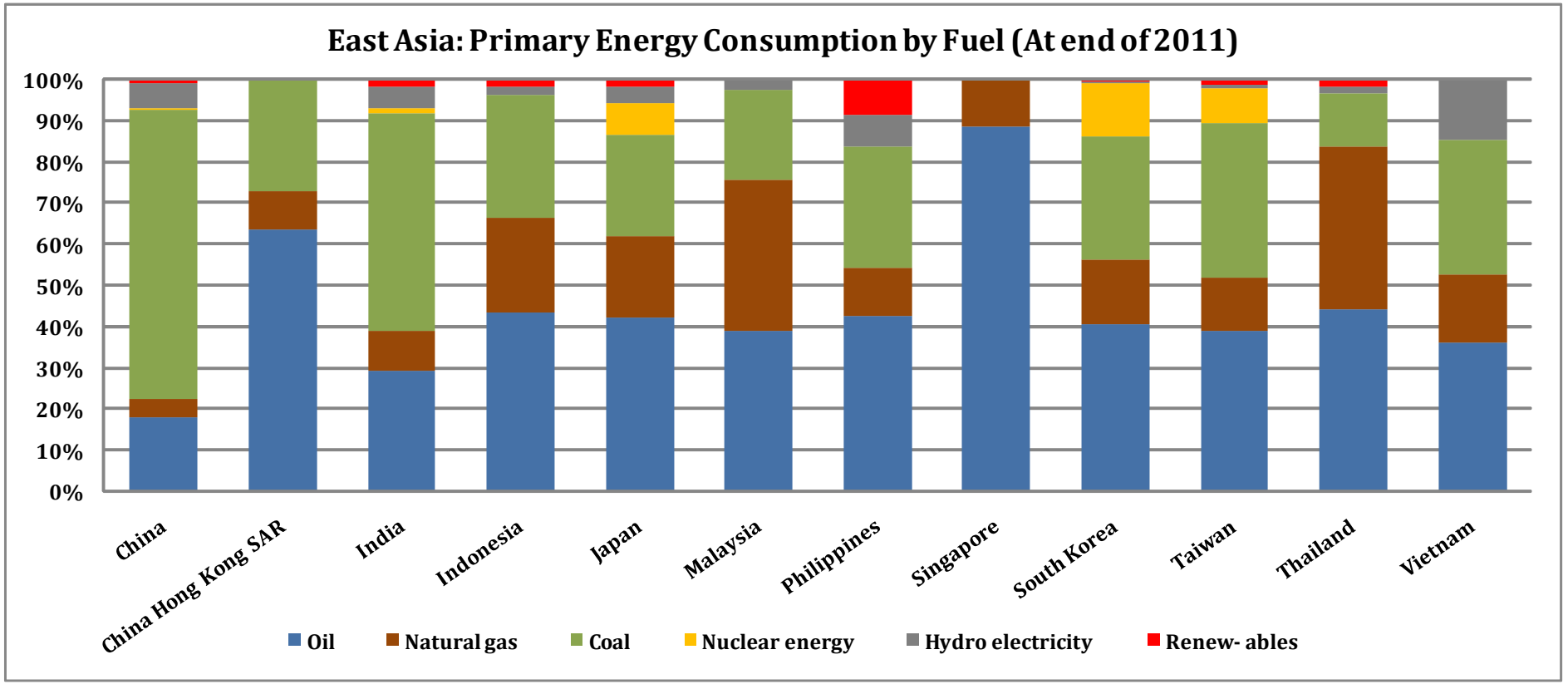
Energy use in ASEAN

Countries	Total Energy Consumption			
	Kilotons of Oil Equivalent			Average Annual Growth Rate (%)
	1995	2000	2009	00 - 09
Brunei	2,312.3	2,453.6	3,123.5	3.4%
Cambodia	3,373.0	3,978.1	5,182.3	3.0%
Indonesia	134,970.8	155,691.6	201,998.6	2.7%
Lao PDR	-	-	-	-
Malaysia	37,112.1	47,271.1	66,826.2	4.1%
Myanmar	11,768.3	12,500.5	15,062.2	2.2%
Philippines	33,981.9	40,423.6	38,842.5	-0.4%
Singapore	18,641.3	19,246.3	18,476.0	-0.8%
Thailand	61,912.6	72,369.9	103,315.9	4.1%
Vietnam	29,982.3	36,923.4	64,047.9	6.4%
China	1,047,245.5	1,094,871.4	2,257,100.9	8.5%
Japan	496,246.8	518,946.1	471,992.4	-1.0%
Europe	1,101,811.9	1,175,607.3	1,169,685.6	-0.03%

