

CHAPTER XXI

Utilities

I. INTRODUCTION

1264. To meet the growth of industry, urban development and the modernization of the rural areas, intensive efforts were made to accelerate power and water supply programmes during the Second Malaysia Plan (SMP). Under the Third Malaysia Plan (TMP), these efforts will be continued with emphasis directed towards the economically depressed regions in line with the New Economic Policy (NEP). The expansion of the national grid of the National Electricity Board (NEB) to the East Coast States in Peninsular Malaysia will further stimulate the dispersal of industries to these areas. Rural electrification and rural water supply programmes will be stepped up in Peninsular Malaysia, Sabah and Sarawak. The provision of such facilities is aimed at improving the health, welfare and living conditions of people in rural areas as part of the overall poverty redressal effort of the Government. Greater emphasis will also be given to sewerage development, especially in major urban areas to improve public health, urban environment and the quality of life in urban areas.

II. POWER

Progress, 1971-75

1265. In *Peninsular Malaysia*, the demand for power increased by 13.5% per annum over the SMP period. To meet this demand, the installed generating capacity of the NEB was expanded by 39.2% to 896.7MW in 1975, comprising 570MW steam, 265.4MW hydro-electric and 61.3MW diesel plants. The major projects completed during the SMP period were the Stage II Tuanku Jaafar Power Station at Port Dickson (120MW), Prai Power Station Extension (30MW) and the final extension of Sultan Ismail Power Station at Johor Bahru (30MW). A number of projects was initiated for feasibility studies including the hydro-electric projects of Temenggor, Trengganu and Tembeling. Construction also began in respect of the Pasir Gudang Thermal Power Station, the Stage III Tuanku Jaafar Power Station and the final extension to the Prai Power Station.

1266. Additional transmission and distribution facilities were also provided within the national grid to connect the major load centres on the West Coast with Kuantan on the East Coast. Transmission lines increased by 246 miles to 1,122 miles in 1975, whilst distribution lines increased by a further 1,440 miles to 2,735 miles in 1975. The number of consumers served increased from 467,930 to 704,140 or 50.5% over the SMP period.

1267. To improve living conditions in remote areas, the programme for rural electrification in Peninsular Malaysia was extended to 297 villages, benefitting about 33,100 households, or 44% of the SMP target. The shortfall was due mainly to the shortage of basic materials like bars, insulated aluminium wires, high-voltage cables, transformers and switchgear; the difficulties in obtaining land for sub-stations, sites for rural power stations and wayleave for low-voltage overhead lines. The programme was financed by both the Federal and State Governments and the NEB. As shown in Table 21-1, a sum of \$516.3 million was spent on the electricity supply programmes in Peninsular Malaysia as against the revised provision of \$555 million.

TABLE 21-1

MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR
ELECTRIC POWER PROGRAMMES, 1971-75
(\$ million)

<i>Project</i>	<i>Revised SMP allocation, 1971-75</i>	<i>Estimated expenditure, 1971-75</i>	<i>(%)</i>
<i>Peninsular Malaysia</i>	555.0	516.3	93.0
South Region power development	21.2	17.9	84.4
Johor Bahru final extension	12.8	18.0	140.6
Port Dickson and Prai extension	60.5	57.5	95.0
Port Dickson stage III	137.4	111.1	80.9
Temenggor hydro-electric development	64.4	59.2	91.9
Prai second extension	—	1.7	—
Tembeling hydro-electric development	3.7	2.5	67.6
Transmissions, distributions and other genera- tion projects	169.8	164.7	97.0
Rural electrification	60.2	60.3	100.2
Administration	25.0	23.4	93.6
<i>Sabah</i>	29.3	52.6	179.5
Power development	23.1	49.3	213.4
Rural electrification	6.2	3.3	53.2
<i>Sarawak</i>	65.0	65.2	100.3
Power development	61.4	59.0	96.1
Rural electrification	3.6	6.2	172.2
TOTAL ..	649.3	634.1	97.7

1268. In *Sabah*, the total generating capacity of the Sabah Electricity Board (SEB) increased by 30MW to 64MW by the end of 1975, an increase of 88%. The major projects completed included the installation of diesel sets at major load centres at Kota Kinabalu (10MW), Labuan (2MW) and Sandakan (15MW). Transmission lines increased by 81 miles for high-voltage and 207 miles for low-voltage. The number of consumers served increased by 91.9% from 24,000 in 1970 to 46,000 in 1975. To meet the increased demand for power in the State and to economize on fuel costs, a feasibility study of the Tenom-Pangi Hydro-electric Project was completed in 1973. Under the rural electrification programme, an additional 40 villages were provided with electricity during the SMP, benefitting about 2,000 families.

