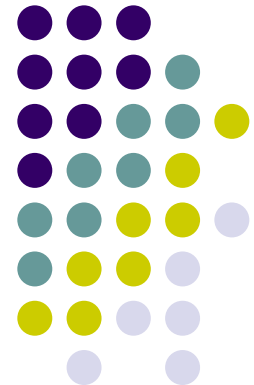


# Renewable Energy and APEC Energy Statistics

**42<sup>nd</sup> Meeting**  
**APEC Expert Group on New and Renewable Energy Technology**

**Moana Surfrider, A Westin Resort & Spa**  
**Honolulu, U.S.A**  
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# EGEDA: Expert Group on Energy Data Analysis

## Mission:

- The Expert Group on Energy Data and Analysis (EGEDA) is responsible for providing policy relevant energy information to APEC bodies and the wider community, through collecting energy data of the APEC region, managing the operation of the APEC Energy Data Base through the Coordinating Agency, collecting policy relevant information from member economies, and examining and advising on the research activities of the APERC.

1991: **2nd APEC EWG Meeting** in Jakarta agreed to establish an Expert Group within APEC responsible for managing and reviewing the operation of the APEC Energy Data Base.

Pursuant to this decision, the **Energy Data Expert Group** was established in 1991.

1993: The Expert Group has published “**APEC Energy Statistics**”. The Expert Group has also developed an on-line data collection and dissemination system.

1996: Following the 12th EWG Meeting in Hong Kong in May 1996, The name of the Expert Group was changed to the **Energy Data and Outlook Expert Group**

1999: It was approved at the 18<sup>th</sup> EWG Meeting in Wellington, to Change the name of the Group to the current **Expert Group on Energy Data and Analysis**.

# EGEDA: Expert Group on Energy Data Analysis

## Energy Data

- **Monthly** Oil and Gas (JODI: Joint Organisations Data Initiative)
- **Quarterly** Energy Supply  
Coal, Oil, Petroleum Products, Gas and Electricity
- **Annual** Energy Supply and Demand  
Coal, Oil, Petroleum Products, Gas, Electricity / Heat, **New and Renewables**

## Other Data (Energy Related Data)

- CO2 Emission
- Energy Prices
- Oil / Gas reserve and producing / refining capacity as JODI Annual

1992: **1<sup>st</sup> trial** energy data collection for 1990 annual energy data.  
**Commercial Biomass Energy were included.**

2005: **Revised questionnaires** are applied for **2004** annual data collection.  
**Non-commercial Biomass Energy are included in the APEC questionnaire.**

# Data Collection for New and Renewable Energy

- The APEC Annual New and Renewable Energy Questionnaire consists of 5 tables:
  - **Table 1a:** Supply Sector
  - **Table 1b:** Imports by Origin / Exports by Destination
  - **Table 2:** Transformation and Energy Sectors
  - **Table 3:** Final Consumption Sector
  - **Table 4:** Conversion Factors

## Energy in New and Renewable Questionnaire

Fuel Wood & Wood Waste		Hydro
Bagasse		Geothermal
Charcoal		Electricity
Other Biomass		Heat
Biogas		Solar
Industrial Waste		Photovoltaic
Municipal Solid Waste	Thermal	
Liquid Biofuels		Electricity
Biogasoline		Heat
Bioethanol		Tide, Wave and Ocean
Bio-jet		Wind
Biodiesels		

# New and Renewables Questionnaire

## Table 1a: Supply Sector

		FuelWood & Woodwaste	Bagasse	Charcoal <sup>2</sup>	Other Biomass <sup>3</sup>	Biogas	Industrial Waste	Municipal Solid Waste	Liquid Biofuels	of which Biogasoline	of which Bioethanol	of which Bio-jet	of which biodiesels
		1000t	1000t	1000t	1000t	10 <sup>10</sup> kcal (gross)	1000t	1000t	1000t	1000t	1000t	1000t	1000t
		A	B	C	D	E	F	G	H	I	J	K	L
Production <sup>1</sup>	(+) 1												
Imports	(+) 2												
Exports	(-) 3												
Stock Changes (+ or -)	(+) 4	0	0	0	0	0	0	0	0	0	0	0	0
<b>Gross Inland Deliveries (calculated)</b>	<b>(=) 5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Statistical Differences	6	0	0	0	0	0	0	0	0	0	0	0	0
<b>Gross Inland Deliveries (observed)</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL STOCKS on NATIONAL TERRITORY</b>													
Opening	8												
closing	9												

### Production:

Report all production within national boundaries. Production should only include marketable production.

### Imports and Exports:

Data should reflect amounts having crossed the national territorial boundaries, whether customs clearance has taken place or not.

### Total stocks on national territory:

All stocks on national territory, including stocks held by governments, by major consumers or by stockholding organisations, stocks held on board incoming ocean vessels, stocks held in bonded areas and stocks held for others, whether under bilateral government agreement or not.

### Stock Changes:

Stock changes should reflect the difference between opening stock level and closing stock level for stocks held on national territory. A stock build is shown as a negative number, and a stock draw as a positive number.