Sources: World Bank Database, 2012

Primary Energy Consumption by Fuel (At end of 2011)

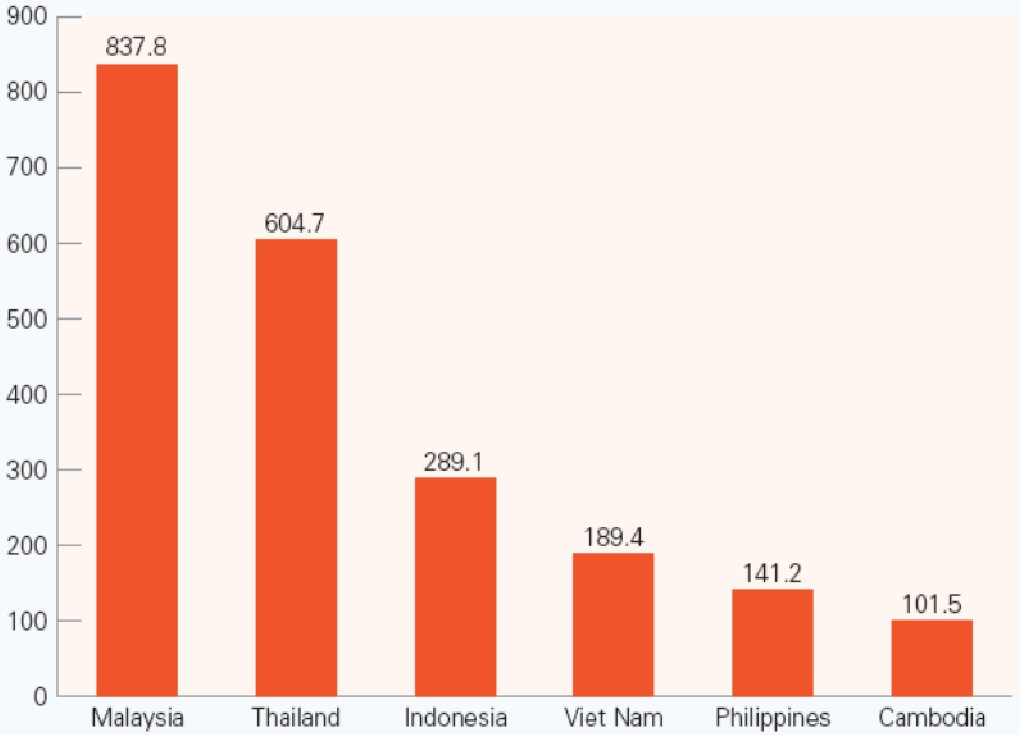
Primary Energy Consumption by Fuel (At end of 2011)