1269. In *Sarawak*, the total generating capacity of the Sarawak Electricity Supply Corporation (SESCO) increased by 29MW to 61MW during the SMP period. The major projects undertaken included the installation of two 8.5MW diesel sets at Kuching and one 5.5MW diesel set at Sibul. The number of consumers served increased from 30,447 in 1970 to 46,540 in 1975.

Programme, 1976-80

1270. The development of power will play a critical role in the growth of the industrial sector under the Plan. With the projected expansion of the manufacturing and commercial sectors of the economy, particularly the development of power intensive industries such as steel, petro-chemical and cement, the provision of reliable power is vital.

1271. Appropriate measures will be taken to ensure that the development of power supply is adequate to meet the projected demands of industry, commerce and domestic consumption. Power generation projects will be programmed and developed based on the most suitable mix of thermal and hydro-electric sources. The feasibility of utilizing nuclear energy is also being considered. The gradual expansion of the national grid to cover the whole of Peninsular Malaysia represents a further effort to reduce the costs of providing power through diesel stations especially for areas in the East Coast States of Kelantan, Trengganu and Pahang.

1272. An appropriate pricing policy will be developed by the various power authorities to ensure that the tariffs charged for supplying power to various categories of consumers reflect the actual costs of providing power except in those cases where subsidies are needed as part of the Government's poverty redressal efforts.

1273. Over the Plan period, the demand for power in Peninsular Malaysia is projected to grow by 12% per annum. The demand from industrial and commercial consumers who now account for 65.8% of total electricity consumption is expected to grow by 15.4% per annum over the Plan period, while that of domestic and other consumers which now account for the

remainder will grow by 11.7% per annum. Based on these projected demands and the extensive studies undertaken by the NEB on the most suitable mix of thermal and hydro-electric facilities, the following projects will be implemented under the Plan:—

- (i) the completion of the Temenggor Hydro-electric Project with four 87 MW units;
- (ii) the extension of the Prai Thermal Power Station with three 120 MW units;
- (iii) the development of a new thermal power station at Pasir Gudang with two 120 MW units;
- (iv) the development of the Tembeling Hydro-electric Project with four 27.5 MW units; and
- (v) the development of the Trengganu River Hydro-electric Scheme with four 100 MW units.

1274. With the completion of these projects, the total generating capacity of the NEB will be more than double from 896.7 MW in 1975 to 1,985 MW in 1980, comprising 1,290 MW thermal, 613 MW hydro-electric and 82 MW diesel plants. The large increase in power generation capacity provided under the Plan is to ensure that present and future expansion of industrial and commercial activities will not be constrained by inadequate power supplies. Furthermore, the implementation of these programmes will enable the NEB to replace the uneconomic diesel power stations on the East Coast and the less efficient thermal sets on the West Coast.

1275. With the rising costs of fuel oil, hydro-electric projects are becoming more viable than steam plants inspite of their heavier capital costs. Great potentials for hydro-electric power exist in Kelantan and Pahang. Most of these hydro-electric schemes will be developed as multi-purpose projects for power generation, flood control, irrigation and recreation. The completion of the Temenggor, Trengganu and Tembeling hydro-electric schemes will provide additional power which will be fed to the national grid system to meet the requirements of both the West Coast and the East Coast States. The transmission facilities will accordingly be extended to Pekan and Tanjung Gelang by 1976 and to Jengka and Jerantut by 1977. Other transmission lines will be extended from Temenggor to Machang, Kota Bharu and Kuala Trengganu by 1980. A sum of \$1.4 billion is allocated under the Plan to implement these projects as shown in Table 21-2.

