

REGION IX: Zamboanga Peninsula

At a Glance...

SOCIO-ECONOMIC PROFILE

Provinces	Isabela City, Zamboanga Del Norte, Zamboanga Del Sur, Zamboanga Sibugay				
Land Area	19,181 sq. kms.				
Population	3,091,208				
Density	161 persons / sq. km.				
GRDP	PhP 30.1 billion				
Top Three Sectors	<ul style="list-style-type: none"> ▪ Industry Sector ▪ Service Sector ▪ Agriculture, Fishery and Forestry Sector 				
Major Products	<table border="0"> <tr> <td style="vertical-align: top;"> <p>Agricultural (Raw and Manufacture d)</p> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ▪ Rice and Corn ▪ Coconut Crude Oil ▪ Canned Tuna ▪ Cassava ▪ Banana </td> </tr> <tr> <td style="vertical-align: top;"> <p>Non-Agricultural</p> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ▪ seashells ▪ shell craft </td> </tr> </table>	<p>Agricultural (Raw and Manufacture d)</p>	<ul style="list-style-type: none"> ▪ Rice and Corn ▪ Coconut Crude Oil ▪ Canned Tuna ▪ Cassava ▪ Banana 	<p>Non-Agricultural</p>	<ul style="list-style-type: none"> ▪ seashells ▪ shell craft
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Source: National Statistical Coordination Board (NSCB)

A. ENERGY SITUATIONER

A. 1 ENERGY RESOURCES

a. Geothermal

The Zamboanga Peninsula has a total of 115 megawatts (MW) of possible geothermal energy resources. The site is specifically located in Lakewood, Zamboanga del Sur.

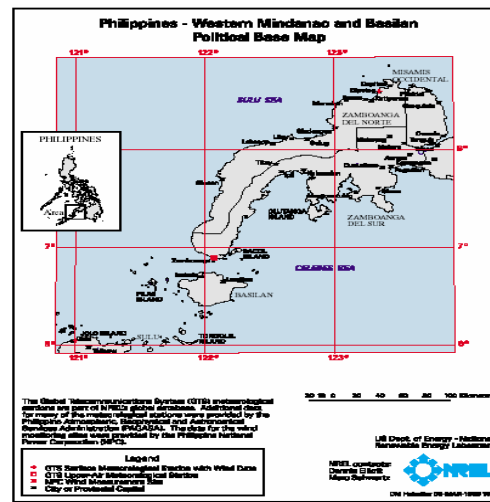
b. Hydropower

The region is endowed with considerable water resources that include Lakewood, Lake Dasay in San Miguel, Lake Timolan in Tigbao, Tuburan Spring of Mahayag and the rivers of Salug Diut in Josefina and Salug Daku in Molave. A potential mini-hydropower site with an estimated capacity of 7 MW is located in Zamboanga City.

c. Wind

The wind potential site in the region is shown in Figure 1.

Figure 1. POTENTIAL WIND ENERGY SITES



d. Coal

As of 2005, the region has an in-situ coal reserve of 8.6 million metric tons (MMMT) located in Zamboanga del Norte. Coal prospects in Malangas, Zamboanga del Norte is being offered under the Philippine Energy Contracting Round (PECR) 2005 for exploration, development and production.

A.2 DOWNSTREAM FACILITIES

The three major oil players are continually expanding their network of operations in the region. A significant number of new investments in fuels bulk marketing, petroleum product refilling, liquefied petroleum gas (LPG) refilling and bulk marketing, terminating, and bunkering have been put up under a deregulated downstream oil industry.

As of 2005, Zamboanga Peninsula hosts a total of 102 gasoline stations, three depots, and three LPG refilling plants with a combined oil storage capacity of 131.29 thousand barrels (MB) as shown in Table 1.

Table 1. DISTRIBUTION OF DOWNSTREAM OIL FACILITIES

Province	Depots		LPG Refilling Plants	Gasoline Stations
	Number of Units	Storage Capacity (MB)		
Isabela City	-	-	-	3
Zamboanga Del Norte	-	-	-	30
Zamboanga Del Sur	3	131.29	3	55
Zamboanga Sibugay	-	-	-	14
Total	3	131.29	3	102

A.3 POWER AND ELECTRIFICATION

The power supply of the region comes from the National Power Corporation (NPC)-owned hydropower electric plants, the Agus I – VII, which source their water from Agus River and Maria Cristina Falls in Iligan City.

These plants have a total installed capacity of 389 MW, of which 354 MW is dependable capacity. The region also hosts a 107-MW oil-based power plant which is operated by Western Mindanao Power Corporation in Sangali, Zamboanga City.