# New and Renewables Questionnaire

## Table 1b: Imports by Origin / Exports by Destination

Imports by Origin:

		FuelWood & Woodwaste	Bagasse	Charcoal <sup>2</sup>	Other Biomass <sup>3</sup>	Biogas	Industrial Waste	Municipal Solid Waste	Liquid Biofuels	of which Biogasoline	of which Bioethanol	of which Bio-jet	of which biodiesels
		1000t	1000t	1000t	1000t	10 <sup>10</sup> kcal (gross)	1000t	1000t	1000t	1000t	1000t	1000t	1000t
		A	B	C	D	E	F	G	H	I	J	K	L
APEC Economies	1	0	0	0	0	0	0	0	0	0	0	0	0
Australia	2												
Brunei Darussalam	3												
Canada	4												
Chile	5												
China	6												
Hong Kong, China	7												
Indonesia	8												
Japan	9												
Republic of Korea	10												
Malaysia	11												
Mexico	12												
New Zealand	13												
Papua New Guinea	14												
Peru	15												
Philippines	16												
Russian Federation	17												
Singapore	18												
Chinese Taipei	19												
Thailand	20												
United States of America	21												
Viet Nam	22												
ASEAN (non-APEC) economies	23	0	0	0	0	0	0	0	0	0	0	0	0
Cambodia	24												
Lao PDR	25												
Myanmar	26												
Rest of the World	27	0	0	0	0	0	0	0	0	0	0	0	0
Other Asia and Pacific	28												
Other Americas	29												
Europe & Former Soviet Union (exclude	30												
Middle East	31												
Africa	32												
Unknown	33												
Total	34	0	0	0	0	0	0	0	0	0	0	0	0

# New and Renewables Questionnaire

## Table 2: Transformation and Energy Sectors

		Firewood & Woodwast	Bagasse	Charcoal	Other Biomass	Biogas	Industrial Waste	Municipal Solid Waste	Liquid Biofuels	of which Biogasoline	of which Bioethanol	of which Bio-jet	of which biodiesels
		1000t	1000t	1000t	1000t	10 <sup>10</sup> kcal (gross)	1000t	1000t	1000t	1000t	1000t	1000t	1000t
		A	B	C	D	E	F	G	H	I	J	K	L
<b>TOTAL TRANSFORMATION SECTOR</b>	1	0	0	0	0	0	0	0	0	0	0	0	0
Main Activity Producers	2	0	0	0	0	0	0	0	0	0	0	0	0
Electricity Plants	3												
CHP Plants	4												
Heat Plants	5												
Autoproducers	6	0	0	0	0	0	0	0	0	0	0	0	0
Electricity Plants	7												
CHP Plants	8												
Heat Plants	9												
Biofuels Processing <sup>2</sup>	10												
Charcoal Production	11												
Not Elsewhere Specified	12												
<b>TOTAL ENERGY SECTOR</b>	13	0	0	0	0	0	0	0	0	0	0	0	0
Electricity, CHP and Heat Plants	14												
Biofuels Processing	15												
Not Elsewhere Specified	16												

**Main Activity Producer:** plants that are either owned by public or private utilities but for which the main activity is to produce power.

**Autoproducers:** plants which main activity is not to produce power, their main activity is e.g industrial activity.

- **Electricity Plants:** Plants that generate electricity only. Fuels or energy source used to generate electricity should be reported here.
- **Combined Heat and Power Plants:** Fuels or energy used by plants that generate both electricity and heat should be reported here.
- **Heat Plants:** Fuels or energy used by plants that generate heat only should be reported here.

**Biofuels Processing:** Report bio-ethanol, bio-diesel, bio-jet kerosene and other biofuel inputs in the process of biofuels blending process.

**Charcoal Production:** Charcoal plants are facilities where charcoal, a solid residue, is produced from the destructive distillation and pyrolysis of wood and other vegetal material. The amount of these wood and other vegetal materials should be reported here.

**Not Elsewhere Specified:** Other transformation plants represent other energy transformation processes not already covered by the list of definition.

# New and Renewables Questionnaire

## Table 3: Final Consumption Sector

		FuelWood & Woodwaste	Bagasse	Charcoal	Other Biomass	Biogas	Industrial Waste	Municipal Solid Waste	Liquid Biofuels	of which Biogasoline	of which Bioethanol	of which Bio-jet	of which biodiesels
		1000t	1000t	1000t	1000t	10 <sup>10</sup> kcal (gross)	1000t	1000t	1000t	1000t	1000t	1000t	1000t
		A	B	C	D	E	F	G	H	I	J	K	L
<b>FINAL CONSUMPTION</b>	1	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL INDUSTRY SECTOR</b>	2	0	0	0	0	0	0	0	0	0	0	0	0
Iron and steel	3												
Chemical and petrochemical	4												
Non-ferrous metals	5												
Non-metallic minerals	6												
Transport equipment	7												
Machinery	8												
Mining and quarrying	9												
Food, beverages and tobacco	10												
Pulp, paper and print	11												
Wood and wood products	12												
Construction	13												
Textile and leather	14												
Not elsewhere specified	15												
<b>TOTAL OTHER SECTOR</b>	16	0	0	0	0	0	0	0	0	0	0	0	0
Commercial and public services	17												
Residential	18												
Agriculture	19												
Fishing	20												
Not elsewhere specified	21												