1276. The programme for rural electrification will continue to be expanded during the Plan period as part of the overall effort to provide social amenities to enhance the quality of life and living standards among the rural communities. The target is to provide electricity to 2,630 villages or about 211,000 rural households. To ensure an effective rural electrification programme, a comprehensive study will be undertaken to determine the most cost-effective way of expanding such programmes. Appropriate criteria

TABLE 21-2

**MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR
POWER PROGRAMMES, 1976-80**

(\$ million)

<i>Peninsular Malaysia</i>	...	...	...	...	...	...	...	...	1,355.7
Port Dickson stage III	...	...	...	...	...	...	...	...	52.7
Temenggor hydro-electric development	...	...	...	...	...	...	...	...	192.0
Prai final extension	...	...	...	...	...	...	...	...	254.2
Johor Bahru final extension	...	...	...	...	...	...	...	...	2.7
Pasir Gudang power station	...	...	...	...	...	...	...	...	71.8
Tembeling hydro-electric development	...	...	...	...	...	...	...	...	26.3
Trengganu hydro-electric development	...	...	...	...	...	...	...	...	27.4
Kenering, Bersia, Pergau and other power generation projects	...	...	...	...	...	...	...	...	38.0
Transmissions and distributions	...	...	...	...	...	...	...	...	400.7
Rural electrification	...	...	...	...	...	...	...	...	158.0
Nuclear power station	...	...	...	...	...	...	...	...	3.6
Administration	...	...	...	...	...	...	...	...	25.0
Johor Tenggara, Pahang Tenggara and purchase of capital assets	...	...	...	...	...	...	...	...	103.3
<i>Sabah</i>	...	...	...	...	...	...	...	...	125.7
Generation	...	...	...	...	...	...	...	...	27.5
Transmissions and distributions	...	...	...	...	...	...	...	...	10.1
Tenom-Pangi hydro-electric development	...	...	...	...	...	...	...	...	65.9
Rural electrification	...	...	...	...	...	...	...	...	10.5
Others	...	...	...	...	...	...	...	...	11.7
<i>Sarawak</i>	...	...	...	...	...	...	...	...	98.1
Generation	...	...	...	...	...	...	...	...	53.2
Transmissions and distributions	...	...	...	...	...	...	...	...	31.1
Rural electrification	...	...	...	...	...	...	...	...	6.1
Others	...	...	...	...	...	...	...	...	7.7
									1,579.5
								TOTAL	1,579.5

will be developed for the selection of areas and villages to be supplied with electricity and the technical standards to be adopted. Special attention will also be given to the supply of electricity to new agricultural and regional development areas as well as to new industrial estates.

1277. In line with the objective of providing electricity through a sole public electricity authority, the Government has taken over the Perak River Hydro-electric Power Company Ltd., its subsidiary, the Kinta Electrical Distribution Company Bhd., and the Electricity Division of the City Council of Georgetown. This is necessary to develop an effective and integrated power system that will provide secure and reliable electricity supply.

1278. Power demand in *Sabah* is expected to grow by 14.7% per annum over the Plan period. To meet the projected growth in power demand, additional generating capacity will be provided by the SEB under the Plan. This will include the installation of four 8.2 MW diesel sets at Kota Kinabalu, two 8 MW sets and one 5.5 MW set at Sandakan, two 5 MW sets at Tawau and other smaller units at Kudat, Lahad Datu, Beaufort, Semporna, Keningau, Ranau and Kota Belud. These programmes will increase the SEB's generating capacity by about 84.85 MW, an increase of about 133%. Additional transmission and distribution facilities associated with the generating capacity expansion programmes will also be constructed including 150 miles of high-voltage and 450 miles of low-voltage lines. One major project to be implemented by the SEB during the Plan period is the Tenom-Pangi Hydro-electric Scheme. The Scheme, the first hydro-electric project undertaken by the Board, will have an ultimate generating capacity of 66 MW when fully completed. The first two 22 MW units are expected to be commissioned in 1980. The rural electrification programme for the State will also be accelerated to cover 45 new rural areas to benefit about 4,800 households or 24,000 people. The total provisions made under the Plan for the SEB's development programme is about \$125.7 million.

1279. The development of electricity in *Sarawak* will also be expanded to meet increased domestic, commercial and industrial demands. A new generating plant will be installed at Kuching comprising three 12MW diesel generating sets which will be commissioned in 1977/79. Two diesel sets of 8MW will also be installed at Sibul by 1977. Other diesel sets will be provided to meet power requirements in Miri and Bintulu. The total generating capacity of SESCO is expected to increase by about 74.65MW to about 135.65MW in 1980. Additional transmission lines and sub-stations will also be constructed in the Kuching and Sibul areas. The rural electrification programme will be expanded to supply another 3,000 households.

