THE PHILIPPINE COAL INDUSTRY ITS CHALLENGES AND OPPORTUNITIES

By

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(PHILCOAL)

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ABSTRACT

The demand for energy has been increasing over the years especially with the country's accelerated economic growth as we move closer to its vision of industrialization by the turn of the century.

Pursuant to this, the Department of Energy (DOE) was mandated to ensure the country's energy supply availability at affordable costs with due consideration to environmental concerns. Likewise, our organization, the Philippine Chamber of Coal Mines, Inc. (PHILCOAL) an association of local coal producers has taken the role of continuing its task of promoting the development and growth of the coal industry and to cooperated with the governmental agencies in their program of accelerating the development; growth and stability of the energy's coal sector

This paper will present a brief overview of the current situation of the coal industry, citing among others the country's coal reserves, quality, the industry's performance and the coal supply and demand projected for a five-year period. This paper shall also briefly discuss the government's plan to intensify coal exploration efforts so as to ensure the expansion of the country's production capabilities, the establishment of more terminals and infrastructures and accelerate the implementation of mine-mouth power generation and co-regeneration projects in potential coal areas.

The implementation of the government's plan for the coal sector will require substantial capital and this paper will cite the principal areas where local and foreign project can come in.

Finally, this paper conclusively state that the country will remain a net importer of coal on account of the inability of local coal producers to meet increasing rate of coal demand.

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I. INTRODUCTION

Distinguished guests, ladies and gentlemen, I am delighted with the invitation to peak to you today and I would like to thank the organizers of this forum for giving me the opportunity to present the Philippine coal industry situation, its current and future outlook, challenges and opportunities.

As we move into the 21st century, our organization, the Philippine Chamber of coal Mines, Inc. (PHILCOAL), an association of local coal producers has taken the role of continuing its task of promoting the development and growth of the coal industry and to cooperate with the government in its program of accelerating the development, growth and stability of the energy's coal sector.

II. OVERVIEW OF THE PHILIPPINE COAL INDUSTRY

When the country experience the worst energy crisis in the seventies, the government came up with a Philippine Coal Development Plan, primarily to encourage the development of the indigenous coal resources and at the same time ensure the availability of coal to end-users at market-based prices.

To achieve this, the Coal Development Act of 1976 under Presidential Decree PD 972 was issued and subsequently followed by the creation of the National Coal Authority (NCA). PD 972 is still enforced with incentive provisions but the NCA has already been abolished when the government started to leave the coal trading business to the private sector under free market forces.

Coal Reserves

The Philippine has potential coal reserves of 1.59 billion tons, of which 388 million tons are proven. As shown in Table 1, these in-situ reserves are spread over in 11 regions, which are shown in Figure 1.

Paper presented during the S & T Centennial Celebration on "Energy Challenges for Sustainable Development in the 21st Century" Symposium held at the Dusit Hotel Nikko, Makati City on 23 October 1997.

Table 1. Philippine Coal Reserves by Region (Thousand MT)

Coal Region	Resource Potential	Proven Reserves	Coal Rank
Cagayan Valley	336,000	107,937	Lignite
Cebu	165,000	10,814	Sub-Bituminous
Davao	100,000	208	Sub-Bituminous
Mindoro	100,000	1,443	Sub-Bituminous
Negros	4,500	2,064	Sub-Bituminous
Bicol	16,500	6,646	Sub-Bituminous
Quezon	5,000	545	Btiuminous
Samar	27,000	5,974	Sub-Bituminous
Semirara	550,000	143,290	Sub-Bituminous
Surigao	209,000	70,819	Sub-Bituminous
Zamboanga	45,000	38,877	Bituminous
	1,588,000	338,717	

Source : DOE/ERDB 15/09/95

The Semirara coal deposit account for about 37 per cent of the total proven reserves, while the lignite deposits in the Cagayan Valley in Northern Luzon represent about 28 per cent. The eleven regions are all in varying degrees or stages of development, ranging from the relatively untapped Davao and Mindoro basins to the advanced Cebu and Semirara coal basins. Local coal seams are usually thin, steeply dipping and highly-faulted. Except in Semirara, where open cast mining methods is empoyed using four (4) continous bucket wheel excavators, the rest employs the underground mining method on account of the complicated geology of the majority of the coal deposits in other coal areas. This method has resulted to lower productivity.

Coal Quality

Philippine coal is generally of low rank quality, with an average heating value of 8,810 Btu/lb. 1% sulfur and 15% ash. Shown in Table 2 are indications of the coal qualities of six coal regions.

Table 2. Proximate Analysis and Heating Value %
(Air-dried Basis)

Parameter	Bicol	Cebu	Samar	Semirara	Surigao	Zamboanga
Total Moisture	22.0	15.0	24.0	27.0	27.0	6.0
Inherent Moisture	13.0	6.0	12.0	13.0	12.0	2.0
Ash	10.5	20.0	15.0	15.0	15.0	16.0
Vol. Matter	42.0	35.0	37.0	39.0	37.0	24.0
Fixed Carbon	33.7	37.0	35.0	36.0	35.0	59.0
Sulfur	2.4	1.8	3.3	2.5	1.4	0.6
HV (Btu/lb.)	8,990	10,060	9,000	9,075	9,500	12,400
HGI	45	45	45	45	45	45

C. Coal Sectoral Performance

The country's coal production for the past eleven years remained at the 1.3 million metric tons level, while coal consumption is about twice coal production until 1995. The gap between production and demand is however, expected to further widen from last year's 3 to 1 ratio when Pagbilao coal power plant will be on full stream and the cement plants being rehabilitated and expanded will commence production.