# New and Renewables Questionnaire

## Table 4: Conversion Factors

Unit: kcal/kg

		FuelWood & Woodwaste	Bagasse	Charcoal	Other Biomass	Biogas	Industrial Waste	Municipal Solid Waste	Liquid Biofuels	of which Biogasoline	of which Bioethanol	of which Bio-jet	of which biodiesels
		A	B	C	D	E	F	G	H	I	J	K	L
Production	1												
Imports	2												
Exports	3												
Average	4												

### Conversion Factors:

In this table, the calorific values or the quantity of heat released by unit quantity of fuel, when it is burned completely with oxygen, and the products of combustion are returned to ambient temperature are to be reported. Renewables have separate calorific values for production, imports and exports. The average of the values of production, imports and exports should also be reported.

1. Expansion of Import / Export
2. Expansion of Non-Energy Use in Oil Questionnaire
3. Adding Unconventional Gases in Gas Questionnaire
4. Adding Production of Petroleum Products from Natural Gas
5. Adding biogasoline, bioethanol, bio-jet and biodiesel in NRE Questionnaire

# Annual Supply / Demand: Energy Balance Table

- Energy Balance Tables are produced by using Coal, Oil, Gas, Electricity/Heat and New and Renewables Questionnaires.

	Coal	Coal Products	Crude Oil	Petroleum Products	Gas	Hydro	Nuclear	Geothermal, etc.	Others	Electricity	Heat	Total
Malaysia												
Indigenous Production	676		35513	2356	57022	642						96208
Imports	8310		8565	7370	4447					9		28701
Exports	-176		-14994	-9517	-21600					-50		-46337
International Marine Bunkers				-66								-66
International Aviation Bunkers												
Stock Changes	-695		144	-115								-666
<b>Total Primary Energy Supply</b>	<b>8114</b>		<b>29229</b>	<b>28</b>	<b>39869</b>	<b>642</b>				<b>-41</b>		<b>77839</b>
<b>Total Transformation Sector</b>	<b>-6894</b>		<b>-26740</b>	<b>25917</b>	<b>-27982</b>	<b>-642</b>				<b>9563</b>		<b>-26778</b>
Main Activity Producer	-6894			-479	-13300	-642				9103		-12211
Autoproducers				-63	-1004					460		-607
Gas Processing					-13679							-13679
Refineries			-26740	26459								-281
Coal Transformation												
Petrochemical Industry												
Loss & Own Use				-993	-1411					-772		-3175
Discrepancy	244		-2488	-519						-768		-3532
<b>Total Final Energy Consumptions</b>	<b>1464</b>			<b>24433</b>	<b>10474</b>					<b>7983</b>		<b>44354</b>
Industry Sector	1464			6092	10250					3685		21490
Transport Sector				16175	189					15		16378
Other Sector				2167	36					4283		6486

