REGION IV-B: MIMAROPA

At a Glance…

SOCIO-ECONOMIC PROFILE

Provinces	Marinduque, Oriental Mindoro, Occidental Mindoro, Palawan, Romblon,
Land Area	27,400 sq. kms.
Population	2,299,229
Density	84 persons / sq. km.
GRDP	PhP 32.4 billion
Top Three Sectors	▪ Agriculture, Fishery and Forestry Sector ▪ Industry Sector ▪ Services Sector
Major Products	
Agricultural (Raw and Manufactured)	• Palay ▪ Coconut ▪ Corn
Non-Agricultural	▪ Processed foods ▪ Handicrafts ▪ Marble

Source: National Statistical Coordination Board (NSCB)

A. ENERGY SITUATIONER

A.1 ENERGY RESOURCES

a. Geothermal

Located in Montelago, Oriental Mindoro is a potential geothermal resource with an estimated capacity of 40 megawatts (MW). This area, together with non-power application of geothermal prospect in Sta. Lucia-Iwahig, Puerto Princesa, Palawan, have been offered for investment in the Philippine Energy Contracting Round (PECR) 2005.

b. Hydropower

All provinces under the region have at least one potential hydropower site. A total of 41 sites will yield an estimated capacity of 193.7 MW, as indicated in Table 1.

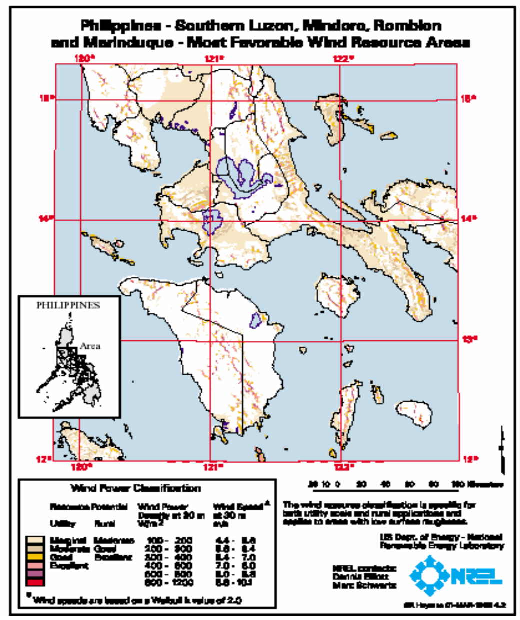
Table 1. LOCATIONS OF HYDROPOWER POTENTIAL RESOURCES

Province	Number of Sites	Estimated Capacity (MW)
Oriental Mindoro	14	137.52
Occidental Mindoro	12	20.13
Marinduque	1	0.16
Romblon	1	0.90
Palawan	13	35.03
Total	**41**	**193.74**

c. Wind

Several wind potential areas in the region are being considered under the Wind Investment Promotion Round. These include potential sites in the following areas: (i) Abra De Ilog, Mindoro Occidental (10 MW) (ii) Bulalakaw, Mindoro Oriental (20 MW) (iii) Sta. Cruz, Marinduque (5 MW) and (iv) Sta. Maria, Tablas Island (5 MW). A potential site is also presently being considered also in Cuyo Island, Palawan. Figure 1 shows the region's potential wind energy sites.

Figure 1. POTENTIAL WIND ENERGY SITES



d. Coal

Coal reserves can be found in Bulalakaw, Mindoro Oriental with in-situ reserves of 1.4 million metric tons (MMMT).

e. Oil and Gas

The four sedimentary basins found in the region include Mindoro-Cuyo, East Palawan, Northwest Palawan, and Southwest Palawan. The biggest gas and condensate field in the country, Malampaya, was discovered in the Northwest Palawan Basin in 1991. The field's life span is about 20 years and has an estimated gas reserve of 3,770 billion cubic feet (BCF) and 85 million barrels (MMB) of condensate. The East and Southwest Palawan are areas offered in the 2005 PECR.

Table 2 shows the estimated oil and gas reserves and potential of the Northwest Palawan Basin.

Table 2. OIL AND GAS POTENTIAL AND RESERVE ESTIMATE, NORTHWEST PALAWAN BASIN

Resource Class	Oil (MMB)	Gas (BCF)	Condensate (MMB)
Reserves	43	3,770	109
Potential Resources	100	36	-

The Mindoro-Cuyo basin has an estimated potential oil resource of 25 BCF.