To fill up the production shortfall, total coal importation (representing 73.1% of the total supply) surged by 74%. Shown in Table 3 is the comparative summary of supply and demand for 1995 and 1996.

Table 3. Comparative Summary of Supply and Demand (MT)

	1996	1995	Inc./(Dec)	% Change
Supply*	4,080,667	3,029,066	1,051,601	34.72
Production	1,097,049	1,318,296	(221,247)	(14.78)
Importation	2,983,618	1,710,770	1,272,848	74.40
Demand	3,198,618	3,219,211	(20,593)	(0.64)
Cement Sector	1,254,021	1,447,004	(192,983)	(13.34)
Power Sectoral	1,631,792	1,420,972	210,820	14.84
Ind'l Direct Process	312,805	351,235	(38,430)	(10.94)

* Does not include inventory stocks
Based on arrivals

Total Coal importation last year rose by 3 1/2 times that of the preceding year on account of the increased importation of NPC as shown in Table 4.

Table 4. Coal Importation by Users

Volume (Thousand MT)

Users	1996	1995	Inc./(Dec.)	% Change
Cement Sector	567	377	190	50.4
Power Sector	1,554	343	1,211	353.0
Ind'l Dir. Proc.	150	157	(7)	(4.5)
PNOC-CC	561	819	(258)	(31.5)
Coal Trade/Asia	152	15	137	913.3
Total	2,984	1,711	1,273	74.40

Source : DOE/EIAB 03/06/97

Also shown in Table 5 is the coal importation by source. Indonesia is the foremost supplier with 1,965,494 MT or 65.9% of the total volume imported. Australia ranked next with 580,345 MT or 19.4% and the remaining balance were shared by China (3.0%), Russia (3.1%), South Africa (4.2%) and Vietnam supplied 132,, 351 MT of anthracite representing 4.4%.

Table 5. Coal Importation by Source, MT (1995-1996)

Source	1996	1995	Inc./(Dec.)	% Change
Indonesia	1,965,494	561,754	1,403,370	249.88
Australia	580,345	367,818	212,527	57,78
Russia	91,326	302,001	(210,675)	(69.76)
China	88,299	338,303	(250,004)	(73.90)
Vietnam	132,351	140,903	(8,552)	(6.07)
South Africa	125,803	----	125,803	100.0
Total	2,983,618	1,710,779	1,272,839	74.40

Source : DOE/EIAB

III. COAL SUPPLY AND DEMAND

The central focus of the energy planning activity is the projection of energy supply and demand balance required to meet the country's socio-economic development goals. Expressed in common energy units, the energy supply and demand balance is the ultimate translation of the plans and programs for the various energy sector.

A. Demand

The sectoral demand for coal as shown in Table 6 is expected to register a two-fold increase from 6.2 million tons in 1997 to 13.2 million tons in 2001.

Table 6. Coal Supply and Demand (Thousand Mt)

	1997	1998	1999	2000	2001
Power	3,212	4,871	6,571	6,890	8,650
Local	850	850	800	800	1,300
Imported	2,362	4,021	5,771	6,090	7,350
Cement	2,729	3,494	4,248	4,248	4,248
Local	300	330	350	400	450
Imported	2,429	3,164	3,898	3,848	3,798
Others	320	320	320	320	320
Local	--	--	--	--	--
Imported	320	320	320	320	320
Total	6,261	8,685	11,139	11,458	13,218
Local	1,150	1,180	1,150	1,200	1,750
Imported	5,111	7,505	9,989	10,258	11,468

Source : Philcemcor, NPC, DOE/EIAB

1. Power Generation Sector

As shown in Table 6, the aggregate coal demand for power use is projected to increase by almost three-fold from 3.2 million tons in 1997 to 8.65 million tons in 2001. This increase in coal demand within the next 5-year period is attributed to the coal-fired plants with a total additional capacity of 2,300 MW in addition to the existing 1,475 MW coal power plants (see Table 7 and 8). Figure 4 will show the location map of the operating and future coal

Table 7 Existing Coal Thermal Plants

Plants	Capacity(MW)	Operator
Calaca I	300	NPC
Calaca II	300	NPC
Naga I & II	105	SALCON
Toledo Power, Cebu	55	TPC
Semirara Island	15	SCC
Pagbilao I	350	HOPEWELL
Pagbilao II	350	HOPEWELL
TOTAL	1,475	

Source : Power Development Plant

Table 8. Additional Coal-Fired Power Plants in MW

(1997-2001)

YEAR	LOCAL COAL	IMPORTED	TOTAL
Existing	625	850	1,475
Short Term	0	2,300	2,300
1996	0	0	0
1997	0	0	0
1998	0	300	300
1999	0	1,550	1,550
2000	0	0	0
2001	0	450	450
TOTAL	625	3,150	3,775

Source : Philippine Energy Plan, p. 35.

2. Cement Sector

Coal consumption of the cement sector as shown in Table 6 is projected to increase by 55.6% from 2.73 million tons in 1997 to 4.25 million tons in 2001. This increase in coal consumption can be attributed to the expansion and modernization of some of the existing cement plants (shown in Table 9 and Figure 5) and the entry of 7 new plants.