**Coal Questionnaire:**  
Supply  
Transformation  
Final Consumption  
Thermal Quantity  
(Unit: kilo-tonnes)

**Oil Questionnaire:**  
Refinery Intake  
Supply  
Transformation  
Final Consumption  
(Unit: kilo-tonnes)

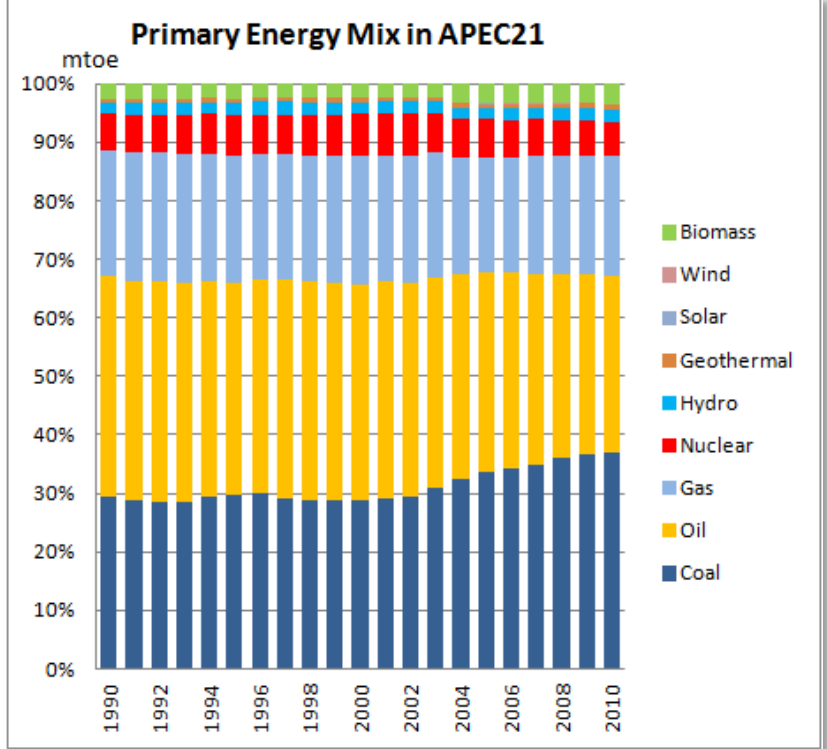
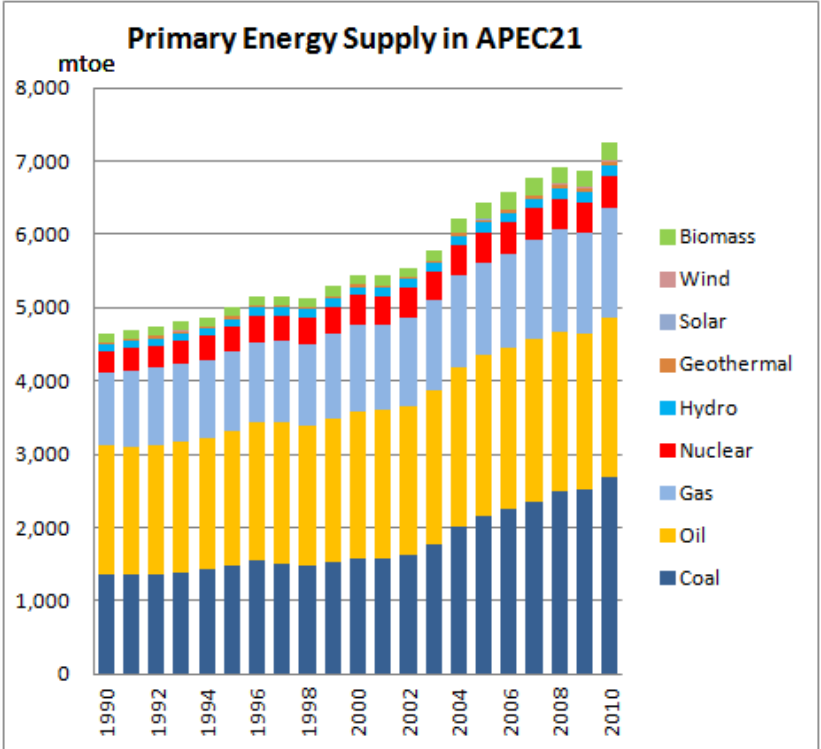
**Gas Questionnaire:**  
Supply  
Transformation  
Final Consumption  
(Unit: million CM)

**Renewables Questionnaire:**  
Supply  
Transformation  
Final Consumption  
(Unit: kilo-tonnes)

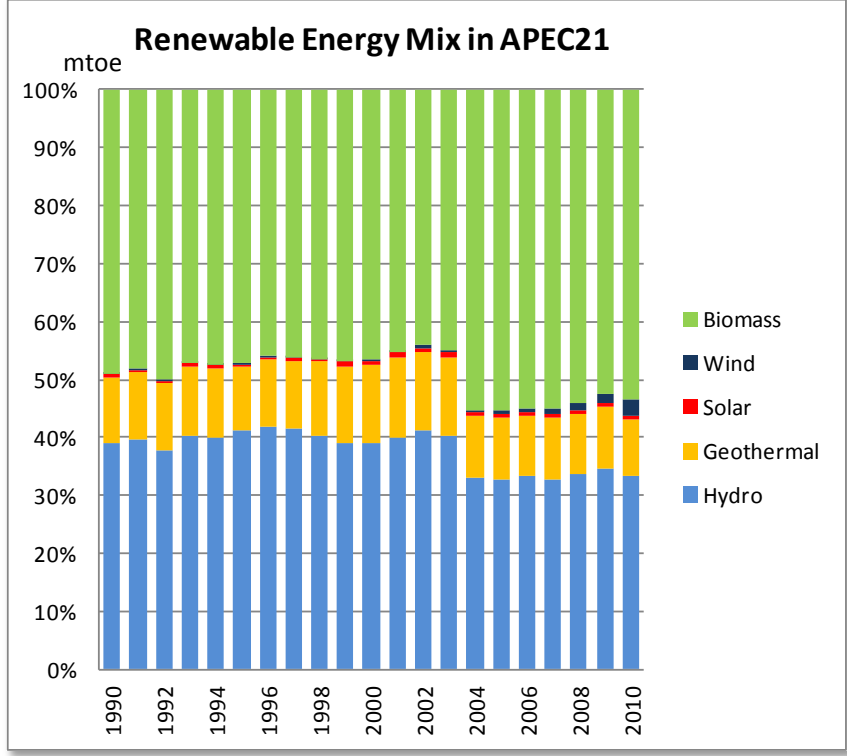
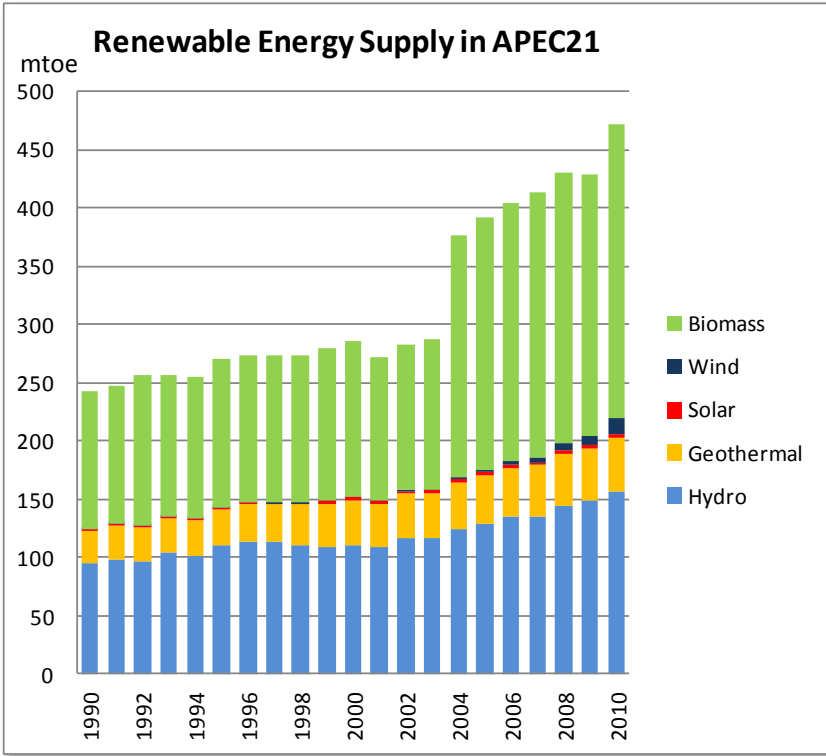
**Electricity & Heat Questionnaire:**  
Generation  
Input  
Supply - Demand  
(Unit: GWh / PJ)