1280. To tap the vast hydro-electric potential that exists in Sarawak for future power development, a detailed feasibility study will be initiated for the Batang Ai and Batang Belaga Hydro-electric Schemes. The detailed design of these projects is expected to be undertaken during the latter part of the Plan period. A sum of \$98.1 million is provided under the Plan for SESCO's expansion programme.

Financing of the power programme

1281. Power development by its nature requires not only long gestation periods but also heavy capital outlays. For these reasons careful advance planning and preparation have been carried out by the various power authorities. A substantial portion of the funds for financing the various development projects under the Plan will come from the revenue generated by these authorities. Out of \$1.6 billion required for power development under the TMP, about \$426.5 million or 27% will be provided from the respective power authority's own resources including NEB, \$350 million, SESCO, \$40.7 million and SEB, \$35.8 million. The foreign exchange costs

will be financed through external borrowing from multilateral agencies such as the World Bank and the Asian Development Bank and through bilateral and suppliers' credit offers. The projects expected to be financed through the latter sources include the Temenggor, Tembeling, Trengganu and Tenom-Pangi Hydro-electric Projects and the thermal projects at Prai and Pasir Gudang.

Tariff structure

1282. The NEB tariffs are designed to reflect the actual operating costs of supplying power. However, the tariffs will be structured so as to ensure that the poor have effective access to electricity as well as to promote the development and dispersal of commercial and industrial activities to the less developed States. A study is being undertaken by the NEB to re-examine the present tariff structure with these objectives in mind. Similar studies will be undertaken by the SEB and SESCO.

1283. While the fuel cost variation surcharge has been applied to meet part of the increase in fuel costs, the basic tariffs, however, have not been revised since 1964 and with accelerated load growth, expanded construction programme and inflation, the present tariffs are no longer related to the current costs of operation. The only major revision was the equalization of tariffs, effective from the beginning of 1974, between the West Coast States served by the national grid and the East Coast States served by isolated diesel stations. This action was taken to ensure that the high operating and distribution costs of the diesel stations reflected in the higher rates charged for electricity in the East Coast, would not be a constraint on the development of these areas in line with the overall strategy to redress economic imbalance.

III. WATER SUPPLY

Progress, 1971-75

1284. In *Peninsular Malaysia*, the overall progress of the water supply programme under the SMP has been satisfactory. Total expenditure on water supplies in Peninsular Malaysia during the SMP period amounted to \$253.9 million as shown in Table 21-3. A number of major schemes were implemented during the Plan period. These included the Kuala Lumpur phase II, the Sungai Muda phase I (Penang), the Greater Ipoh phase I (Perak), the Durian Tunggal stage I (Malacca) and the Batu Pahat (Johor) water supply schemes. The Sungai Muda phase I scheme was completed in 1974 while the remaining schemes are expected to be completed during 1976-77. With the increasing demand for water, additional projects were also identified for implementation during the latter part of the Plan period. These include the Kedah Utara phase III, the Sungai Petani phase II, the Arau-Kangar (Perlis) and the Kuala Trengganu water supply projects. The completion of these

TABLE 21-3

MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR
WATER SUPPLY PROGRAMMES, 1971-75

(\$ million)

<i>Project</i>	<i>Revised SMP allocation, 1971-75</i>	<i>Estimated expenditure, 1971-75</i>	<i>%</i>
<i>Peninsular Malaysia</i>	292.0	253.9	87.0
Major urban supplies			
Kuala Lumpur I	19.1	15.7	82.0
Kuala Lumpur II	20.0	19.0	95.0
Sungai Muda I	33.4	31.4	94.0
Durian Tunggal I	34.7	29.8	86.0
Other urban supplies	152.8	134.5	88.0
FELDA water supplies	27.0	19.7	73.0
Rural water supplies	5.0	3.8	76.0
<i>Sabah</i>	27.5	24.8	90.2
Kota Kinabalu II	1.2	2.3	192.0
Labuan	2.6	0.6	23.0
Sandakan II	4.5	6.3	140.0
Others	19.2	15.6	81.3
<i>Sarawak</i>	30.8	18.4	59.7
Kuching	13.5	5.9	43.7
Sibu	4.0	3.0	75.0
Others	13.3	9.5	71.4
TOTAL	350.3	297.1	84.8

projects will increase the water supply treatment capacity in Peninsular Malaysia by 92.23 mgd and will benefit an additional 1.5 million people. Thus, about 6.2 million people or 60% of the population will be provided with treated water.