Table 9. Existing Philippine Cement Plants

CEMENT PLANTS	CAPACITY (x1000 MT)	COAL REQUIRED (MT)
1. Alsons	460	65,000
2. Apo	156	48,000
3. Bacnotan	1,160	175,000
4. Central	240	48,000
5. Continental	850	44,000
6. Davao-Union	1,760	87,000
7. Fortune	690	58,000
8. FR Cement	550	104,000
9. Grand	660	105,000
10. Hi-Cement	870	116,000
11. Iligan	440	60,000
12. Lloyds	550	136,000
13. Mindanao	160	0
14. Northern	1,320	127,000
15. Pacific	255	50,000
16. Republic	580	60,000
17. Rizal	360	98,000
18. Solid	1,800	190,000
19. Titan	300	101,000
Total	13,161	1,672,000

Source PHILCEMCOR, 1996

3. Industrial Process Sector

The other sector such as fertilizer, steel chemical and sugar shall required an annual volume of 520,000 coal during the first decade planning period. In this sector, the major users of imported anthracite is Philippine Sinter Corporation and the ferroalloy plant. Since anthracite is not available locally, all of the requirement shall be imported.

B. Supply

Within the 5-year period, the projected coal supply which will come from the local coal production and importation is shown in Table 6.

1. Coal Resources Development (Upstream)

The government through the Department of Energy envisaged an intensive exploration in potential coal areas in 8 regions which are still under-explored and unexplored. If these plans are implemented as scheduled, the total proven reserves is expected to increase from the current 388 million tons to 630 million tons by 2001.

Barring the execution of the government's exploration projects, production within the next 5-year period is expected to reach a realizable volume of 2.30 million tons. This production is expected to come from Semirara Coal Corporation (SCC) with 1.3 million tons (86.6% of its rated annual capacity) available by 2001, and PNOC Coal Corporation's Lalat Coal Mines in Zamboanga del Sur generating 0.50 million tons, and the other small to medium-sized coal mines sharing also about 0.50 million tons. Additional coal production is however, expected from mine-mouth power plant projects, which are envisaged to be carried out after the medium term schedule ending 2006.

Shown in Table 10 and Figure 6 are the potential coal areas in the different regions where the mine-mouth power plants can be set up.

Table 10. POTENTIAL MINE-MOUTH POWER PLANTS

COAL REGION	PROVEN RESERVES	ANNUAL COAL REQUIRED	RATED PLANT CAPACITY
	(Million MT)	(Thousand MT)	(MW)
1. Bicol (Batan)	7.0	198.0	70
2. Cagayan-Isabela	103.9	3,460.0	500
3. Samar	5.9	181.0	60
4. Semirara	104.0	1,000.0	300
5. Surigao	70.5	600.0	200
6. Zamboanga	38.8	480.0	150

Source : PHILCOAL, DOE

2. Downstream Facilities

While the government's plan made mention of the projected construction of four (4) more coal terminals, exclusive of the off-loading ports and terminals being established by the IPP's, the only projects that can be justified for implementation in the foreseeable future are those to be made by PNOC Coal Corporation and Asia Coal Corporation, the two coal trading companies serving the cement sectors and to some extent the smaller-sized coal-fired power stations like those NPC Naga plants in Cebu.

Currently, there are nine (9) coal terminals which will also need some refurbishing work. These are located in Poro Point (La Union), Batangas, Semirara Island, Cebu, Iligan City, Misamis Oriental and Malangas (Zamboanga del Sur).

3. Coal Importation

As we move into the next century, more and more coal has to be imported to fill up the widening gap between demand and supply of domestic coal. As noted from Table 6, imported coal is expected to increase from the past year's level of 2.98 million tons to 11.5 million tons in 2001.

To effect security of supply, there will be a need for long-term contracts where more favorable terms at competitive prices can be established.

IV. INVESTMENT OPPORTUNITIES

The implementation of the government's plan for the coal sector will undoubtedly offer significant investment opportunities for local and foreign developers particularly in the following areas.

1. Joint Partnership in Coal Resource Development and in Establishment of Mine-Mouth Power Plants.

The planned intensification of coal resource development in conjunction with the establishment of mine-mouth power plants will definitely requires substantial funds. However, local private coal producers and even government sector can not be expected to provide the entire capital outlay needed for these projects. Foreign developers and investors are therefore, welcome to participate in the establishment of these integrated projects. This can also be pursued in the form of BOT or BOO arrangement.

2. Foreign Investment in Downstream Facilities

With two intensified local proponents of coal terminal projects, namely PNOC Coal Corporation and Asia Coal Corporation this country's 2 major coal traders, foreign investors can come in and explore the possibility of entering into joint partnership with these two firms.