# Renewable Energy in APEC Region

- Share of Renewable Energy in APEC economies increased from 5.2% (1990) to 6.3% (2010)

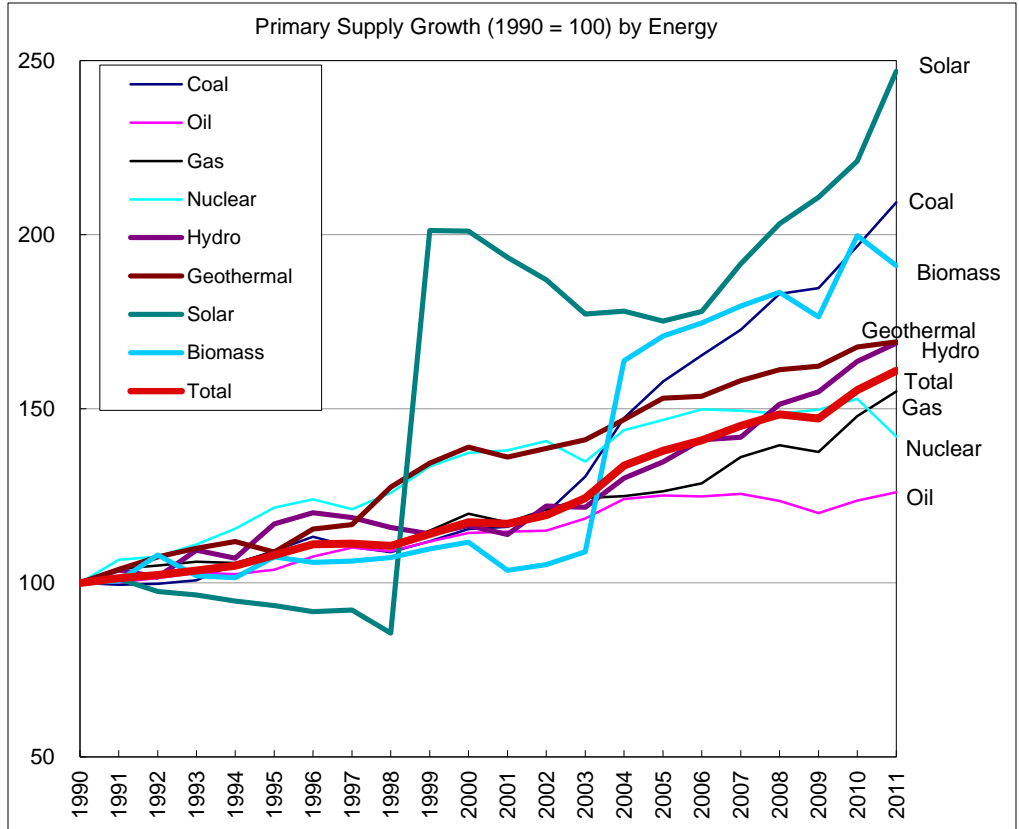


# Renewable Energy in APEC Region



# Primary Supply and Renewable Energy in APEC region

- Renewable Energy and Coal leads the increasing energy supply in APEC region.