A.2 DOWNSTREAM FACILITIES

A total of 104 gas stations, 5 depots, 3 liquefied petroleum gas (LPG) bulk plants and 1 LPG refilling plant are found in the region. These facilities are distributed in the different provinces as indicated in Table 3.

Table 3. DISTRIBUTION OF DOWNSTREAM OIL FACILITIES

Province	Depots		LPG Refilling Plants	Gasoline Stations
	Number of Units	Storage Capacity (MB)		
Occidental Mindoro	1	22.42	-	18
Oriental Mindoro	1	24.31	-	34
Marinduque	1	22.22	-	8
Romblon	-	-	-	3
Palawan	2	58.12	1	41
Total	**5**	**127.07**	**1**	**104**

A.3 POWER AND ELECTRIFICATION

Six areas (Marinduque, Occidental Mindoro, Oriental Mindoro, Mainland Palawan, Tablas Island and Romblon Island) are included in the first wave or group of the National Power Corporation – Small Power Utilities Group (NPC-SPUG) that have been offered for Qualified Third Party participants. As of December 2005, all of these areas have been privatized except for Occidental Mindoro.

Currently, there are 37 power plants located in the region, which include 31 land-based, one hydropower and five barge-mounted diesel power plants (DPP), with a total rated capacity of 153.01 MW (Table 4).

Table 4. EXISTING SPUG POWER PLANTS

Plant	Capacity (MW)		Location
	Installed	Dependable	
Oil-Based			
Pulang Lupa DPP	9.05	3.80	San Jose, Mindoro Occidental
Island Power Corp. (IPP)	7.00	-	Mindoro Occidental
Lubang DPP	1.60	0.63	Lubang, Mindoro Occidental
Calapan DPP	9.00	2.00	Calapan, Mindoro Oriental
Power Barge 102	32.00	6.50	Mindoro Oriental
MIRANT (Pinamalayan)	7.50	7.40	Mindoro Oriental
Mamburao DPP	4.65	0.38	Mamburao, Mindoro Oriental
Boac DPP	3.67	0.90	Boac, Marinduque
Torrijos DPP	1.57	1.40	Torrijos, Marinduque
Power Barge 120	7.20	6.25	Marinduque
Tablas DPP	10.72	2.74	Tablas, Romblon
Power Barge 109	2.24	0.85	Romblon
Romblon DPP	2.86	2.09	Romblon, Romblon
Power Barge 114	1.68	0.90	Romblon
Sibuyan DPP	1.00	0.59	Sibuyan, Romblon
Banton DPP	0.49	0.42	Banton, Romblon
Corcuera DPP	0.33	0.30	Corcuera, Romblon
Concepcion DPP	0.33	0.28	Concepcion, Romblon
San Jose DPP	0.33	0.16	San Jose, Romblon
Puerto Princesa DPP	9.00	5.30	Puerto Princesa, Palawan
Paragua Power Corp. (IPP)	16.00	11.60	Palawan
Power Barge 106	14.40	4.40	Palawan
Narra DPP*	1.00	-	Narra, Palawan
Brookes PT. DPP	0.60	0.40	Brookes Pt., Palawan
El Nido DPP	0.42	0.40	El Nido, Palawan
Roxas DPP	0.94	0.90	Roxas, Palawan
Taytay DPP	0.42	0.40	Taytay, Palawan
San Vicente DPP	0.59	0.40	San Vicente, Palawan
Busuanga DPP	1.62	1.23	Busuanga, Palawan
Cuyo DPP	1.63	1.02	Cuyo, Palawan
Culion DPP	0.42	0.40	Culion, Palawan
Linapacan DPP	0.11	0.10	Linapacan, Palawan
Araceli DPP	0.33	0.15	Araceli, Palawan
Balabac DPP	0.33	0.15	Balabac, Palawan
Cagayancillo DPP	0.27	0.15	Cagayancillo, Palawan
Agutaya DPP	0.22	0.20	Agutaya, Palawan
Hydropower			
Dulangan MHPP	1.60	1.30	Dulangan, Mindoro Oriental
Total	**153.01**	**66.10**	