3. Prospect for Contract Mining and Processing

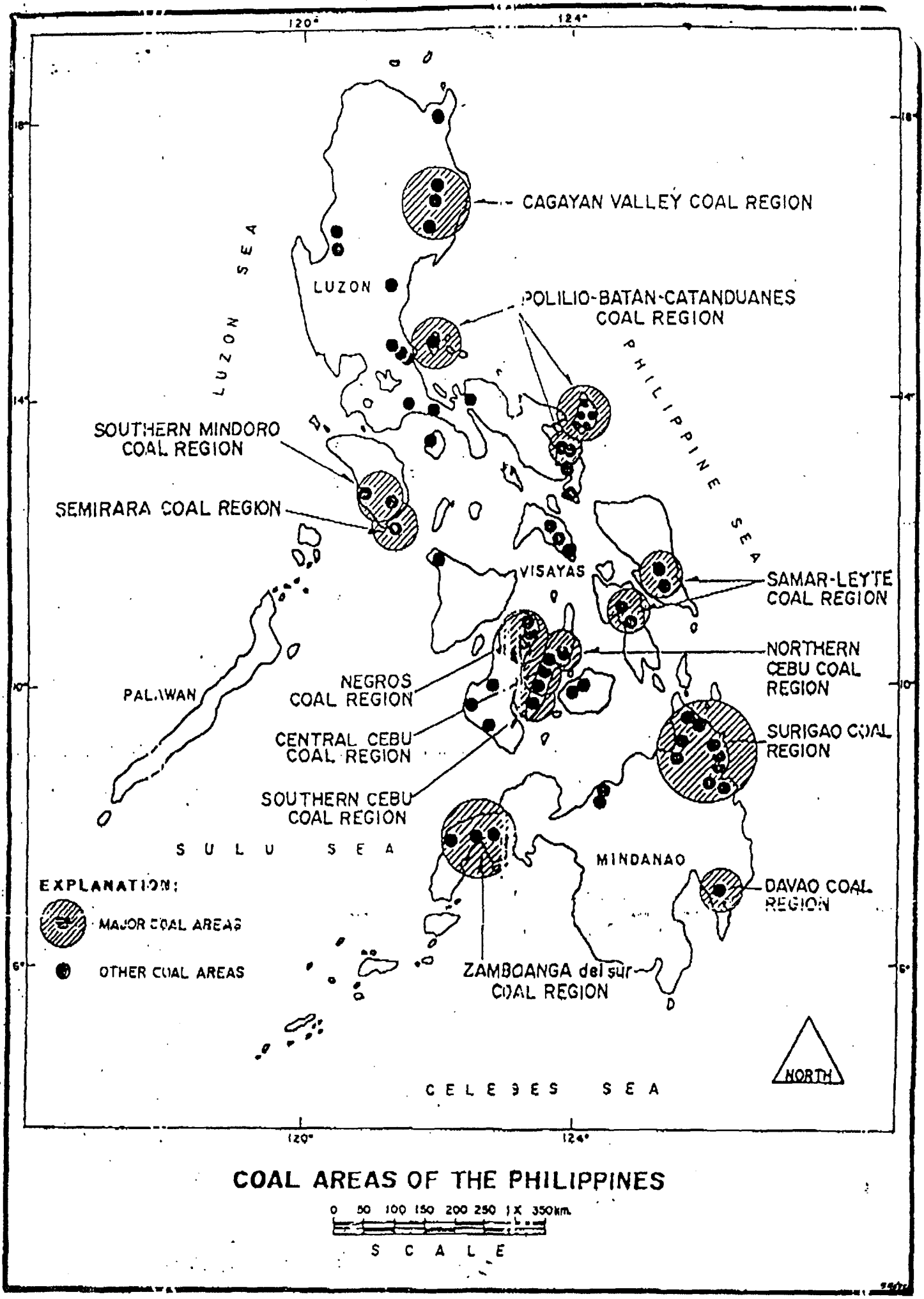
Contract mining and contract processing which are being adopted extensively in Indonesia can be introduced here particularly in open cast mines. Foreign mining and processing contractor with the capabilities and equipment facilities can come in and provide total mining services for a fixed per ton fee, subject of course to a more economical and attractive proposals as compared to their present system.

4. Manpower Training and Technology Transfer in Coal Mining

With the expected intensification of the exploration and development of more coal areas, there is an urgent need for local manpower, mining engineers and geologist to undergo additional training that could be imparted by foreign experts along these fields.

V. CONCLUSION

The Philippines will remain a net importer of coal on account of the inability of local coal producers to meet the substantial growth rate in coal demand. For the Philippine coal industry to ride with the increasing demand, we foresee the need for the development of mine-mouth power plants through joint ventures with foreign investors and developers. Likewise, since coal requirements of the cement industries are increasing, the existing infrastructure facilities will no longer be adequate. In view of this, there will be a need to expand the off-loading ports and other infrastructure facilities to serve the cement plants.



