OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

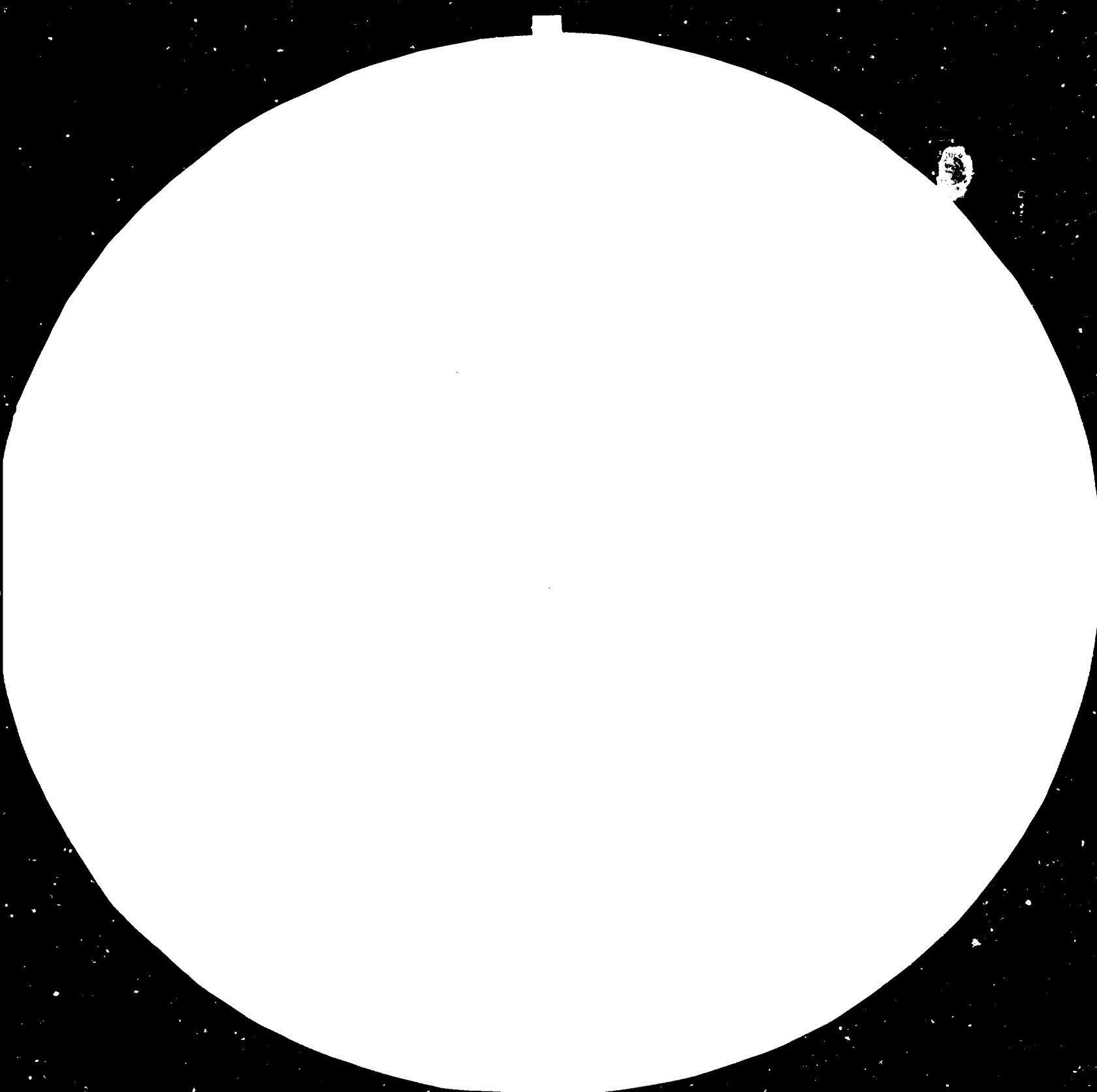
FAIR USE POLICY

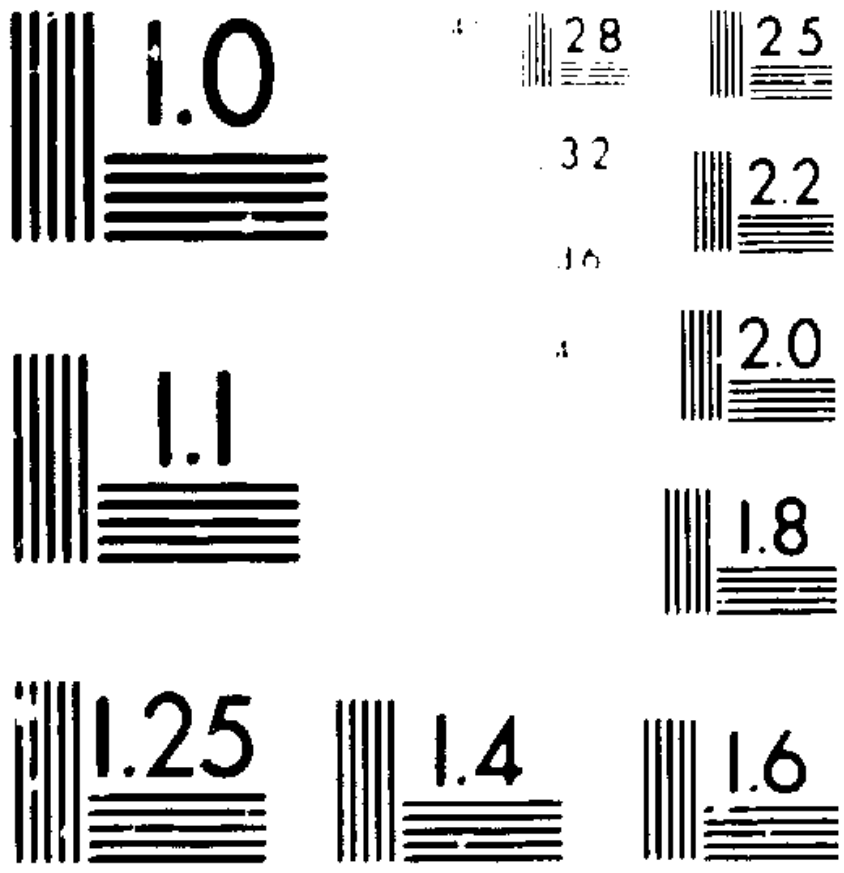
CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org





13462

Distr.
LIMITED

ID/WG.417/7
24 February 1984
ENGLISH

United Nations Industrial Development Organization

Expert Group Meeting on Exchange of Experiences on Energy Conservation in Small and Medium Industries for ASEAN Countries

Kuala Lumpur, Malaysia, 5-7 December 1983

ENERGY CONSERVATION IN THE PHILIPPINES*

by

Gregorio Gonzales**
and
Marilou Calzado***

1239

* This document has been reproduced without formal editing.

** President, Energy Management Association of The Philippines, Escolta Manila.
*** Manager, Energy Productivity Division, Productivity and Development Centre, Development Academy of The Philippines, Cubao. Q.C., The Philippines.

V.84-82355

1.0 BACKGROUND: The Small and Medium Scale Industry in the Philippines

Small and medium scale industries (SMI) play a vital role in the development of the Philippine economy. SMI accounts for more than 90% of the total number of establishments in the manufacturing sector employing some 50% of workers.

In order to place a stronger emphasis on the SMI, a government bureau[1/] was instituted to respond to the needs of the sector and face the challenges of the 80's.

The small and medium industry in the Philippines is defined according to the following criteria:

1. Based on asset size for lending purposes: Small scale industries are those with total assets between ₱250,000 and ₱2.5 M. Medium scale industries are those whose total assets are not exceeding ₱10 M. The government based these criteria on assets before financing and provides for adjustments for changes in the country's economic conditions.

2. Based on number of employees for statistical purposes: Small scale industries employ from 10-99 workers while medium scale industries employ from 100-199 workers.

3. Based on management structure: Small and medium scale industries are enterprises in which the owner-manager performs the varied range of tasks involved in guidance and leadership without the help of specialized staff officers.

1/ Bureau of Small and Medium Industries (BSMI) under the Ministry of Trade and Industry (MTI).