1285. The shortage of water supply remains a problem in such urban areas as Kota Bharu, Kuala Trengganu and Padang Besar as these areas are characterized by either lack of adequate surface water or saline intrusion at potential sources of surface water. To meet the immediate requirements of water supply in Kuala Trengganu and its immediate environs, the present treatment plant capacity at Bukit Losong is being expanded from 2.3 mgd to 5 mgd. The project is scheduled to be completed in 1977. Feasibility studies for the Kota Bharu, Tanah Merah/Machang, Tumpat, Pasir Puteh and Pasir Mas water supply schemes have also been completed.

1286. To fulfil the objective of uplifting the economic and social well-being of the rural population, the rural water supply programme was accelerated during the latter part of the SMP period. Although the responsibility for providing water supply rests with the State Governments, however, the Federal Government during the latter part of the SMP period

provided assistance by way of equipment to accelerate the programme in a number of States depending on the merits of each case. About 310,000 people benefitted under these programmes during the SMP period.

1287. Water supply programmes to the Federal Land Development Authority (FELDA) schemes were also expanded during the SMP period. About 36 villages were provided with water supply, benefitting about 14,000 settler families.

1288. In *Sabah*, extensions and improvements to existing supplies were carried out. These included the Kota Kinabalu, Labuan, Sandakan, Tawau and other smaller schemes. In addition, ten new schemes were also constructed to serve the small townships of Beluran, Kunak, Kota Marudu, Limau-Limauan, Bingkor, Nabawan, Tambunan, Weston, Kuala Penyu and Membakut. A total of 65 extensions to water mains was also implemented to provide potable water to rural communities throughout the State. With the completion of the above schemes, the water supply capacity in Sabah was increased by more than three-fold from 6.5 mgd in 1970 to 21 mgd in 1975, benefitting an additional 79,000 people. Thus, about 227,000 people or 30% of the State population are provided with piped water.

1289. In *Sarawak*, extensions to the Kuching and Sibu water supply schemes were started during the SMP period to increase the supply capacity by 6 mgd and 4 mgd, respectively. New water supply schemes for Miri, Simanggang, Simunjan, Saratok and Tapah/Beratok were completed in the first half of the SMP period. In addition, a large number of minor schemes was also implemented to meet the demand of small townships and rural communities. The completion of these projects will increase the water supply treatment capacity in Sarawak by 15 mgd and will benefit an additional 163,000 people. Thus, about 432,000 people or 38.8% of the State population will be provided with treated water.

Programme, 1976-80

1290. In Peninsular Malaysia and in Sabah, the water systems generally provide service on a regional basis rather than for a single community. These systems, which serve almost all urban areas and adjacent towns and villages, have enabled rural communities to benefit from water supplies they otherwise would be unable to support. In Sarawak, where some 80% of the population live in small communities, water supply systems serve individual communities only.

1291. The water supply programmes proposed under the Plan would meet the growing demands of principal urban areas, extend water supply facilities to settlers under the various land development schemes and provide safe water supply to an increasing segment of the total population especially those in rural areas. These would be met by constructing new projects and expanding services from existing systems.

1292. Expansion of water supplies to poverty and new regional development areas will be accorded high priority. In the case of the poverty areas such as those found in Kedah and Perlis in the north and Kelantan, Trengganu and Pahang in the east, the provision of treated water supplies in these States forms part of the overall Government effort to provide social amenities to improve the health and quality of life for the rural poor. In the case of the new regional development areas in Trengganu, Pahang and Johor, such facilities form part and parcel of the overall economic infrastructure development for the various townships and regional centres to generate further development activities in those regions. The water supply systems in present towns in the East Coast States and the Northern States will also be expanded to ensure that such facilities do not constrain the future development of these towns and their surrounding areas.

1293. Apart from completing the projects carried over from the SMP, a number of new water supply schemes will be implemented during the Plan period. These include the Muar phase I, Johor (8 mgd), the Sungai Muda phase II, Penang (15 mgd), the Kuala Lumpur phase III (42.5 mgd), the Segamat, Johor (2.75 mgd) and the Labis, Johor (2 mgd) water supply schemes. It is estimated that an additional 1.3 million people will benefit from projects implemented under the Plan.