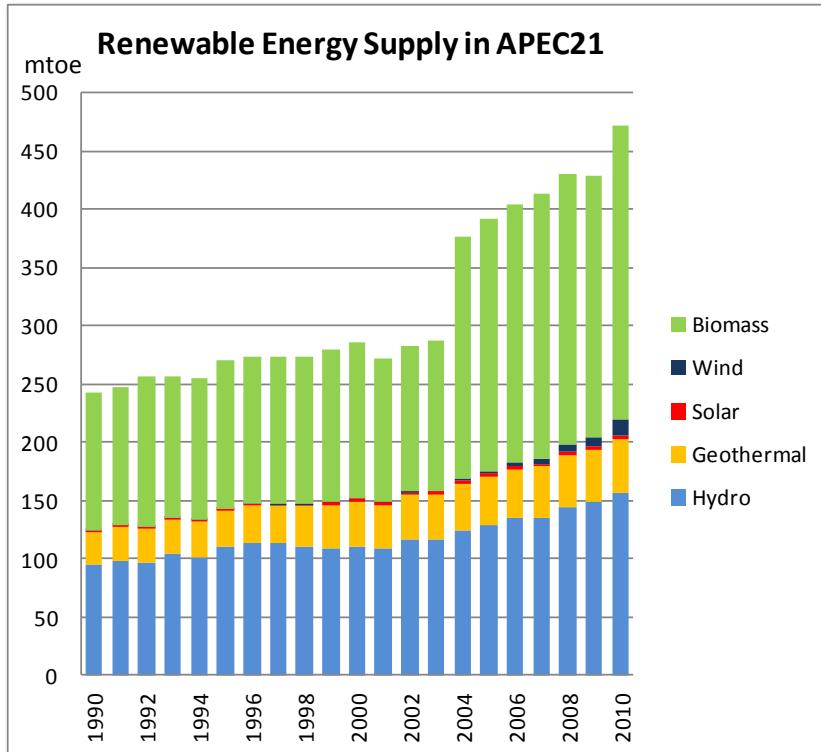


\*excludes wind

# Renewables Energy Supply in APEC Region (Year 2011)

## Renewables Supply

## Renewables Supply (Year 2011)



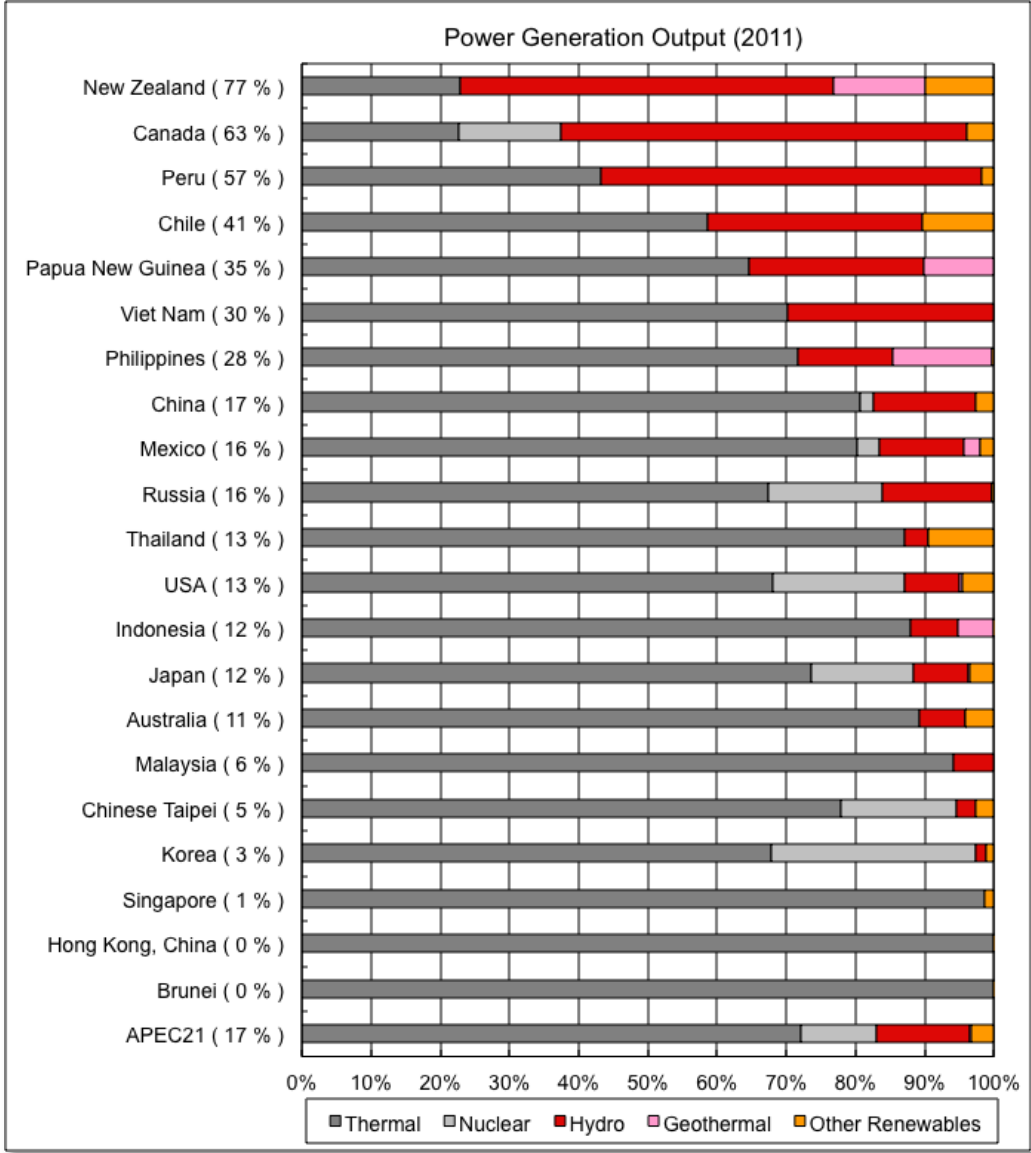
Primary Energy Supply (ktoe)