Electricity is distributed throughout the region by four electric cooperatives (ECs), namely: the Zamboanga del Norte Electric Cooperative (ZANECO), Zamboanga del Sur I Electric Cooperative (ZAMSURECO I), Zamboanga del Sur II Electric Cooperative (ZAMSURECO II) and Zamboanga City Electric Cooperative (ZAMCELCO).

Table 2 shows the electricity purchased and/or generated and electricity sales of each EC. Also shown are their respective system losses for 2004, which can either be technical or non-technical losses.

Table 2. REGIONAL ELECTRICITY PROFILE BY ELECTRIC COOPERATIVE, 2005

Name of Cooperative	Electricity Purchased/Generated (GWh)	Electricity Sales (GWh)	System Loss (%)	Classification
ZANECO	121	105	13.3	ML
ZAMSURECO I	131	113	12.8	ML
ZAMSURECO II	77	67	12.1	EL
ZAMCELCO	474	202	15.0	ML

ML-Mega Large, EL-Extra Large

Note: Classification is based on the following criteria: (i) volume of average MWh Sales; (ii) number of service customers (iii) average kilometers of lines

Under the Department of Energy's (DOE's) Expanded Rural Electrification Program, 1,592 of the 1,903 total barangays in the region have gained access to electricity services, representing a 83.7 percent electrification level as of end-2005 (Table 3).

Table 3. STATUS OF BARANGAY ENERGIZATION BY PROVINCE, as of 2005

Province	Coverage	Energized Barangays	Energization Level (%)
Isabela City	45	45	100.00
Zamboanga Del Norte	691	548	79.31
Zamboanga Del Sur	681	537	78.85
Zamboanga Sibugay	388	364	93.81
Zamboanga City	98	98	100.00
Total	1,903	1,592	83.66

At the household level, 65.4 percent has been energized as of 2004. This represents a total of 284,694 households energized out of the total 435,200 potential households in the region.

A.4 BENEFITS TO HOST COMMUNITIES

As of 2005, five projects were approved in the region and financed under the electrification fund (EF) as shown in Table 4. The other types of funds available to the region are the development and livelihood fund (DLF) and the reforestation, watershed management, health and/or environmental enhancement fund (RWMHEEF).

Table 4. SUMMARY OF APPROVED PROJECTS, as of 2005

Type of Fund	Number of Projects	Total Amount (PhP million)
EF	5	2.48
DLF	-	-
RWMHEEF	-	-
Total	5	2.48

B. ENERGY DEMAND FORECAST

Accounting for an average share of 4.0 percent of the country's total energy demand, Region IX is expected to require an average volume of 7.8 MMBFOE (1.1 MTOE), which translates to an average growth of 1.7 percent during the planning period. The residential sector will account for the biggest share of the region's total energy demand (Figure 2), while petroleum products will be the primary fuel for sectoral activities in the region (Table 5).

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

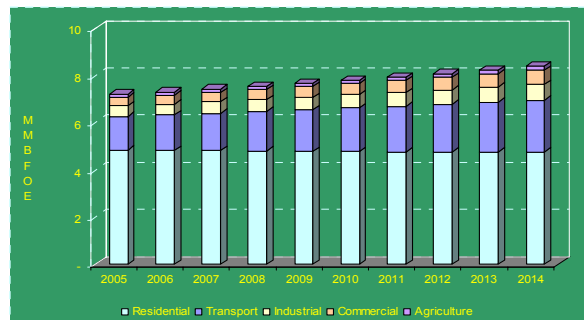


Table 5. SECTORAL ENERGY DEMAND (MMBFOE)

	2005	2006	2010	2014
Grand Total	7.24	7.33	7.83	8.42
Oil and Oil Products	1.83	1.90	2.31	2.74
Biomass	4.85	4.84	4.78	4.75
Electricity	0.55	0.58	0.73	0.94
Industry	0.46	0.46	0.55	0.69
Oil and Oil Products	0.09	0.08	0.09	0.11
Biomass	0.20	0.22	0.27	0.34
Electricity	0.16	0.17	0.19	0.23
Commercial	0.36	0.39	0.48	0.61
Oil and Oil Products	0.09	0.10	0.12	0.16
Biomass	0.11	0.11	0.13	0.15
Electricity	0.17	0.18	0.23	0.30
Residential	4.86	4.84	4.79	4.77
Oil and Oil Products	0.10	0.09	0.10	0.11
Biomass	4.54	4.51	4.38	4.26
Electricity	0.22	0.24	0.30	0.40
Transport	1.42	1.50	1.85	2.20
Oil and Oil Products	1.42	1.50	1.85	2.20
Agriculture	0.13	0.14	0.15	0.16
Oil and Oil Products	0.13	0.13	0.14	0.16

Total may not tally due to rounding off

Residential

The residential sector will register an average share of 61.3 percent of the region's total energy demand over the planning period. The final energy demand of the sector will register an average volume of 4.8 MMBFOE (0.7 MTOE), but consumption is projected to decline at a rate of 2.0 percent due to the change of fuel usage from biomass towards conventional fuels.