Based on the foregoing, the objectives of the Small and Medium Industries were formulated in line with the government's National Development Plan. These are:

a. equitable distribution of wealth,
b. increased employment generation,
c. improved living standards of the poor,
d. countryside development, and
e. utilization of indigenous resources.

The government's national industrialization objectives provided the framework for small and medium scale industries development. Among others, this framework covers the following thrusts:

a. accelerated employment creation.
b. increased foreign exchange earnings to support the country's development programs and growing import bills,
c. a dynamic industrial structure that is efficient and world competitive, and
d. an even distribution of benefits of industrialization among the Filipino people.

These objectives and framework are in line with the Philippine government industry-intensive plan.

1.1 Financial Assistance

To assist the Small and Medium Scale Industries to acquire substantial working capital, the government devised policies to facilitate financial extension to these industries. These policies are the following:

1. Long term lending policies extended to SMI through financial institutions (notably the Development Bank of the Philippines (DBP)),
2. Interest rates for loan extended to SMI reflects the cost of borrowing and is in line with the prevailing market rates,

3. Easing up government policies on collateral requirement for SMI borrowers through provision of guarantee schemes.
4. Schemes covering equipment leasing to reduce the needs of SMI to invest in fixed assets,
5. Equity financing by private sector, and
6. Additional financing schemes for working capital, e.g., sub-contracting financing of purchase orders and in-kind raw material financing.

2.0 Energy Conservation Program in SMI's

At this point, we would like to share some of the Energy Conservation Programs for the Small and Medium Scale Industries. Examples from industrial sectors are presented to give you a first-hand look at our developmental efforts towards energy conservation. These examples were actually presented during the National Energy Conservation Workshop held last September 1983 and it is with due respect that we in turn present these to our ASEAN brothers who may get something out of these examples.

Before we proceed with these examples it is but proper that we also look into the Philippine Energy Situation in the 80's.

2.1 The Philippine Energy Situation

The severe oil crisis of 1973 made it necessary that our government devise ways and means to counter/minimize the impact of the energy problem. Steps were undertaken by our government to include the exploitation and development of indigenous and alternative energy sources and the management of energy demand and supply. The programs have been highly successful considering that energy dependency from outside sources have drastically been reduced by a third. By the end of 1982, local energy sources accounted for 31.7% of total requirements, a hefty increase from 1978's 12.8%.
Refer to Table 1.

TABLE 1
Primary Energy Consumption
(Thousand Barrels of Fuel Oil Equivalent)

	1982	1981	1980	1979	1978
Imported Energy					
Oil	65533	67162	69455	70504	75322
Indigenous Energy					
Oil	2952	1373	3507	7177	-
Coal	1110	905	955	815	929
Hydro	6653	6384	5938	4798	4645
Geothermal	6245	4747	3501	1064	5
Bagasse	7352	6224	4850	5308	5449
Non-conventional	78	340	21	-	-
Agri-Industrial	6090	6260	-	-	-
Sub-total	30480	26233	18722	19162	11028
% of Total	31.7	28.1	21.3	21.4	12.8
Total Consumption	960313	93395	88227	89666	86372

Source: Ministry of Energy Report for 1982, p.44.

The substitution of imported energy by local sources resulted in savings of ₱918 million for 1982 alone, and this accounted for the drop in the oil bill by 16% from the previous year. The sustained pace in domestic oil production generated an average of over 21,000 barrels per day, roughly 10% of total daily requirements for 1982. This was achieved despite the decline in exploration activities which saw only 12 exploratory wells drilled. The accompanying discovery of four gas deposits boosted further the gains made in oil production which amounted to 3.56 million barrels.

Coal production for 1982 was 556,900 metric tons, a 55% improvement from the 1981 production of 359,000 metric tons. As in previous years, the actual production capacity of existing mines (estimated at 800,000 MT) was not optimized on purpose due to the oversupply situation. This year, an upsurge in demand is anticipated when the level of utilization increases with the conversion of mining and cement industries to coal usage. The rest of the local energy sources registered modest gains, except for non-conventional sources and from agri-industrial waste fuel.