COAL AREAS OF THE PHILIPPINES

Coal Importation by Source
1996

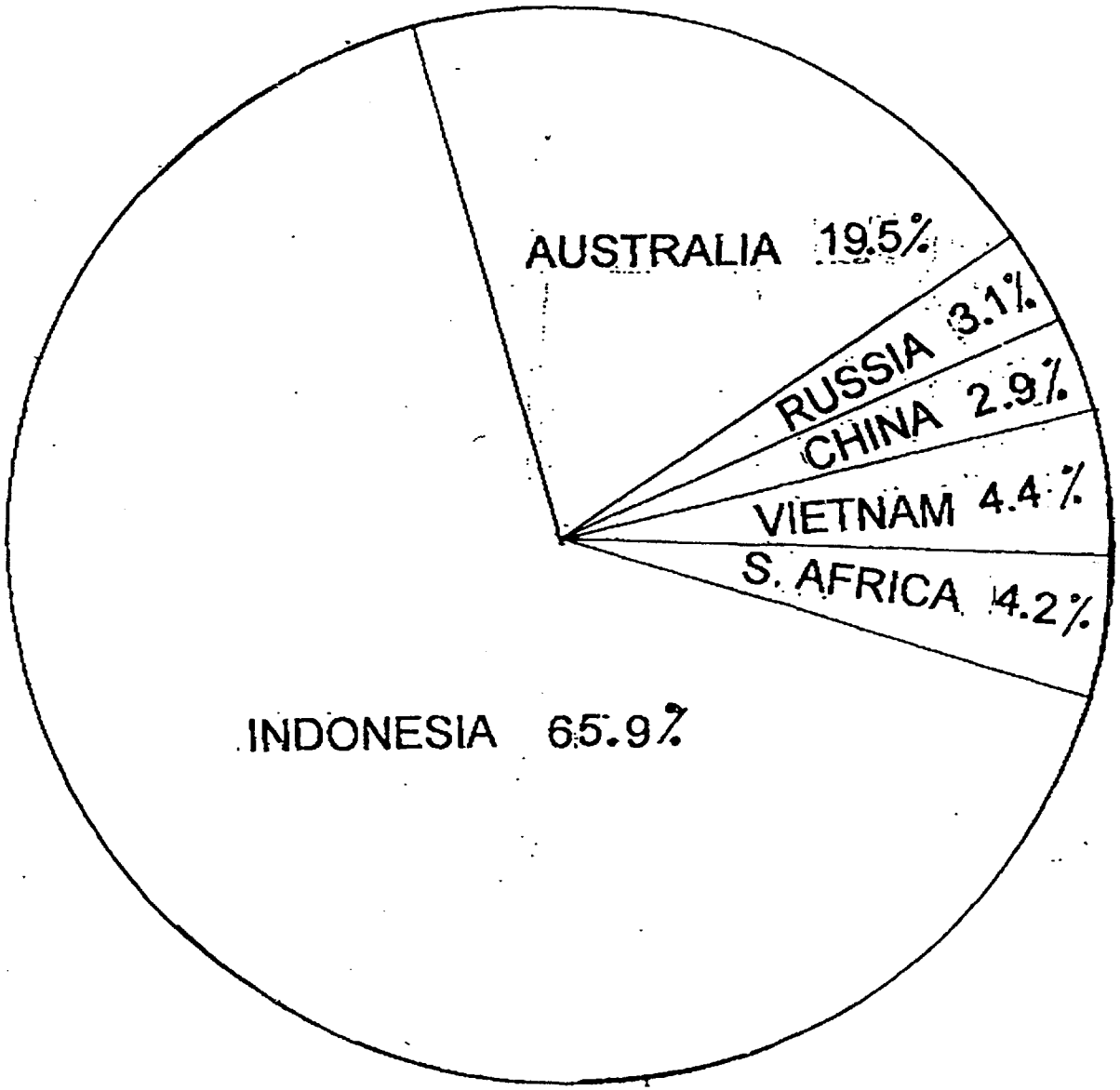