Renewable energy sources, particularly biomass, will dominate the sector's energy requirements, posting the highest average share at 91.4 percent. The balance will be shared by electricity (6.4 percent) and petroleum products (2.2 percent).

Transport

The transport sector will register an average share of 23.5 percent of the region's total energy demand. In terms of volume, the sector will consume an average of 1.8 MMBFOE (0.3 MTOE), growing at an average annual rate of 5.0 percent. Petroleum products, particularly gasoline and diesel, will be the major fuels of the sector, taking 51.1 percent and 41.2 percent, respectively.

Industrial

Owing to the projected surge in industrial activity in the Zamboanga Peninsula, the sector's energy demand is seen to capture an average share of 7.2 percent of the region's total demand. An average volume requirement of 0.6 MMBFOE (81.2 KTOE), which translates to an average annual growth rate of 4.6 percent, will be posted during the planning period. Electricity will comprise the bulk demand at 34.9 percent average share of the sector's total energy demand, and will post an average growth rate of 4.3 percent. The remaining balance will be shared by biomass at 49.0 percent and petroleum products at 16.4 percent.

Commercial

Energy consumption in the commercial sector is estimated to grow 5.8 percent annually, translating to an average volume of 0.5 MMBFOE (70.7 KTOE). The sector's average share in the total regional demand is projected at 6.2 percent. Electricity will be the major fuel with an average share of 47.7 percent, followed by biomass (27.0 percent) and petroleum products (25.0 percent).

Agricultural

The sector's average share will account for 1.9 percent of the region's total energy demand. It will post an average volume of 0.1 MMBFOE (21.0 KTOE), translating to an average annual growth rate of 1.9 percent during the planning period. Petroleum products will be the major fuels of the sector, accounting for a 1.8 percent growth rate. Among the petroleum products, diesel will account for the highest average share at 85.9 percent, followed by fuel oil at 11.5 percent.

C. SECTORAL PLANS AND TARGETS

❖ POWER DEVELOPMENT PLAN

To meet the expected increase in the region's electricity demand, continuous reliability and maintenance activities will be undertaken in the Agus complex, the region's main electricity supplier.

❖ TRANSMISSION DEVELOPMENT PLAN

Table 6 lists the transmission infrastructure projects required to meet customer demand and to ensure reliability, adequacy, and

stability of our nationwide transmission system during the planning period.

Table 6. TRANSMISSION LINE PROJECTS

Project Name	Description	Target Date of Completion
Projects that will relieve constraints in the Luzon Grid		
Zamboanga City Area 138 KV T/L	To relieve the Sangali-Zamboanga City 69 KV T/L	2006
Aurora-Polanco 138 KV T/L	To relieve the Aurora-Polanco T/L	2008
Ongoing Transmission Projects		
Mindanao Substation Expansion (Sta. Clara substation)	To increase the substation capacities in Sta. Clara S/S	2007
Zamboanga City Area 138 KV T/L	To provide reliable power supply in Western Mindanao	2006
Transmission Project for Implementation (Priority 1)		
Aurora-Polanco 138 kV T/L	To serve the demand in Polanco area and relieve the congestion of the existing 69 kV line.	2009
Transmission Project for Implementation (Priority 2)		
Mindanao Mobile Transformers	To provide continuous and quality power service for and provide stop-gap measure for substation with deficient capability to deliver electricity given the long procurement process-including manufacturing process	2009
Power Circuit Replacement Program (Aurora substation)	To replace defective and inadequate PCB's	2010
Grid Compliance - Indicative Project		
Mindanao Reliability Project - 2 (Aurora, Sangali, & Pitogo substations)	In compliance with the reliability requirement of the Grid Code.	2013
Indicative Project - Sub-Transmission		
Zamboanga Peninsula	To serve additional power to customers and minimize distribution loss. Note: Projects are subject for further study and for clarification on ERC's Connection Charging Policy.	2013
Mindanao Capacitor Project III part only of 26-7.5 Mvar (sites for further study)	To maintain the voltages limit prescribed by the Grid Code	2012

❖ DISTRIBUTION DEVELOPMENT PLAN

To ensure reliability of supply at the distribution level, the distribution development plan in Region IX is shown in Table 7.