In the transport sector, the use of energy, particularly petroleum products, had been kept below 10 per cent of total consumption. Within the industry, the share of land transport had grown from only 29.3% in 1979 to a staggering 44.7% during the first quarter of 1983. Domestic marines's share fell from a high of 45.8% in 1980 to just 39% during the first quarter of 1983. The share of domestic aviation also registered a drop from 20% in 1980 to only 16.3% for the same quarter (see Table 2). Other major petroleum users are Power Generation, Mining, Cement, Logging/Wood Production, and Contractors which account for more than 60% of total consumption.

TABLE 2

Petroleum Products Consumption in the
Transport Sector
(In Thousand Barrels)

	1983*	1982	1981	1980	1979
Land Transportation	515.32	1959.44	1643.00	1548.00	1582.40
% of total	44.7	42.5	38.6	34.2	29.3
Domestic Marine	449.28	1872.02	1817.00	2076.00	2171.30
% of total	39.0	40.6	42.6	46.8	40.3
Domestic Aviation	188.40	777.67	801.00	907.00	1638.80
% of total	16.3	16.9	18.8	20.0	30.4
Total	1153.0	4609.13	4261.00	4531.00	5392.50

* First Quarter

Source: Quarterly Review, Bureau of Energy Utilization.

Although the transportation industry's share of petroleum use still has to surpass the 10% mark, the fact that it belongs to the top five major users of fuel is more than enough reason to conserve petroleum utilization within the industry. In fact, according to Asian Energy Problems (An Asian Development Bank Survey, p. 223), a large part of the reduction in energy consumptiion was primarily the result, among others, of better fleet management and reduction in leisure travel in the transport sector. With such premise, the Philippines has introduced energy conservation measures and programs to develop potential local sources of energy within the sector, among which are:

1. Prohibition in the importation, manufacture or assembling of gasoline-powered passenger motor cars with engine displacement of over 2,800 cc. or kerbweight exceeding 1,500 kilograms, including accessories.

2. Ban in the use of government vehicles during Sundays, legal holidays, or outside of office hours or authorized routes.

3. Granting of authority to the Ministry of Transportation to regulate the use of motor vehicles for purpose of conserving fuel. Regulations may include restrictions in the use of vehicles during certain days and time, destinations or streets, and even denying registration to certain types of vehicles which do not meet standards of energy consumption.

4. Empowering the Ministry of Energy to allocate and distribute fuel to various sectors of the economy whenever necessary for the general welfare.

Aside from these provisions, the government also introduced measures designed to encourage fuel conservation. One was the support extended to the manufacture and use of vehicles running on diesel engines as against gasoline-powered engines. To complement this move, the socialized pricing scheme was adopted wherein diesel fuel prices were lowered thru imposition of lower tax rates. This resulted in the mass usage of diesel-fueled vehicles by the public transportation sector as diesel prices accounted for only 62.71% of premium gasoline. The use of compact cars was also encouraged due to their better fuel efficiency capability.

A study is currently being done by the Bureau of Energy Utilization on the efficiency trade-offs between gasoline and diesel for the purpose of establishing a better petroleum pricing policy.

In the public land transportation side, the government came up with the following:

1. Segregated Bus Stops - Both as an energy conservation and traffic decongestion measure, the system segregates loading/unloading points for passenger buses, along E. de los Santos Avenue, the longest and busiest road in Metro Manila.

2. Banning of less efficient public transportation vehicles in certain routes - This is presently being applied along E. de los Santos Avenue where passenger density is greatest.

3. Establishment of the Light Rail Transit System - under construction at present - this project is expected to transport thousands of commuters along one of Manila's busiest routes at the least fuel utilization.

4. Synchronization of traffic warning devices. This move greatly contributed to fuel conservation as it enabled vehicles to move along simultaneously at both sides of the road.

Case 1. The Metro Manila Transit Corporation (MMTC)

In Metro Manila Transit Corporation (MMTC), a government controlled bus company, energy conservation is a multi-pronged activity. MMTC operates about 500 units daily, distributed on more than 20 different routes. With such a large fleet, energy conservation is a challenge. The quest for energy efficiency is treated not only as a cost control program but as an eventual model for private industry to copy and improve upon.