Eight electric cooperatives (ECs) serve as distribution utilities (DUs) in the region, namely: Lubang Electric Cooperative (LUBELCO), Occidental Mindoro Electric Cooperative (OMECO), Oriental Mindoro Electric Cooperative (ORMECO), Marinduque Electric Cooperative (MARELCO), Tablas Island Electric Cooperative (TIELCO), Romblon Electric Cooperative (ROMELCO), Busuanga Island Electric Cooperative (BISELCO) and Palawan Electric Cooperative (PALECO). The profiles of these ECs in terms of their respective electricity sales and purchases and system losses are briefly summarized in Table 5. To augment further the electrification activities in the region, local government units (LGUs), specifically the municipalities of Corcuera, Concepcion and Banton, also operate their own electric distribution systems.

Table 5. REGIONAL ELECTRICITY PROFILE BY DISTRIBUTION UTILITY, 2005

Name of Distribution Utility	Electricity Purchased/ Generated (GWh)	Electricity Sales (GWh)	System Loss (%)	Classification
ORMECO	124	107	13.0	ML
ROMELCO	9	8	11.7	M
OMECO	63	53	15.0	L
LUBELCO	2	2	19.5	S
MARELCO	32	27	14.2	L
TIELCO	17	15	9.1	L
PALECO	121	106	11.5	EL
BISELCO	6	5	13.4	S
CORCUERA	No Data			
BANTON	No Data			
CONCEPCION	No Data			

ML-Mega Large, L-Large, M-Medium, S-Small
Note: Classification is based on the following criteria: (i) volume of average MWh Sales; (ii) number of service customers (iii) average kilometers of lines

The region has a barangay energization level of 91.9 percent (Table 6). The province of Palawan has the lowest percentage of energized barangays as most of these remaining barangays are located in the remotest or "last mile" areas.

Table 6. STATUS OF BARANGAY ENERGIZATION BY PROVINCE, as of 2005

Province	Coverage	Energized Barangays	Energization Level (%)
Marinduque	218	218	100.00
Mindoro Occidental	162	159	98.15
Mindoro Oriental	426	421	98.83
Palawan	431	322	74.71
Romblon	219	219	100.00
Total	**1,456**	**1,339**	**91.96**

The status of household energization as of 2004 stood at 70.5 percent. The total number of households that have been energized was recorded at 264,751, leaving 110,649 households yet to be energized.

A.4 BENEFITS TO HOST COMMUNITIES

As of 2005, there are 51 approved projects under Energy Regulations (ER) 1-94. As presented in Table 7, these projects fall under three types of funds: electrification (EF), development and livelihood (DLF) and reforestation, watershed management, health and/ or environmental enhancement (RWMHEEF). The 51 projects have an accumulated financial benefit of almost PhP 50.0 million.

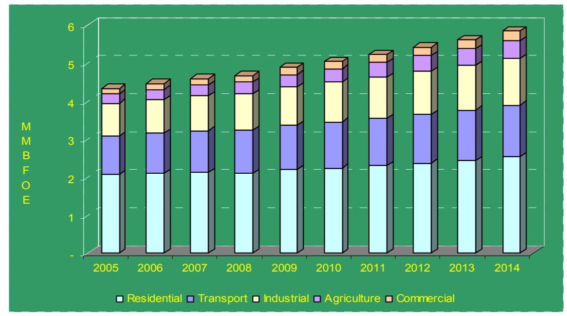
Table 7. SUMMARY OF APPROVED PROJECTS, as of 2005

Type of Fund	Number of Projects	Total Amount (PhP million)
EF	12	12.29
DLF	22	23.37
RWMHEEF	17	14.31
Total	**51**	**49.97**

B. ENERGY DEMAND FORECAST

As the region's economic performance continues to follow a progressive track, total energy demand in the region is expected to grow by 3.4 percent annually. During the planning period, MIMAROPA will require an average volume of 5.1 MMBFOE (0.7 MTOE), as shown in Figure 2, accounting for an average share of 2.5 percent of the country's total energy demand.

Figure 2. FINAL ENERGY DEMAND, BY SECTOR (MMBFOE)



Petroleum products, electricity and biomass will fuel the region's rapid growth towards urbanization. To prop up its transport sector and growing commercial industries, which play vital roles in promoting tourism in the region, demand for petroleum products will increase by 4.1 percent or almost half of the total energy requirement of the region during the reference period. The region's electricity and biomass requirement will also increase by 9.7 percent and 0.3 percent, respectively, owing to increased trade and tourism activities. During this period, biomass will account for 34.2 percent of the total energy demand of the region while electricity demand will account for 14.5 percent (Table 8).