Table 7. DISTRIBUTION DEVELOPMENT PLAN

Name of Cooperative	2005	2006	2010	2014
Number of Customers				
Residential	236,925	252,146	321,705	407,734
Commercial	23,582	24,464	28,325	33,264
Industrial	1,461	1,487	1,612	1,756
Others	13,884	14,936	20,695	29,961
ZANECO				
System Loss (%)	13.3	12.3	8.6	8.2
Electricity Purchase/Generated (GWH)	121	131	193	318
Electricity Sales (GWH)	105	115	176	292
ZAMSURECO I				
System Loss (%)	12.8	11.5	9.4	8.6
Electricity Purchase/Generated (GWH)	129	137	193	278
Electricity Sales (GWH)	112	121	174	253
ZAMSURECO II				
System Loss (%)	11.7	10.4	9.5	9.2
Electricity Purchase/Generated (GWH)	77	81	110	161
Electricity Sales (GWH)	68	72	98	145
ZAMCELCO				
System Loss (%)	15.0	13.9	8.4	8.4
Electricity Purchase/Generated (GWH)	473	499	623	828
Electricity Sales (GWH)	401	429	569	757

❖ EXPANDED RURAL ELECTRIFICATION

Table 8 shows the barangay energization, line extension and rehabilitation targets of Expanded Rural Electrification Program in Region IX.

Table 8. EXPANDED RURAL ELECTRIFICATION PROGRAM

Year	Barangays	Expansion		Line Rehabilitation (ckt.-kms.)
		Distribution Lines (ckt.-kms.)	Substations (MVA)	
2006	84	571.32	25	433.50
2007	112	511.74	20	291.00
2008	105	902.86	20	236.57
2009	-	46.07	15	137.72
2010	-	-	-	-
2011	-	-	-	-
2012	-	-	-	-
2013	-	-	-	-
2014	-	-	-	-
Total	301*	2,031.99**	80**	1,098.79**

*Source: DOE

**Source: NEA

❖ ENERGY RESOURCE DEVELOPMENT

Geothermal

The development of the 40-MW Lakewood geothermal power plant in Zamboanga del Sur will help meet the requirements of the Mindanao grid during the planning period. The project, which will entail the drilling of 11 wells, is targeted for commissioning in 2012. Steam availability will reach 41 MW by 2014 (Table 9).

Table 9. GEOTHERMAL MEASURABLE SECTORAL TARGETS

	2005	2006	2010	2014
Number of wells to be drilled	-	-	4	-
Steam Availability (Cum. MW)	-	-	26.07	40.71

Hydropower

During the planning period, hydropower resources from the region can contribute a total of 31.8 MW of indicative capacity additions to meet the requirement of the Mindanao grid. Eight mini-hydropower projects will be commissioned starting 2006 (Table 10). Prospects include developing the mini-hydropower potential in Josefina, Zamboanga del Sur. Private firms Smith Bell Renewable Energy Service Company (RESCO) and ZAMSURECO I have ongoing reconnaissance activities and pre-feasibility studies in these prospective areas.

Table 10. INDICATIVE HYDROPOWER CAPACITY ADDITIONS

Plant	Location	Classification	Potential Capacity (MW)	Year Available
Lower Dapitan	La Libertad, Zamboanga Del Norte	Mini	3.8	2006
Middle Dapitan	Mutia, Zamboanga Del Norte	Mini	4.4	2008
Salug Daku 1*	Josefina, Zamboanga Del Sur	Mini	2.5	2008
Salug Daku 2	Josefina, Zamboanga Del Sur	Mini	2.5	2008
Salug Daku 3	Josefina, Zamboanga Del Sur	Mini	6.0	2010
Salug Daku 4	Josefina, Zamboanga Del Sur	Mini	6.0	2010
Upper Dapitan	Mutia, Zamboanga Del Norte	Mini	3.6	2011
Ingin*	Sindangan, Zamboanga Del Norte	Mini	3.0	2012
Total			31.8	

*With feasibility study

Coal

Coal production in Zamboanga is projected to increase at an average annual rate of 8.0 percent. Correspondingly, in-situ reserves will decrease from 17.8 MMT in 2006 to 16.8 MMT at the end of the planning period (Table 11).

Table 11. COAL MEASURABLE SECTORAL TARGETS @10,000 BTU/lb

	2005	2006	2010	2014
In-situ Reserves (MMMT)	17.84	17.77	17.35	16.79
Production (MMMT)	0.16	0.19	0.28	0.31
Malangas (PNOC)	0.16	0.19	0.20	0.20
Lalat (Filsystems)	0.00	0.00	0.08	0.11