	1990	1995	2000	2005	2010	2011
Hydro	94,226	110,186	109,727	126,946	154,115	159,109
Geothermal	27,587	30,014	38,326	42,226	46,281	46,691
Solar	1,298	1,213	2,656	2,326	2,955	3,291
Wind	264	281	534	1,952	13,982	18,368
Biofuels	118,724	127,600	132,590	202,811	237,056	226,867

Growth (1990 = 100)

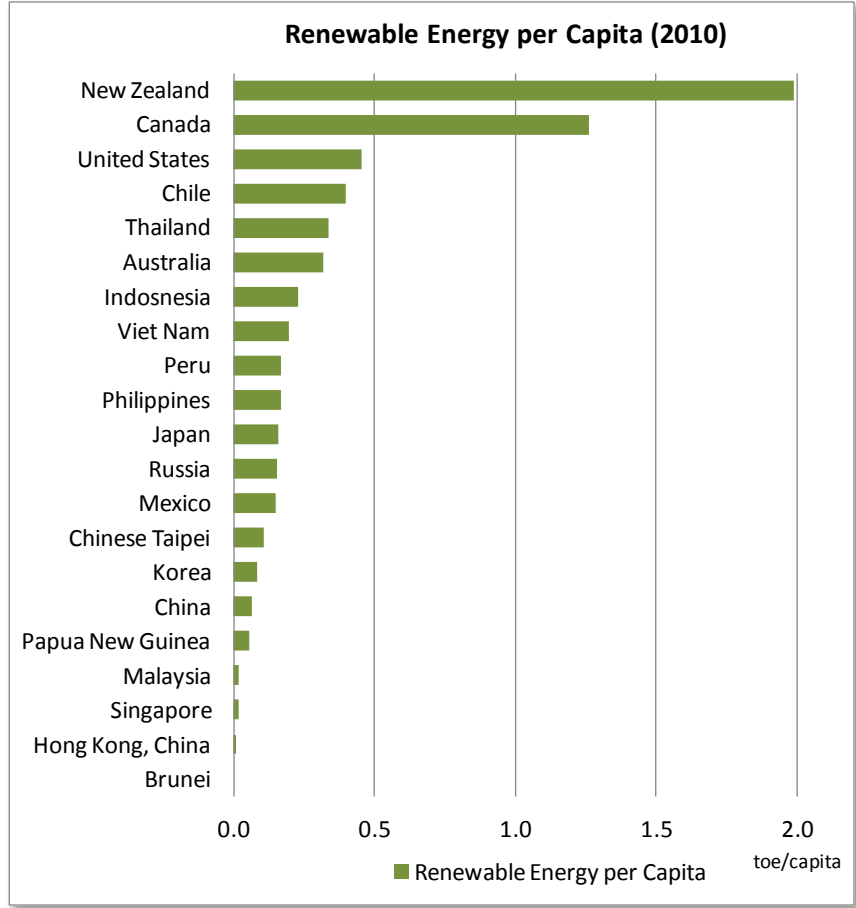
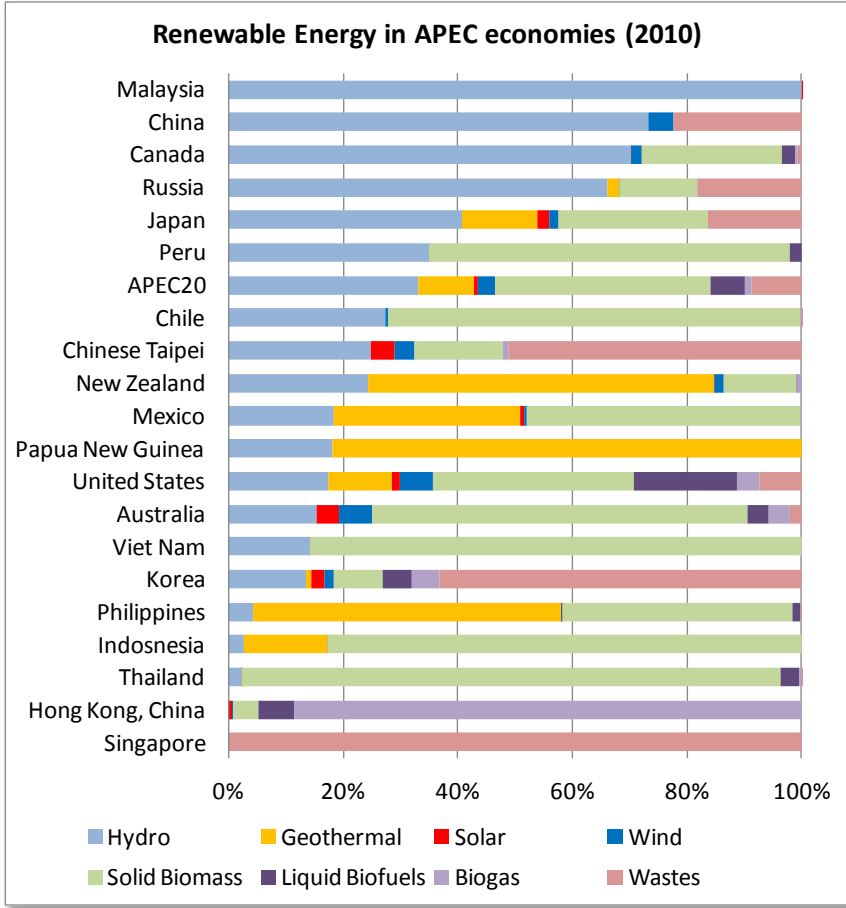
Hydro	100	117	116	135	164	169
Geothermal	100	109	139	153	168	169
Solar	100	93	205	179	228	254
Wind	100	107	202	740	5,301	6,964
Biofuels	100	107	112	171	200	191