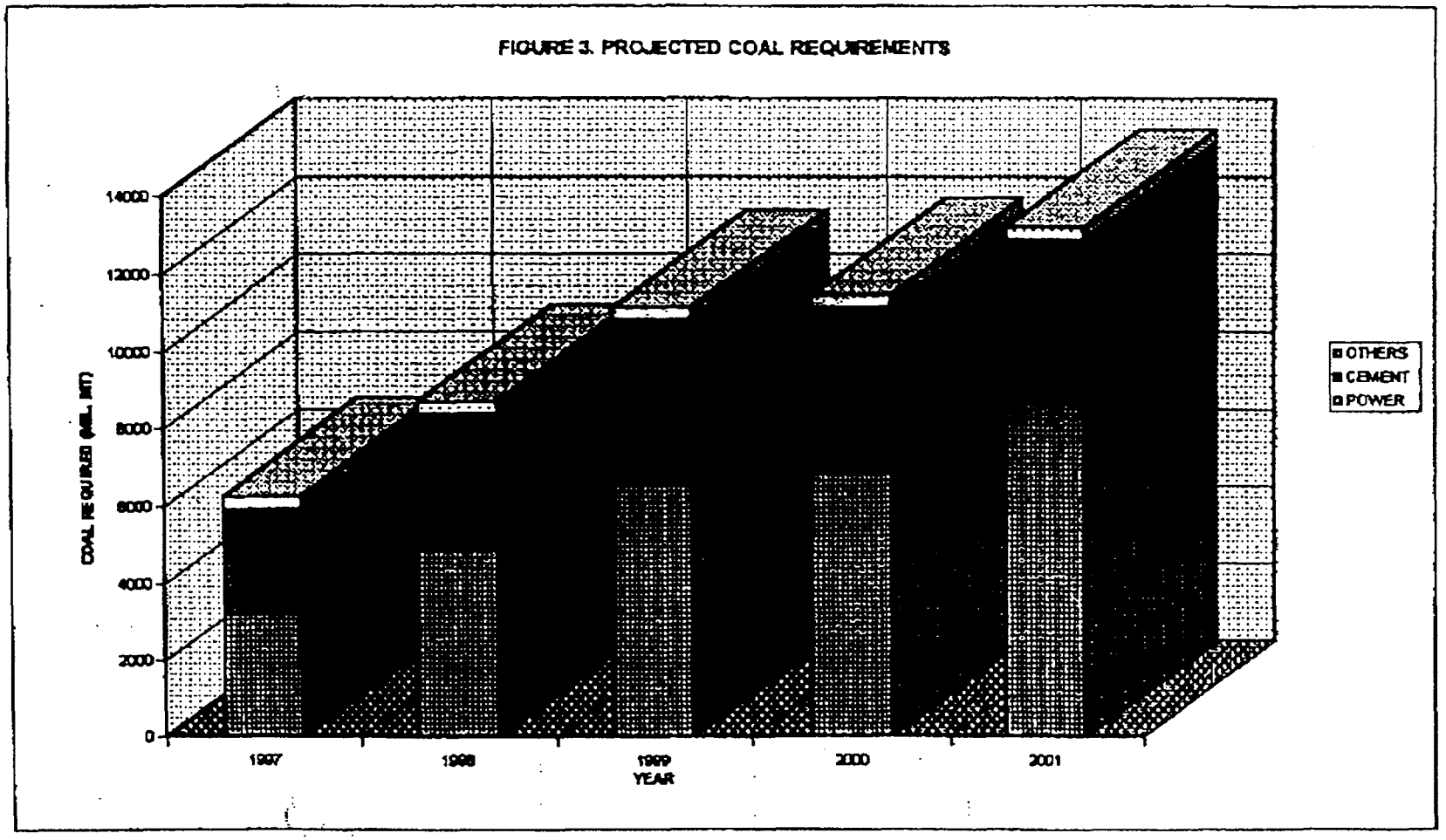
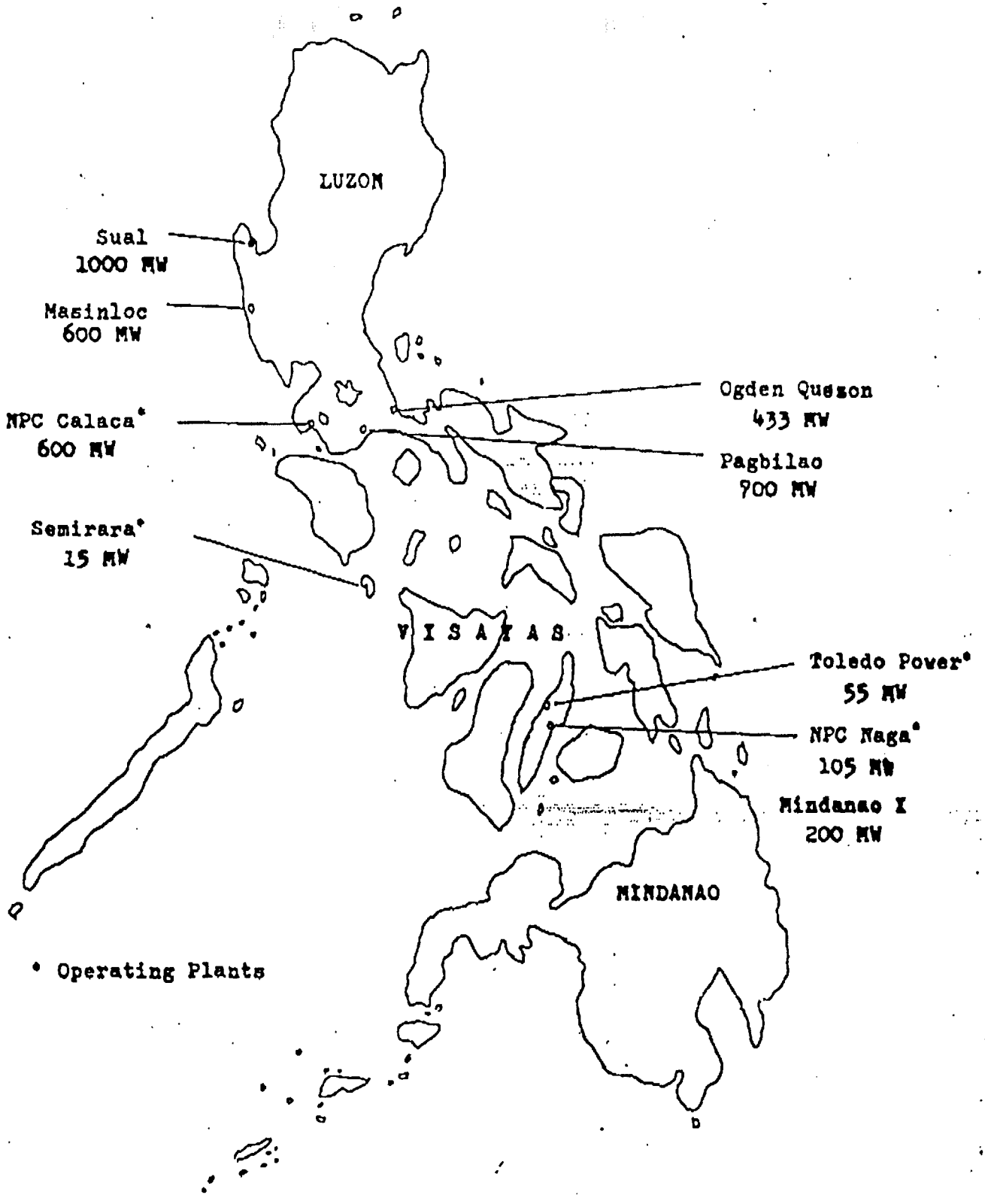