Source: BP Statistical Review of World Energy 2012

Oil Product Use Per Capita

Figure 3.20. Oil Product Use Per Capita
Selected ASEAN Economies, 2009

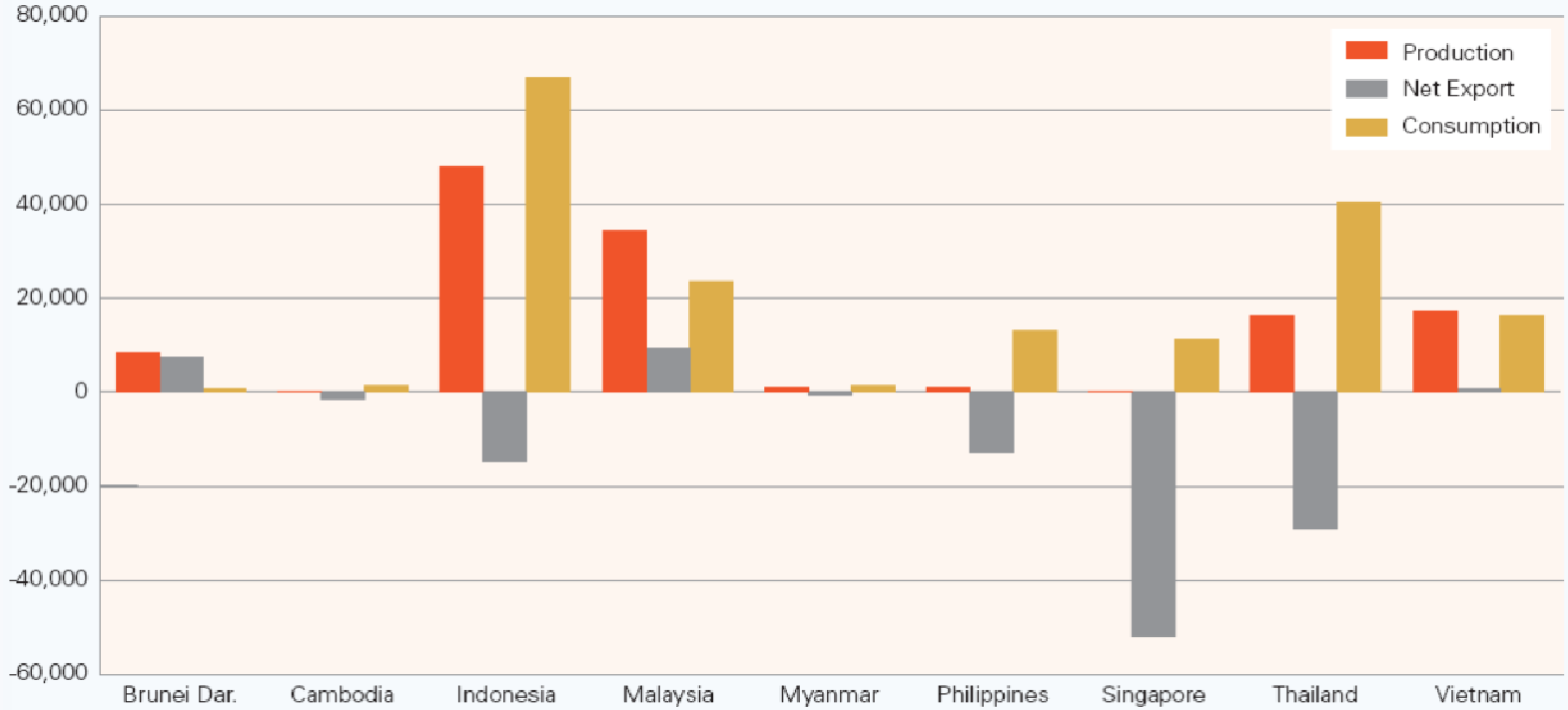


Notes: Thousand Tonnes Oil-Equivalent per Capita
Source: Asian Development Bank (ADB). 2010. Key Indicators for Asia and the Pacific 2010, 41st Edition.

Source: ASEAN 2030 Study, ADB 2011

Oil Production, Net Exports, Consumption

Figure 3.21. Oil Production, Net Exports, Consumption
Oil-Equivalent Thousand Tonnes in Selected ASEAN Countries, 2009



ASEAN=Association of Southeast Asian Nations; Brunei Dar.=Brunei Darussalam
Notes: (i) Oil-equivalent tonnes measure the amont of energy released by burning approximately one tonne of crude oil; (ii) Figures are calculated on a net calorific value basis.
Source: International Energy Agency. On-line Countries Data, available at: http://www.iea.org/countries/