# Power Generation Output in APEC region

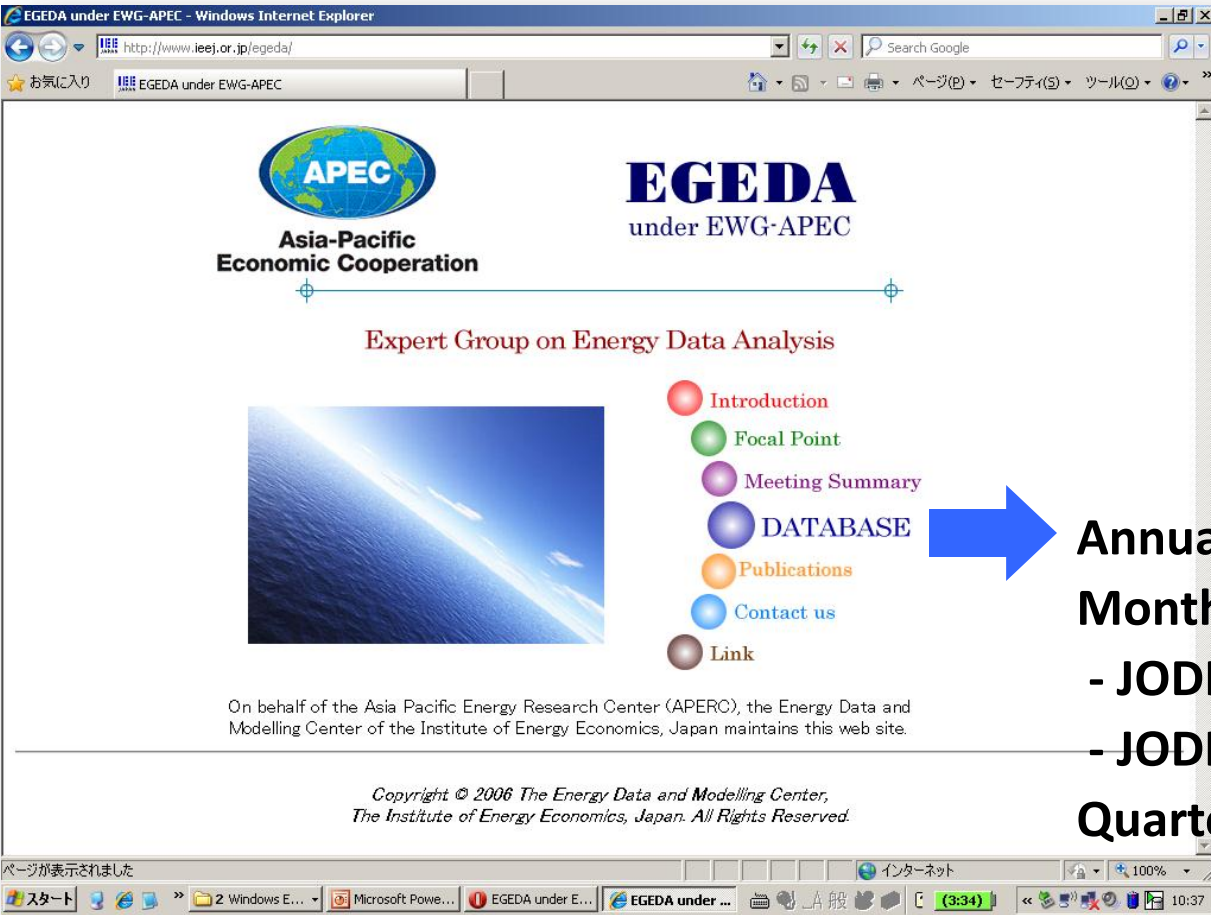




# Renewable Energy in APEC Region



# EGEDA: Energy Database Web-site



**Annual Energy Data**  
**Monthly Oil & Gas data**  
 - JODI Oil  
 - JODI Gas  
**Quarterly Energy Supply Data**

<http://www.ieej.or.jp/egeda/>