FIG. 2

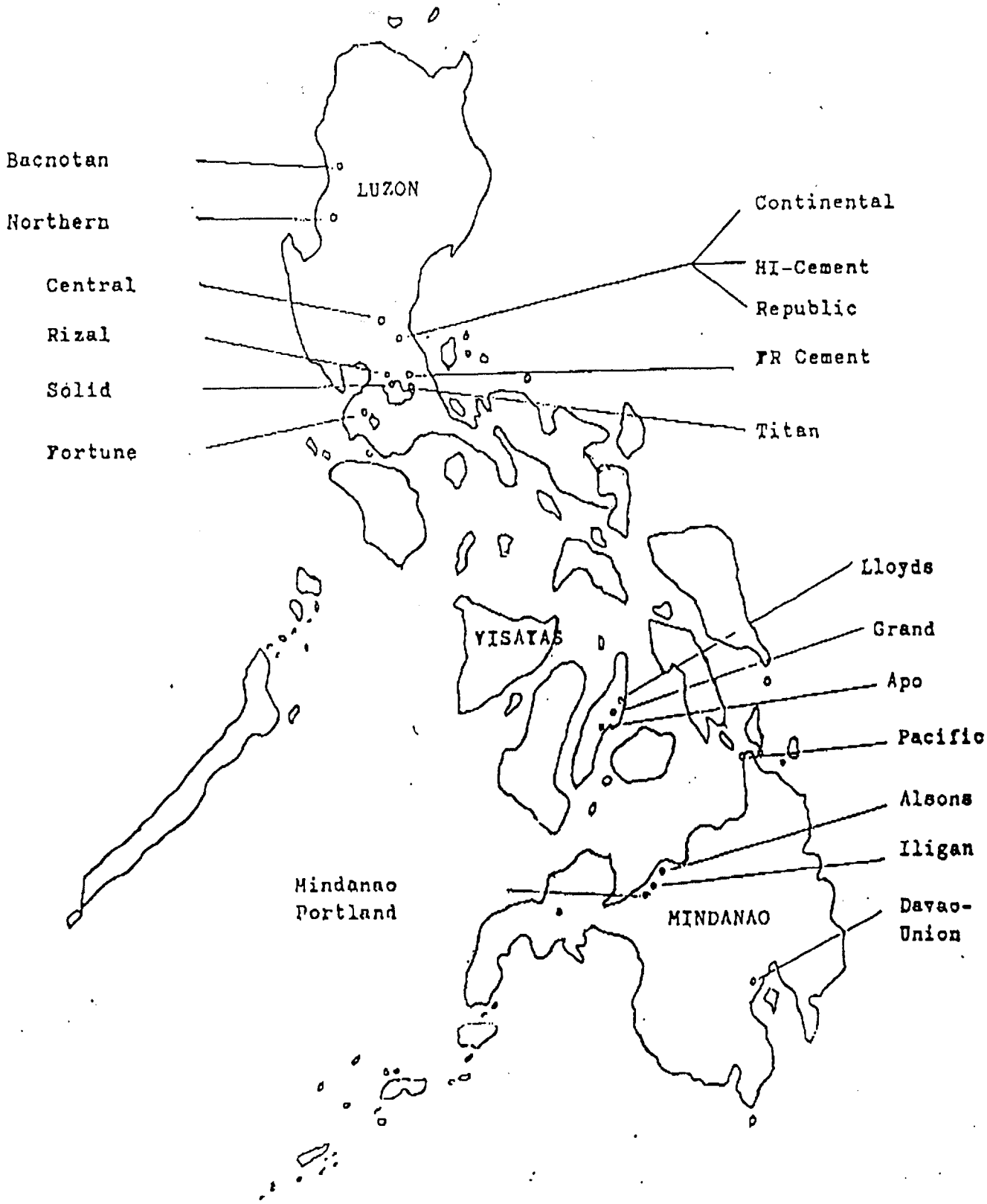
FIGURE 3. PROJECTED COAL REQUIREMENTS





LOCATION MAP OF COAL-FIRED POWER PLANTS

Fig. 4

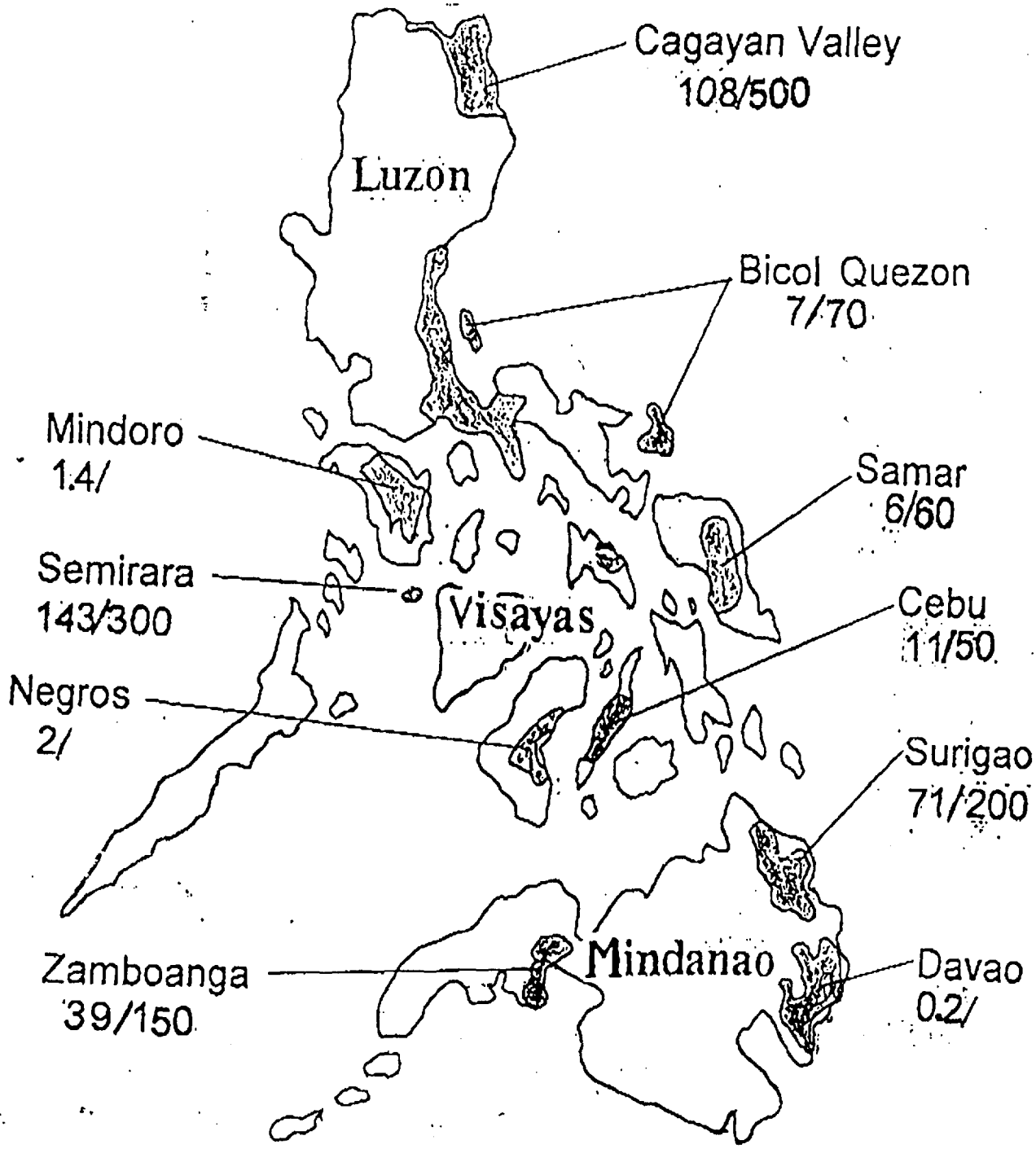


LOCATION MAP OF OPERATING CEMENT PLANTS

Fig. 5

Potential Mine-Mouth Power Plants

Thousand MT/MW



EXISTING COAL TERMINALS

LOCATION	HANDLING CAP. (TPH)	STOCKPILE CAP. MT.	FACILITIES
1. BATANGAS	200	120,000	3 PAYLOADER; GRAB CRANE ELEC. WEGHBRDG
2. PORO PT. SN. FDO., LA UNION	300	20,000	4-VESSEL UNL. CONV.; LDG. BIN; RECL. HOP'R ELEC. WGHBRDG
3. NPC, CALACA BATANGAS	2-1000	300,000	2 CLAMSHELL 100 TPH UNL;
4. NPC NAGA, CEBU	400	150,000	2-STKR/RECLRS; BELT CONVYRS
5. SANGI, CEBU	500	10,000	GANTRY CRANE; CLAMSHELL UNL; BELT CONVYRS