Source: ASEAN 2030 Study, ADB 2011

ASEAN Socio-economic Growth Projection 2007-2030

Table 4 ASEAN Socio-economic Growth Projection 2007-2030

2007-2030 Projection	Population	GDP	Primary Energy		Final Energy		Electricity	
			BAU	APS	BAU	APS	BAU	APS
ASEAN	**1.1%**	**5.2%**	**4.5%**	**3.6%**	**4.4%**	**3.6%**	**6.5%**	**5.8%**
Brunei	2.1%	2.6%	2.8%	1.8%	3.2%	3.1%	3.6%	3.5%
Cambodia	1.3%	6.9%	4.2%	3.5%	3.8%	3.1%	14.5%	13.8%
Indonesia	1.1%	6.3%	5.0%	3.7%	5.0%	4.0%	7.7%	6.6%
Lao	1.7%	7.5%	6.3%	6.0%	5.0%	4.7%	10.6%	10.5%
Malaysia	1.6%	5.0%	3.1%	2.0%	3.3%	2.1%	3.9%	3.1%
Myanmar	1.7%	9.0%	3.6%	3.2%	3.7%	3.4%	14.9%	14.9%
Philippines	1.4%	4.9%	4.4%	4.0%	4.0%	3.6%	5.8%	5.3%
Singapore	0.7%	3.9%	2.4%	2.2%	3.1%	3.0%	2.8%	2.5%
Thailand	0.3%	4.1%	3.8%	2.7%	4.0%	2.8%	4.3%	3.6%
Vietnam	0.9%	7.5%	6.3%	5.9%	5.1%	4.8%	8.8%	8.2%

Source: Achayuthakan C. and Ongsakul W., ADBI, 2012

Primary Energy Forms in Southeast Asia 2007,2030

Table 3.16. Primary Energy Forms in Southeast Asia 2007, 2030

Primary Energy	2007		2030		Annual average growth rate
	Oil-equivalent million tons	% share	Oil-equivalent million tons	% share	
Coal	76.0	14.9	300.1	26.0	6.2%
Oil	185.0	36.2	408.1	35.4	3.5%
Natural Gas	109.0	21.3	183.3	15.9	2.3%
Nuclear	0.0	0.0	30.4	2.6	–
Hydro	6.0	1.2	29.0	2.5	7.1%
Geothermal	15.0	2.9	47.4	4.1	5.1%
Others	120.0	23.5	154.2	13.4	1.1%
Total	**511.0**	**100.0**	**1,152.5**	**100.0**	**3.6%**

ASEAN=Association of Southeast Asian Nations.
Notes: (i) Oil-equivalent tonnes measure the amont of energy released by burning approximately one tonne of crude oil; (ii) Other sources of energy include the traditional use of biomass—the gleaning of fields and forests.
Source: Chira Achayuthakan and Weerakorn Ongsakul. 2012., Energy Needs toward ASEAN 2030, Background paper prepared for the ASEAN 2030 Study.

ASEAN 2030 Projection on Renewables

Table 6 ASEAN 2030 Projection on Renewables

2030 Projection	Share in Primary Energy (APS)			Share in Electricity (APS)		
	Hydro	Geothermal	Renewables*	Hydro	Geothermal	Renewables*
ASEAN	**2.52%**	**4.11%**	**13.38%**	**16.32%**	**2.65%**	**6.12%**
Brunei	-	-	0.00%	-	-	0.00%
Cambodia	15.79%	-	30.70%	77.27%	-	0.00%
Indonesia	0.61%	5.96%	13.02%	5.09%	4.98%	1.44%
Lao	21.69%	-	10.84%	64.56%	-	-
Malaysia	2.18%	-	3.95%	11.99%	-	2.64%
Myanmar	40.37%	-	3.98%	97.64%	-	-
Philippines	1.37%	20.49%	11.47%	8.42%	12.22%	1.62%
Singapore	-	-	0.60%		-	4.93%
Thailand	0.15%	-	28.29%	1.06%	-	32.07%
Vietnam	2.74%	-	9.52%	15.40%	-	0.58%

* Mostly renewables are biomass or agricultural waste except solar in Singapore

Source: Achayuthakan C. and Ongsakul W., ADBI, 2012

Net Energy Import Dependency of the ASEAN Countries, 2002 - 2030

Net Energy Import Dependency of the ASEAN Countries, 2002 - 2030

Countries	2002	2030
Brunei	-668	-688
Indonesia	-55	Negligible
Malaysia	-57	32
Philippines	51	68
Singapore	97	99
Thailand	53	81
Vietnam	-26	15
China	Negligible	18
Japan	82	78
Korea	84	77

Source: APERC, Understanding International Energy Inititiatives in the APEC Region, 2007. Nicolas F., ASEAN Energy Corporaation: An Increasing Daunting Challenge, IFRI, 2009.