Current programs presently being undertaken are:

1. Tachograph utilization - The permanent records provided by tachographs allow management greater control over operating costs, driver performances, maintenance scheduling, equipment utilization, and safety standards. Through tachographs, we were able to correct bad drivers' habits on speeding and engine operating ranges, and institute fairly accurate maintenance schedules.

2. Better Maintenance Activity - This required the realignment of maintenance functions to include energy efficiency goals. Activities under this measure include monitoring of less fuel-efficient units and correction through engine derating, scaling down of horsepower capacity or repowering of older engines and daily monitoring of fuel deliveries, handling methods and fuel issuance to avoid minimize losses and wastage.

3. Better Dispatching Methods - This measure involves the redistribution of bus trips to conform to passenger availability patterns, resulting in better revenue-generating opportunities and generation of fuel savings thru elimination of unproductive runs.

4. Training and Education of Personnel - This is the most visible and active company project which entails several seminars held on regular intervals. Aside from the usual pre-employment lectures and training programs, drivers undergo lectures and seminars on correct bus operating techniques and maintenance, including the effective use of bus equipment. This program serves as the tool for increasing drivers' awareness of energy conservation and fuel efficiency.

5. Use of rewards - A rigid gatheing of essential data from the transport crews, engineering personnel, and fuel issuers are performed daily, disected, and statistically analyzed to expose the fuel savers and fuel wasters. In this regard, the top fuel savers are not only commended and recognized at appropriate ceremonies but also given a percentage of actual fuel savings. Conversely, the worst fuel wasters are given strict reminders of their undesirable driving habits, made to undergo the re-training cycle and are forwarned of future management action if no significant improvement will be observed in succeeding months.

Reports from this process also reveal significant indications on bus performance and maintenance procedures, and thereby trigger appropriate management action.

The company's transport operations has a variety of bus services which is a remarkable feature in the industry. In addition to the Ordinary mode, the Express and Aircon Services cater to the long distance commuters who prefer faster and more convenient modes. The Aircon particularly helps reduce the utilization of privately owned vehicles, a greater number of which are also air conditioned. The Double Deckers, on the other hand, provide space and fuel savings, as well as fare reduction on a per passenger basis.

The drive towards a fuel efficient public transport system does not end there. The government has adopted support programs for the industry in order to motivate the sector to use alternative forms of fuel which are locally available. The introduction of gasifiers among jeepney operators was recently strengthened by the development of a lighter model. To speed up the distribution of the gasifier, which convert biomass (any agricultural and forest waste product) into combustible gases used for heating and power, a financial scheme was formulated to assist transport cooperatives and independent operators to acquire them at easy terms. To support the gasifier program, 1.5 million hectares of land was declared alienable and disposable by the President to be used in the production of fast growing trees, particularly ipil-ipil, which are made into charcoal, the gasifier's fuel.

Alcogas use, meanwhile, is being boosted by providing financial and tax incentives to sugar mills that produce anhydrous alcohol for blending with gasoline. Incentives include subsidiaries on prices of anhydrous alcohol output to make them competitive with current sources of energy. The Ministry of Energy, as part of its

function to require the use of alcohol gasoline mix or other energy blends, has caused the manufacture of coco-diesel, a mixture of coconut oil and diesel. Coco-diesel is of great potential due to the abundance of coconut in the country. Encouragements provided by the government are production and technical assistance to the coconut industry as well as price support to end-product prices.

Case 2. Solid Mills, Inc.

In 1979, Solid Mills, Inc. (SMI) undertook energy conservation measures for BFO. These measures were basically housekeeping which were undertaken without much capital cost.

SMI adopted the ratic of BFO to production which showed that in 1979, the ratio of 1 liter of BFO to 1 kilogram of production was 0.2585. By 1980, the ratio went down to 0.2103 with a 1981 target aimed at a modest ratio of 0.1516.

SMI started monitoring its electric consumption for which the accepted basis is the ratio KWH/KG of production. In 1980, the ratio took its highest increase, 12%. This high incremental ratio was largely due to the modernization of the whole plant in 1978. However, this proved encouraging for the firm because product quality and productivity at the factory level increaced by more than 20% and 40% respectively enough to cover the electric consumption ratios. Similar operating strategies such as power factor improvement, optimizing lighting requirements, etc.were resorted to.