Table 8. SECTORAL ENERGY DEMAND (MMBFOE)

	2005	2006	2010	2014
Grand Total	**4.33**	**4.46**	**5.05**	**5.84**
Oil and Oil Products	1.85	1.93	2.28	2.66
Coal	0.30	0.31	0.32	0.34
Biomass	1.72	1.72	1.74	1.77
Other Renewables	nil	nil	nil	nil
Electricity	0.47	0.50	0.71	1.07
Industry	**0.86**	**0.89**	**1.04**	**1.23**
Oil and Oil Products	0.33	0.35	0.42	0.52
Coal	0.30	0.31	0.32	0.34
Biomass	0.19	0.20	0.25	0.32
Other Renewables	nil	nil	nil	nil
Electricity	0.04	0.04	0.05	0.06
Commercial	**0.15**	**0.16**	**0.20**	**0.25**
Oil and Oil Products	0.05	0.06	0.07	0.10
Biomass	0.02	0.02	0.02	0.02
Other Renewables	nil	nil	nil	nil
Electricity	0.08	0.08	0.10	0.13
Residential	**2.06**	**2.10**	**2.24**	**2.53**
Oil and Oil Products	0.20	0.21	0.21	0.21
Biomass	1.51	1.50	1.47	1.43
Other Renewables	nil	nil	nil	nil
Electricity	0.35	0.38	0.56	0.89
Transport	**1.02**	**1.05**	**1.21**	**1.37**
Oil and Oil Products	1.02	1.05	1.21	1.37
Natural Gas	nil	nil	nil	nil
Agriculture	**0.24**	**0.26**	**0.36**	**0.46**
Oil and Oil Products	0.24	0.26	0.36	0.46

Total may not tally due to rounding off

Residential

The residential sector will account for an average share of 44.5 percent of the region's the total energy demand. Over the planning period, energy consumption in the sector is foreseen to grow at 2.3 percent annually. As a result of the reduced consumption of kerosene in domestic activities, energy consumption in the sector is expected to average 2.3 MMBFOE (0.3 MTOE).

Biomass will be the dominant fuel in households, accounting for an average share of 64.8 percent. Electricity and petroleum products, on the other hand, will account for an average share of 26.0 percent and 9.3 percent, respectively, of the total sectoral demand.

Interestingly, there will be a 6.5 percent decline in kerosene consumption in the sector during the planning period. This may be attributed to the rapid urbanization and increasing developments in electronics and technology which will likely reduce the use of kerosene for lighting, cooking and other domestic activities. Demand for LPG, on the other hand, will slightly increase by 5.5 percent. Electricity consumption in the sector will grow by 10.9 percent, as more households benefit from the government's Expanded Rural Electrification Program.

Transport

Over the planning period, the transport sector will account for an average share of 23.8 percent of the total demand mix, with a volume requirement averaging 1.2 MMBFOE (0.2 MTOE). Energy consumption in the sector is projected to grow by 3.3 percent annually.

Petroleum products will remain the leading fuels in the transport sector. Diesel will account for the highest average share at more than half of the total volume, while gasoline and fuel oil will account for 42.0 percent and 4.3 percent, respectively.

Industrial

With a projected 4.1 percent growth in energy demand, the region's industrial sector will require an average volume of 1.0 MMBFOE (0.2 MTOE) over the planning period. This will comprise an average share of 20.6 percent of the region's total energy requirement.

The bulk of the sector's energy requirement will predominantly be for biomass and petroleum products, with diesel and LPG having the biggest demand. During the reference period, petroleum products will account for an average share of 40.7 percent, while biomass will account for almost one-fourth of the total demand of the sector.

Commercial

With an average volume requirement of 0.2 MMBFOE (29.0 KTOE), energy demand in the sector will grow by 5.9 percent over the planning period. As commercial activities continue to propel the economy of the region, requirement for petroleum products will increase by 6.9 percent annually, accounting for an average share of 37.7 percent of the total sectoral demand. A similar trend will be noted for electricity requirement, with an average growth rate of 5.7 percent accounting for 52.5 percent share of the total sectoral requirement.