3. ASEAN Energy Outlook (concl)

- ASEAN energy demand particularly for electricity will increase rapidly over the next 2 decades
- In spite of hydro potential, dependency on fossil fuel will remain large at over 70% in 2030. The share of coal might double.
- Projections by ACE up to 2020 show electricity generation by coal to double and that of hydro to stagnate
- For instance, in Viet Nam power plan 2006-2015, on 48,700 MW new generation capacity, 53% (25,890 MW) to be coal fired, 29% hydro, 13 % LNG.

Electricity Generation Mix in 2000 and 2020

Electricity Generation Mix in 2000 and 2020
(by country and type in fuel, in percentage, with values for 2020 in brackets)

Countries	Gas	Coal	Oil	Geo	Hydro	Others
Brunei	100 (89)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (11)
Cambodia	0.0 (19)	0.0 (0)	100 (12)	0.0 (0)	0.0 (30)	0.0 (39)
Indonesia	28.1 (25)	42.1 (60)	24.3 (4)	1.2 (3)	4.2 (4)	0.0 (3)
Laos	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	100 (100)	0.0 (0)
Malaysia	74.8 (44)	9.7 (46)	5.1 (0)	0.0 (0)	10.4 (9)	0.0 (1)
Myanmar	44.9 (4)	0.0 (2)	11.4 (0)	0.0 (0)	43.6 (93)	0.0 (0)
Philippines	0.0 (8)	44.8 (82)	19.3 (1)	11.1 (3)	7.5 (5)	17.2 (0)
Singapore	12.6 (78)	0.0 (18)	87.4 (2)	0.0 (0)	0.0 (0)	0.0 (1)
Thailand	74.1 (69)	16.0 (17)	8.1 (0)	0.0 (0)	1.8 (12)	0.0 (0)
Vietnam	20.9 (30)	28.8 (40)	20.2 (0)	0.0 (0)	30.1 (28)	0.0 (2)
Total	47.7 (39)	22.0 (45)	19.7 (1)	1.4 (1)	7.4 (3)	1.8 (1)

Source: BP Statistical Review of World Energy 2012; Nicolas F., ASEAN Energy Corporaation: An Increasing Daunting Challenge, IFRI, 2009.

3. ASEAN Energy Outlook (concl.)

- In Thailand, Malaysia and Singapore, strong opposition to coal fired plants.
- Hydro power potential very high in Cambodia, Laos and Mynamar for export to China, Thailand and Viet Nam. Security issues and risks associated with climate change. Also strong resistance by civil society particularly in Myanmar. Thailand and Viet Nam exhausted potential. Potential in Indonesia, Malaysia (Sarawak) and Philippines good but far from consumer markets (see next table).
- Renewables will remain small generally below 5 %

3. ASEAN Energy Outlook (Concl.)

- ASEAN countries will become net energy importers in the next 2 decades (table above).
- 70% of oil will be imported by 2030 against about 20% in 2005. Pressure to explore for new deposits high but disputed areas….
- Nuclear power possible in Viet Nam, Thailand and Indonesia but Japanese earthquake setback.
  ASEAN agreed on peaceful use of nuclear power at November2007 ASEAN Summit

3. ASEAN Energy Outlook (concl.)

- Except possibly for oil, ASEAN is by and large self sufficient.
- However energy availability particularly hydro, gas and oil is not in countries where demand highest; hence trade needed but supply security a highten issue
- Lao, Myanmar and later Cambodia exporting to China, Thailand and Viet Nam; Indonesia and Malaysia to Singapore.
- Pressure for new exploration in contested areas will increase dramatically (see below)

4. ASEAN Energy Cooperation

- ASEAN cooperation in energy sector has been part of ASEAN since the 1970s.
- Cooperation focused on oil supplies security and power grid interconnections which started in 1960s between Thailand and Laos (Nam Ngum 1: 155 MW in 1971: Started idea of GMS), with later connections between Malaysia and Thailand, and Malaysia and Singapore.
- Mainly exchange of information and discussions

4. ASEAN Energy Cooperation

- ASEAN Economic Community (AEC) Blueprint basis for cooperation: Energy key to enable ASEAN to be a competitive single production base. Two main priorities to enhance security and quality of energy supply.
- The ASEAN Power Grid (APG) aims to establish 14 electricity interconnections to optimize power production and distribution
- The Trans-ASEAN Gas Pipeline involves 7 interconnections between pipelines across ASEAN
- Grid connectivity also under GMS program as is creation of a regional power trade market