A major turn of events to highlight the energy conservation measures of Solid Mills, Inc. was the installation of the By-Product-Power Plant or the Co-generation System. Plainly, co-generation is the simultaneous production of the steam and electricity similar to that of a utility power plant except that the exhaust from the turbine is further utilized for other processes.

The co-generation plant has a boiler capacity of 16 tons/hr. that runs a turbine/generator with a rated output of 1.6 megawatts. The exhaust steam is extracted from the turbine at 85 psi (pounds per square inch) and is used for Dyeing and Finishing processes. Consequently, the old boilers are on standby when the co-generation plant is running. The boiler of the co-generation plant is guaranteed to have an efficiency of 92% much better than the old boilers with an efficiency of 85%. Further, the 1.6 megawatts generated by the co-generation plant have chopped off some 30% on electric bills of Solid Mills, Inc.

One of the most successful programs undertaken in the field of energy management is the education program. As of November 1983, there are 1871 energy managers and energy technicians trained on energy management. Graduates include top company officials, plant managers and supervisors. Lately, an energy management course was also conducted for the engineering academé of ten universities. Presently, a one-semester course on energy management for graduating engineering students is being pilot-tested. The course is being endorsed by the Ministry of Education, Culture and Sports (MECS) where due accreditation will be given to participating students from 10 universities.

This endeavor is jointly undertaken by the Bureau of Energy Utilization and the Productivity and Development Center of the Development Academy of the Philippines since 1979.

3.0 Energy Audits in Key Energy-Intensive SMI

Assistance in the conduct of energy audits is being extended by the Bureau of Energy Utilization (BEU), to assist industrial, transport, commercial and building establishments to identify energy conservation opportunities. In line with this program the BEU has conducted since July 1982 up to April 1983, energy audits of 69 selected industrial plants which included among others 4 cement plants, 7 mining companies, 5 textile companies and 4 steel/metal corporations. Many of these companies are of course large industries. A number of them fall under the SMI category.

The energy audits have enabled the BEU and the companies to determine energy utilization efficiency of the various energy consuming facilities and processes, and identify potential areas for energy conservation. The BEU, in the conduct of energy audits of the 69 industrial plants, took note of the energy savings on company implemented energy conservation measures (see Table 3) and in return, provided the companies with potential energy savings based on BEU recommended energy conservation measures (see Table 4).

The following energy conservation measures were implemented by the companies belonging in mining, textile and steel/metal processing sectors:

Mining Sector

1. Power factor improvement by use of capacitors
2. Oil Reclamation
3. Preheating of boiler feedwater using calcine cooler
4. Installation of a new 30 MW Sulzer Diesel-Generator set
5. Improvement in electric power utilization
6. Burning of carbon gases in lieu of LPG in sintering furnace
7. Use of condensate heat in ammonia scrubber
8. Optimizing steam to carbon ratio in the gas plant
9. Reduction of sulphides moisture by use of filters before drying.

Textile Sector

1. Power factor improvement by use of capacitors
2. Fuel consumption monitoring and housekeeping measures
3. Cogeneration power system
4. Installed economizer on boiler
5. Continuous degumming equipment
6. Condensate and flash steam recovery system
7. Daily check of leaks, insulation and steam traps
8. Reduction in lighting