Diesel and LPG will comprise most of the commercial sector's petroleum product requirements, with average shares pegged at 14.7 percent and 13.5 percent, respectively.

Agricultural

Energy demand in agriculture will post the highest growth among the economic sectors of the region, at an average rate of 7.5 percent. During the planning period, the region's agricultural sector will require an average volume of 0.4 MMBFOE (51.9 KTOE), taking up an average share of 7.1 percent of the region's energy demand.

Agriculture, which is fast becoming the mother industry of the region, will be fueled mainly by petroleum products. Diesel will account for almost 100 percent of the total requirement of the sector during the reference period.

C. SECTORAL PROGRAMS AND TARGETS

❖ *POWER DEVELOPMENT PLAN*

SMALL ISLAND GRID

Electricity Demand Forecast

Peak demand in the region is foreseen to grow at an average annual rate of 11.6 percent. Likewise, electricity sales forecast will improve at an average annual rate of 14.1 percent (Table 9).

Table 9. SMALL ISLAND GRIDS DEMAND AND SUPPLY OUTLOOK

	2005	2006	2010	2014
Capacity Additions (MW)	8.80	14.50	48.00	2.75
Cumulative Installed Capacity (MW)	146.41	166.21	190.68	250.30
Peak Demand (MW)	59.86	80.86	94.03	169.33
Electricity Sales (GWh)	266.77	318.35	453.23	889.64
Gross Generation (GWh)	306.27	334.31	477.32	936.89
Dependable Capacity (MW)	113.61	124.69	150.62	199.45

Generation Expansion Plan

With an additional capacity of 14 MW during the planning period, installed capacity in this region is expected to reach 250 MW. Correspondingly, gross generation is expected to increase to 937 gigawatt-hours (GWh) in 2014.

❖ TRANSMISSION DEVELOPMENT PLAN

Listed in Table 10 are the required transmission infrastructure projects needed to meet customer demand and ensure reliability, adequacy and stability of the nationwide transmission system.

Table 10. TRANSMISSION LINE PROJECTS

Project Name	Description	Target Date of Completion
Interconnection Project for Implementation (Priority 2)		
Luzon-Mindoro Interconnection	To provide reliable supply of power to the Island of Mindoro and serve as alternate transmission highway to Visayas.	*Dec 2011*
Indicative Project – Interconnection		
Luzon-Marinduque Interconnection Project	To provide reliable supply of power and make available huge quantity of power from the main grid.	2014
Indicative Project – Interconnection		
Small Island Interconnection Development Program (SISID)	To enhance power supply in Boracay, Tablas, Romblon and Mindoro.	2012

❖ DISTRIBUTION DEVELOPMENT PLAN

To ensure reliability of supply at the distribution level, the distribution development plan in Region IV-B is shown in Table 11.

Table 11. DISTRIBUTION DEVELOPMENT PLAN

Name of Cooperative	2005	2006	2010	2014
Number of Customers				
Residential	279,399	299,055	387,664	468,281
Commercial	24,169	25,286	30,357	35,129
Industrial	528	556	706	940
Others	19,728	21,878	30,573	38,330
LUBELCO				
System Loss (%)	19.5	18.3	13.6	10.6
Electricity Purchase/Generated (GWh)	2	2	3	6
Electricity Sales (GWh)	2	2	3	5
OMECO				
System Loss (%)	15.0	13.5	9.0	7.9
Electricity Purchase/Generated (GWh)	63	65	86	128
Electricity Sales (GWh)	53	56	77	117
ORMECO				
System Loss (%)	13.0	12.4	9.2	9.2
Electricity Purchase/Generated (GWh)	124	135	190	274
Electricity Sales (GWh)	107	118	172	248
MARELCO				
System Loss (%)	14.2	13.2	9.0	9.0
Electricity Purchase/Generated (GWh)	32	34	44	55
Electricity Sales (GWhH)	27	29	39	49
TIELCO				
System Loss (%)	9.1	8.5	7.1	7.1
Electricity Purchase/Generated (GWh)	17	18	26	38
Electricity Sales (GWh)	15	17	24	36
ROMELCO				
System Loss (%)	11.7	10.4	8.2	6.8
Electricity Purchase/Generated (GWh)	9	10	15	26
Electricity Sales (GWh)	8	9	14	24
BISELCO				
System Loss (%)	13.4	13.1	11.0	9.4
Electricity Purchase/Generated (GWh)	6	6	9	14
Electricity Sales (GWh)	5	5	8	12
PALECO				
System Loss (%)	11.5	11.0	9.0	9.0
Electricity Purchase/Generated (GWh)	119	126	162	220
Electricity Sales (GWh)	105	115	147	200
CORCUERA ELECTRIC SYSTEM	*No Data*			
BANTON ELECTRIC SYSTEM	*No Data*			
CONCEPCION ELECTRIC SYSTEM	*No Data*			