The Existing 3020 km. Bilateral Connections

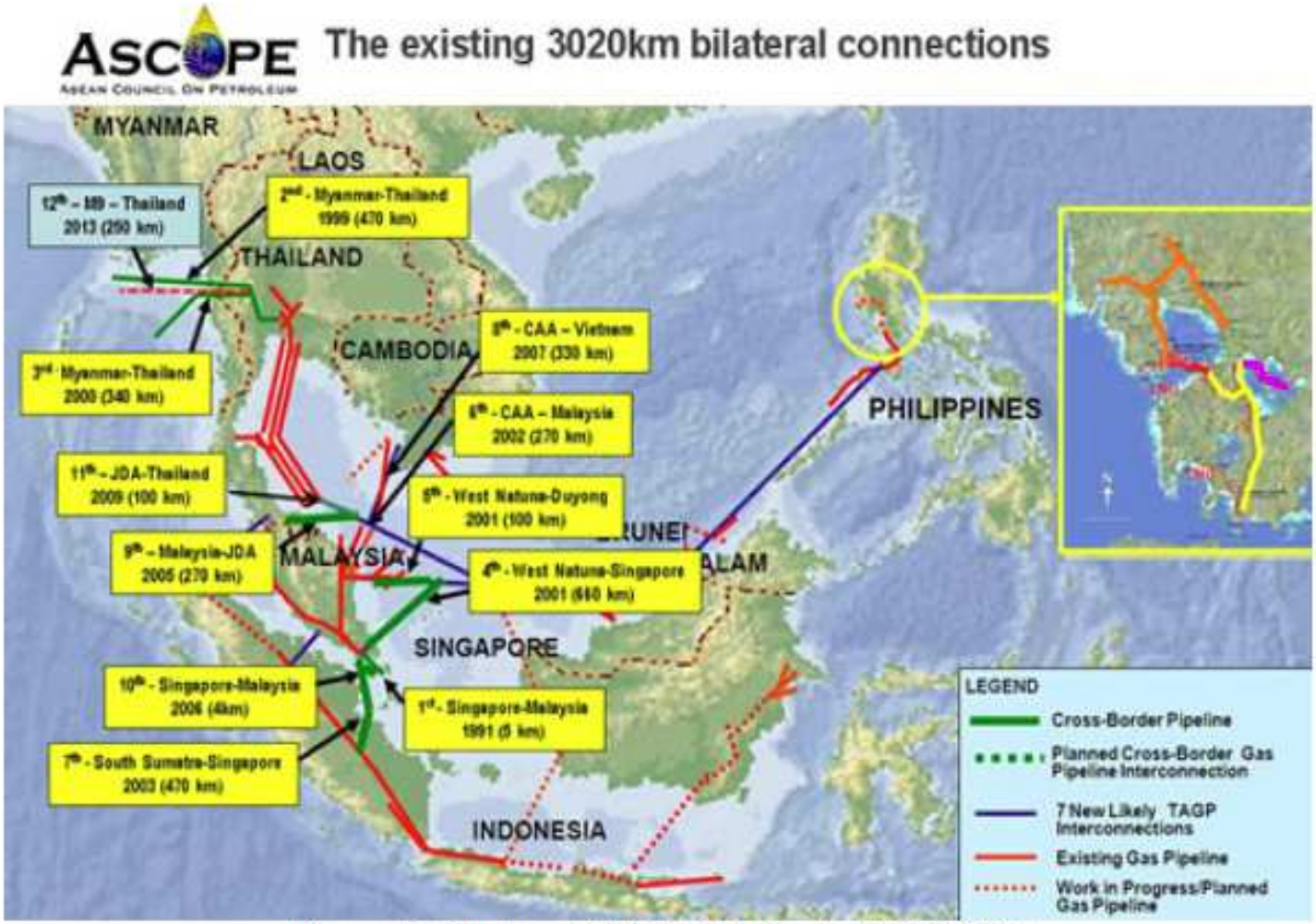


Figure 5. Status of TAGP Projects (ASCOPE)

Source: Achayuthakan C. and Ongsakul W., ADBI

4. ASEAN Energy Cooperation

- AEC also prioritizes the finalization of the ASEAN Petroleum Security Agreement (APSA) to enhance oil and gas security in the region. The APSA is emergency crisis response mechanism where members guarantee supply in case of emergency. APSA never worked so far, as each country first need their own national oil emergency response in place.
- In its Plan of Action on Energy Cooperation, 2010-2015, ASEAN also envisages cooperation in clean coal technology, renewable energy (biofuels), civilian nuclear energy, energy efficiency and conservation. Little progress has however been done in these areas.