Table 3 Energy Savings on Company Implemented
Energy Conservation Measures

	Industrial Sector	No. of Companies Audited	Combined Annual Energy Consumption KJ Million		Annual Energy Savings Reported			
			Million	LOE/2	Combined Savings Million KJ	Million LOE	Combined Savings %	Range of Savings %
1.	Cement	4	10,245,899	245.12	-		-	-
2.	Ceramics	4	496,227	11.87	1,834	0.04	0.4	2.8
3.	Chemicals	4	3,854,633	92,22	48,390	1.16	1.2	1.4 - 5.3
4.	Coconut/Veg. Oil	6	2,266,011	54.21	33,321	0.80	1.5	2.1 - 4.4
5.	Construction	2	221,390	5.30	8,561	0.20	3.7	3.0 -13.5
6.	Food	7	2,016,628	48.24	122,256	2.92	4.7	2.7 -11.3
7.	Glass	3	1,705,120	40.79	730,800	17.48	30.0	5.1 -53.6
8.	Mining	7	48,032,545	1149.10	1,200,003	28.71	2.4	3.2 - 4.4
9.	Petroleum	2	12,908,589	308.82	1,293,740	30.95	9.1	5.3 -17.7
10.	Pulp & Paper	3	13,196,861	315.71	305,653	7.31	2.3	2.0 - 7.7
11.	Rubber	3	756,664	18.10	-	-	-	-
12.	Steel/Metal	5	10,162,843	243.13	433,346	10.37	4.7	4.0 - 6.7
13.	Sugar	4	5,198,653	124.37	446,703	10.69	8.5	13.5
14.	Textile	5	1,889,580	45.21	66,669	1.60	3.4	2.1 -14.4
15.	Wood	2	1,113,829	26.65	62,496	1.50	5.3	10.6
16.	Tobacco	1	70,547	1.69	-	-	-	-
17.	Others 1/	2	123,149	2.95	-	-	-	-
18.	Power Plants	5	93,245,902	2230.76	-	-	-	-
	TOTAL	69	207,505,070	4964.24	4,753,772	113.73	2.2	1.4 - 53.6

1 Appliance & 1 Automotive

Liters Oil Equivalent

Table 4 Potential Energy Savings on BEU Recommended Energy Conservation Measures

Industrial Sector	No. of Company Audited	Combined Annual Energy Consumption Million KJ	Million LOE	Annual Energy Savings Potential Sectoral Savings Million KJ	Million LOE	Sectoral Savings %	Range of Savings %
1. Cement	4	10,245,899	245.12	59,766	1.43	0.6	0.7 - 0.8
2. Ceramics	4	496,227	11.87	65,144	1.56	13.1	4.2 -26.2
3. Chemicals	4	3,854,633	92.22	43,295	1.04	1.1	2.5 - 3.8
4. Coconut/Veg. Oil	6	2,266,011	54.21	96,474	2.31	4.3	3.3 -13.3
5. Construction	2	221,390	5.30	28,902	0.69	13.1	14.0
6. Food	7	2,016,628	48.24	121,913	2.92	6.0	2.5 -12.4
7. Glass	3	1,705,120	40.79	80,034	1.91	4.7	1.0 - 6.5
8. Mining	7	48,032,545	1149.10	741,342	17.74	1.5	0.1 -18.9
9. Petroleum	2	12,908,589	308.82	330,848	7.92	2.6	2.3 - 3.2
10. Pulp & Paper	3	13,196,861	315.71	202,533	4.85	1.5	1.5 - 3.4
11. Rubber	3	756,664	18.10	54,492	1.30	7.2	4.3 -31.2
12. Steel/Metal	5	10,162,843	243.13	115,377	2.76	1.1	6.8 -19.6
13. Sugar	4	5,198,653	124.37	433,160	10.36	8.3	1.1 -39.2
14. Textile	5	1,889,580	45.21	36,527	0.87	1.9	0.7 - 3.9
15. Wood	2	1,113,829	26.65	75,060	1.79	6.7	12.7
16. Tobacco	1	70,547	1.69	7,960	0.19	11.3	11.3
17. Others	2	123,149	2.95	7,607	0.18	6.2	3.0 - 6.9
18. Power Plants	5	93,245,902	2230.76	1,699,217	40.65	1.8	1.0 - 8.8
TOTAL	69	207,505,070	4964.24	4,199,646	100.47	1.8	0.1 -39.2

Table 5 PETROLEUM PRODUCTS CONSUMPTION BY INDUSTRY
(In Thousand Barrels)