6. ILIGAN CITY	500	25,000	VESSEL UNL.; CONVYRS; PAYLOADER, ELEC. WGHBRDG
7. ISABEL, LEYTE	400	20,000	GRAB CRANE; PAYLOADER; FIXED GANTRY EXTENSIBLE BOOM; BELT CONVYRS
8. MALANGAS, ZAMBO. DEL SUR.	300	60,000	LOADER; CONVEYOR BELT; WGHBRDG
9. SEMIRARA ISLAND	1000	150,000	CONVEYOR (RAIL-MOUNTED); STACKER/RECLAIMER

ADDITIONAL CEMENT PLANTS

PROPONENT	SITE	PROPOSED CAP. (MILLION T/YR)
1. PANGASINAN CEMENT CORP.	BOLINAO, PANGASINAN	3.3
2. APC CEMENT CORP.	GINATILAN, CEBU	1
3. SOUTHERN CROSS	TOLEDO, CEBU	1.5
4. ORIENTAL CEMENT	DACONGCOGON, NEGROS	1
5. LUCKY STAR MFG. INC.	LABAYUG, PANGASINAN	1
6. GENERAL CEMENT CORP.	ALIBUG, MINDORO OCC.	2
7. SOUTHWESTERN CEMENT	MALABUYOC, CEBU	1.2
8. PALAWAN CEMENT PROJ. INC. (PENWAY RESOURCE LTD.)	ESPANOLA/QUEZON, PALAWAN	2.2