❖ EXPANDED RURAL ELECTRIFICATION

Presented in Table 12 are the electrification schedule, expansion program and line rehabilitation for MIMAROPA to achieve the full energization of the region's barangays by 2008.

Table 12. EXPANDED RURAL ELECTRIFICATION PROGRAM

Year	Barangays	Expansion		Line Rehabilitation (ckt.-kms.)
		Distribution Lines (ckt.-kms.)	Substations (MVA)	
2006	33	111.69	5	299.87
2007	43	16.91	5	197.54
2008	41	24.00	15	201.93
2009	-	-	5	47.42
2010	-	-	-	21.04
2011	-	-	-	9.67
2012	-	-	-	5.01
2013	-	-	-	4.37
2014	-	-	-	4.38
Total	**117***	**152.57****	**30****	**790.23****

*Source: DOE
**Source: NEA

❖ *ENERGY RESOURCE DEVELOPMENT*

Geothermal

The 40-MW geothermal plant located in Montelago, Mindoro Oriental is planned for commissioning in 2010. A total of 12 wells is expected to be drilled across the planning horizon and by 2014, steam availability is expected to reach 44.8 MW (Table 13).

Table 13. GEOTHERMAL MEASURABLE SECTORAL TARGETS

	2005	2006	2010	2014
Number of wells to be drilled	-	-	-	-
Steam Availability (Cum. MW)	-	-	41.54	44.85

Hydropower

The indicative capacity addition of hydropower resources in the region is estimated at 48.3 MW. These projects, as indicated in Table 14, are open to private investors.

Table 14. INDICATIVE HYDROPOWER CAPACITY ADDITIONS

Plant	Location	Classification	Potential Capacity (MW)	Year Available
Batang Batang	Narra, Palawan	Mini	3.50	2006
Langogan *	Puerto Princesa, Palawan	Mini	6.80	2010
Babuyan Island*	Puerto Princesa, Palawan	Mini	5.60	2010
Catuiran*	Naujan, Oriental Mindoro	Large	18.0	2011
Aglubang*	Victoria, Oriental Mindoro	Large	13.60	2011
Cabinbin*	Brooke's Point, Palawan	Mini	0.80	2013
Total			48.30	

*With feasibility study

Wind

Four projects in the region with a total potential capacity of 40 MW is shown in Table 15.

Table 15. INDICATIVE WIND POWER CAPACITY ADDITIONS

Location	Potential Capacity (MW)	Year Available
Mt. Payong-payong, Marinduque	5	2008
Abra de Ilog, Occidental Mindoro	10	2010
Bulalakaw, Oriental Mindoro	20	2010
Tablas Island, Romblon	5	2012
Total	40	

Oil and Gas

Table 16 shows the production targets of existing oil and gas fields in the region. Production is expected to grow to 8.2 million barrels (MMB) from the current level of 0.2 MMB, mainly due to the West Linapacan A oilfield. Similarly, gas production will increase to 182.6 billion cubic feet (BCF) from the current level of 108.2 BCF, with the coming on stream of the San Martin gas field in 2010. However, with the expected depletion of the Malampaya field, condensate production will decrease from 5.2 MMB to 3.6 MMB.

Table 16. OIL AND GAS MEASURABLE SECTORAL TARGETS

Field	2005	2006	2010	2014
Production				
Oil (MMB)				
Nido	0.08	0.09	-	-
Malampaya	-	-	4.38	-
Galoc	-	0.75	0.75	-
Matinloc	0.07	-	-	-
West Linapacan A	-	-	6.57	8.21
Gas (BCF)				
Malampaya	108.18	88.21	146.00	146.00
San Martin	-	-	36.50	36.50
Condensate (MMB)				
Malampaya	5.21	5.20	4.93	3.65