1294. Further detailed technical investigations will be carried out in respect of new water supply schemes at Tiram Layang in Johor Bahru, Kota Bharu, Tanah Merah/Machang, Tumpat, Pasir Puteh, Pasir Mas and Bachok in Kelantan and Kuala Trengganu. A feasibility study will also be undertaken for increasing the water supply to the Kuantan urban region including the port and the industrial estate in the Gebeng area. It is estimated that the treatment capacity will be increased by 60 mgd when these schemes are completed.

1295. An expanded rural water supply programme will be carried out during the Plan period to widen the coverage of water supply to remote rural areas. A provision of \$100 million has been provided for this purpose to benefit about 300,000 people.

1296. The FELDA water supply programmes under the Plan will cover 80 new settlements in addition to completing 32 continuation projects started under the SMP. In addition, six new schemes will be implemented in the Jengka Triangle to be completed by 1979. Total allocation for FELDA water supply programmes under the Plan is \$70.4 million and will benefit about 40,000 settler families.

1297. Water supply programmes in the regional development areas of Johor Tenggara, Pahang Tenggara and Trengganu Tengah will also be implemented. These projects are primarily designed to meet the supply requirements of new townships in these areas. Four water supply schemes with a combined treatment plant capacity of 16.5 mgd in Pahang Tenggara and six schemes with a combined treatment plant capacity of 13.25 mgd in

Johor Tenggara will be constructed. Feasibility studies for the Trengganu Tengah water supply system will be initiated during the early part of the Plan period. A total provision of \$84.1 million has been made under the Plan for water supply development in these three regional development areas.

1298. To meet the future demand for water beyond the Plan period, underground water surveys are being conducted in such areas as Kedah, Perlis, Kelantan, Trengganu, Pahang, Johor and Malacca. Similarly, surface water resource investigations will also be carried out to provide the data base for future water resource development.

1299. In *Sabah*, extensions to existing supplies, especially in major urban areas, will be implemented during the Plan period. Detailed feasibility studies for two major schemes at Kota Kinabalu and Sandakan to increase the capacity by another 30 mgd will be carried out. Various smaller schemes to meet the water requirements of such areas as Labuan, Lahad Datu, Tawau, Semporna and Kudat will also be implemented. These schemes are expected to increase the water treatment capacity by another 15 mgd. In addition, the rural water supply programme will also be expanded. A total allocation of \$36 million has been provided under the Plan for the water supply programme in Sabah. It is expected that an additional 123,000 people will benefit from this programme.

1300. In *Sarawak*, the two major expansion projects at Kuching and Sibul will be completed during the Plan period which will meet water supply demands up to 1981. In addition, extensions and new water supply schemes will be implemented at Bau/Lundu, Lubok Antu, Miri and Kapit. The water supply schemes to serve small isolated communities will also be expanded especially in the coastal and interior areas. It is expected that the total treatment capacity will increase by 29.1 mgd to 50.5 mgd in 1980, benefitting 338,000 people. A total provision of \$59.7 million is made under the Plan for these purposes.

IV. SEWERAGE

1301. Few satisfactory sewerage systems exist in Malaysia. According to the 1970 Census, only 20.6% of the population were provided with flush systems discharging either to communal or municipal sewers or, alternatively, to individual disposal systems. The remaining population was served by bucket (night soil) collection or used pit latrines or open drains. Of the urban areas, only Kuala Lumpur and Georgetown (Penang) have sewers; and a total of 350,000 people or 9% of the 1970 urban population of 3.7 million persons benefitted from this service.

1302. The need to improve and expand sewerage facilities to major towns during the SMP was recognized. Feasibility studies for the provision of comprehensive schemes in Kuala Lumpur, Ipoh and Georgetown were completed and some interim improvement schemes were carried out. A total of \$21.1 million was spent during the SMP.

1303. Under the Plan, sewerage development will be given emphasis as part of the overall programme to improve the environment and the quality of life particularly among the poor in major urban areas of the country. The programme calls for improvement and expansion of existing sewerage facilities and construction of new sewerage systems. Future development of housing and industrial estates near or around existing urban areas will be provided with centralized sewerage collection systems. The extension of sewerage facilities will also be carried out in presently built-up areas where existing systems are inadequate.