	1980	Percent of Total	1981	Percent of Total	1982	Percent of Total	First Half 1983
Cement	3,362	6.3	3,030	6.1	3,186	6.6	1,271
Mining	4,244	7.9	3,788	7.6	3,248	6.7	1,413
Textile Mills	940	1.7	859	1.7	754	1.5	402
Transport 1/	4,532	8.5	4,240	8.4	4,592	9.5	2,413
Land Transport	1,548	2.9	1,622	3.2	1,942	4.0	1,053
Domestic Marine	2,076	3.9	1,817	3.6	1,872	3.9	914
Domestic Aviation	908	1.7	801	1.6	778	1.6	446
Steel/Metal/Nickel Processing	5,305	9.9	4,524	9.1	2,894	6.0	649
Other Sectors (Including RF & L) 2/	35,240	65.7	33,498	67.1	33,937	69.7	20,937
TOTAL 3/	53,623	100.0	49,939	100.0	48,494	100.0	27,085

1/ Excludes direct purchases from service stations

2/ Refinery fuel & Loss

3/ Reflects sales to direct consumers only

Steel/Metal Processing Sector

1. Improved instrumentation on boiler
2. Improvement in performance of slab and billet furnaces
3. Reduction in power thru improvement in operations such as standardized stopping and starting procedures of equipment
4. Reduction in fuel oil consumption thru improvement in operating practices
5. Reduction in coke breeze consumption by maintaining high bed height operation, controlled moisture content of mix, etc.
6. Continuous strand casting
7. Installation of a small boiler to accommodate demand fluctuation.

In general, the BEU recommended the following energy conservation measures to the companies audited to attain the identified energy saving opportunities depending on each company's equipment and process:

1. Boiler/Furnace/Power plant efficiency improvement
2. Waste Heat Recovery
3. Condensate/Flash Steam Recovery
4. Equipment Modification
5. Process improvement and improved operating practices
6. Installation/use of more energy efficient equipment
7. Re-insulation Program
8. Improvement of electric power utilization
9. Power Factor Improvement
10. Housekeeping Measures
11. Minimize Rejection Rate

4.0 Major Problems Facing Implementation of Energy Conservation Programmes and Projects

Some of the problems confronting the industry in implementing energy conservation programs are presented below. These could be generally classified into a) lack of enercon conciousness on the part of management and employees; b) financial and technical difficulties; and c) lack of supportive government policies.

The most common problems shared by the industries are as follows:

a. Lack of management support for capital intensive enercon projects.
b. Non-compliance of employees on enercon measures
c. Lack of viable financing
d. High interest expense and foreign exchange exposure
e. Lack of viable fuel/blend in the market.

On a sectoral basis, the following problems were emphasized:

Cement: Lack of trained staff on coal utilization. This was realized in view of the on-going coal conversion program by cement firms.

Mining: Difficulty in obtaining water right for mini-hydro systems which some mining firms are considering in view of the localized nature of their operation (lack of NPC Power in the area) and availability of hydro power source.

Steel: Lack of technical support for new ideas.

Textile: Absence of full time energy manager. This stemmed from the fact that B.P. 73 provides only for the appointment of a regular or permanent employee to act as full time energy manager and does not oblige the company to hire another employee as energy manager. Hence in most cases,

the production engineer or engineering manager is normally designated to perform as energy manager aside from his regular functions. In most instances, however, the overriding focus is on the regular workload and energy management is oftentimes accorded a low priority.

Transport: Lack of better road condition. The inferior condition of roads as well as road repairs, diggings performed by utility companies, disrupting normal traffic flow was viewed by the transport sector as a major setback in the fuel efficiency of their operations.

5.0 Proposals/Recommendations

In order to counter the problems and constraints previously identified and thus strengthen the complimentary energy conservation efforts of both government and private sectors, a number of proposals were laid out. Among the proposed measures, commonly cited by the industries are as follows:

a. Provision of adequate and attractive financing package/ assistance for enercon projects.
b. Legislation of measures to allow direct power connection with NPC by industries above a specific demand load regardless of location.
c. Provide tax credits on enercon savings.
d. Professionalize energy management and mandatory employment of a full time energy manager.
e. Training of managers and rank and file employees on energy conservation.

These proposals call for appropriate government policies particularly on financing aspects to ensure economic viability of enercon projects and also for accelerated enercon campaign.

Other proposals which are equally important to note include:

a. Establishment of closer cooperations/interactions among industry members on enercon matters.
b. Deferment of 3% Ad Valorem Tax and pre tax payment
c. Amendment of dollar L/C allocation
d. Strict implementation of traffic rules and rules on road repairs.