5. ASIAN Energy Challenges

- Looking ahead, energy challenges for Asia and ASEAN are formidable from multiple points of view: supply, demand, security, exploration, territorial claims, and environment
- **ON SUPPLY**: Continued high dependence on fossil fuels requires strong diversification initiatives as well as technological innovation to mitigate impact on climate change given projected increasing use of coal.
- Supply issues call for a much stronger regional cooperation within ASEAN and within whole of East and Southeast Asia (can be done in ASEAN + 3 context).
- East Asia's dependence on ASEAN for some energy supply (oil and gas) is issue of past given ASEAN's own needs: Indonesia stopped oil exports to Japan; Gas export might take some more time to stop; Hydro still possible but to China. So East Asia and ASEAN will become more competitors for energy

5. ASIAN Energy Challenges

- **DEMAND SIDE MANAGEMENT** essential to improve region's energy efficiency. Energy use highly inefficient except Japan, Korea and Singapore
- Regional concerted Asia wide approach would work best: again regional cooperation ASEAN-East Asia needed beyond just interconnections.
- ASEAN should develop common standards and policies to encourage energy conservation and improve energy efficiency. Formidable challenge given widespread subsidies in region. Lessons from EU ? Underlying issue is competitiveness.
- Transport infrastructure and logistics should be optimize based on impact on climate (EU Green logistics plan)
- Huge investment needed to move away from mainly road and air transport (railway, maritime, RO-RO networks)

5. ASIAN Energy Challenges

- Because of East Asia's and ASEAN's increasing dependence on oil and gas imports, **SECURITY** in trade routes will be essential.
- Straits of Malacca will be more congested and unsecure.
- Large ships can avoid Straits but much longer routes
- China developing Kyu Phyu Port in Rakhine State of Myanmar to transfer oil via pipeline to Yunnan and rest of China: unrest in some areas of Myanmar could be big security threat. How will China deal with security issue ? Influence on Myanmar?
- Cross Thailand peninsula pipeline connection not a viable option!
- Protection of sea lanes will become more vital than in past.

5. ASIAN Energy Challenges

- **EXPLORATION**: Many potential energy rich areas in Asia have not yet been explored: Andaman Sea of Myanmar, Thailand and Laos inland areas, some offshore in Gulf of Thailand, offshore along Viet Nam and Philippines coasts, offshore in Northeast Asia, etc; Many ASEAN areas still not explored
- While cooperation within ASEAN +3 or within ASEAN would be best way forward, in many cases, territorial disputes and conflicts over resources sharing stand in way.
- Contrary to Europe (?), many borders, territorial and at sea, are not defined in Asia. Potentially very dangerous situation which could be exacerbated by need for energy security. If countries think about themselves first, conflicts possible which will spill over worldwide.
- Need for international settlement

5. ASIAN Energy Challenges

- Conflict areas include South China Sea with many ASEAN countries and China involved, ASEAN territorial water including between Cambodia and Thailand.
- ASEAN does not appear to have a single voice or position (ASEAN MFAs meeting in June of this year had for first time ever no communique); November 2012 Summit (on-going) will be big test
- Issue is serious and has recently deteriorated: Energy at center of problems !

5. ASIAN Energy Challenges

- **Environmental issues** will also become large challenges as pressure for hydropower development will increase dramatically
- On Mekong River, several mainstream dams are planned which could affect Cambodia and Viet Nam. Xayaburi in Laos restarted November 2012.
- Main rivers in Myanmar such as Salween without dams so far. But pressure by China and Thailand is high. Environment issues and social issues (minorities) critical.
- Resistance to dam construction likely to increase within region and possible source of frictions with buyer of electricity (China, Thailand and Viet Nam).

MERCI DE VOTRE ATTENTION !

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