1304. With the continued growth of industry and mining, sources of water have been polluted and water treatment costs are increasing. In some instances, extensive land development is contributing to changes in stream flows making them unreliable sources of water.

1305. With the expansion of agro-based industrial activity, manufacturing production and the growth of urban areas, the pollution of downstream water sources is emerging as a potentially serious problem with consequential effects on the supply of water, health and freshwater fisheries. The increasing discharge of toxic waste from industry is another water pollution problem. While at present the control of water pollution is effected on an *ad hoc* basis, the Environmental Quality Act of 1974 is an important first step in providing the basis for long-range planning and control of water pollution. In recognition of these problems, a Malaysia-wide waste water sector survey will be initiated to facilitate the formulation of appropriate policy and the design of the investment programmes required for the treatment of waste water pollution. Some of the major urban areas to be covered by the survey include Seremban, Butterworth, Kuantan, Johor Bahru, Malacca, Kota Bharu, Kuala Trengganu, Kuching, Sibul, Miri and Kota Kinabalu.

1306. The immediate sewerage project to be implemented under the Plan is in the Federal Territory. The first phase of the Kuala Lumpur Sewerage Scheme covering Pantai, Bunas, Puchong and Lower Kerayong will provide sewerage facilities to about 200,000 people. The extension of sewerage services to these people who now rely upon night soil collection and sullage drains will improve their sanitary and living conditions and at the same time improve the aesthetics of the entire urban environment. At present, the sewerage effluents are either discharged to the drains or river systems. Thus, timely treatment of these effluents through the provision of a proper sewerage system will help to conserve the quality of water in the streams which will also benefit those who live in the downstream areas. A sum of \$138.5 million has been allocated for sewerage development.

V. FINANCING OF WATER SUPPLY AND SEWERAGE PROGRAMMES

1307. A number of water supply projects, particularly the major ones under the Plan are expected to be financed with external assistance. These include the Kuala Lumpur phase III, Sungai Muda phase II, Johor Bahru, Muar, Kota Kinabalu and Sandakan schemes. In addition, where feasible, a number of minor water supply schemes will also be packaged to take advantage of similar financing arrangements. The remaining sources of finance will be provided by the State Governments, except for FELDA schemes which will continue to receive direct Federal funds. In the case of sewerage projects, similar financing arrangements will be made particularly those in major urban areas.

1308. The Federal Government will finance the feasibility studies of sewerage programmes while the State Governments and the Municipalities are expected to contribute to the cost of design, land acquisition and construction of sewerage facilities. As both sewerage and water supply programmes generate their own revenue, the entire programme will be implemented, as far as possible, on a self-supporting basis through appropriate tariffs for various categories of users. The concept of beneficiaries paying for water service through adequate tariffs is well-established in Malaysia and water tariffs generally are sufficient to meet operating costs and debt service payments yielding at the same time a small surplus. This, however, is not sufficient to enable the water supply system to be extended to serve a greater population. Expenses of sewerage service are expected to be met principally from general tax assessments of local governments. Table 21-4 shows the allocation of water supply and sewerage development under the Plan.

TABLE 21-4

MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR WATER SUPPLY AND SEWERAGE PROGRAMMES, 1976-80 (\$ million)

WATER SUPPLY

<i>Peninsular Malaysia</i>	...	...	...	...	...	...	...	...	496.4
Major urban supplies									
Greater Ipoh	...	...	...	...	...	...	...	...	29.4
Johor Bahru I	...	...	...	...	...	...	...	...	7.0
Kuala Lumpur II	...	...	...	...	...	...	...	...	19.0
Kuala Lumpur III	...	...	...	...	...	...	...	...	10.0
Muar I	...	...	...	...	...	...	...	...	14.9
Sungei Muda II	...	...	...	...	...	...	...	...	6.0
Other urban supplies									
East	...	...	...	...	...	...	...	...	56.3
Central	...	...	...	...	...	...	...	...	14.7
North	...	...	...	...	...	...	...	...	28.1
South	...	...	...	...	...	...	...	...	21.5

TABLE 21-4—(cont.)

**MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR
WATER SUPPLY AND SEWERAGE PROGRAMMES, 1976-80**
(\$ million)

FELDA water supplies	...	...	...	...	...	...	...	...	70.4 ¹
Rural water supplies	...	...	...	...	...	...	...	...	100.0
Regional authorities water supplies	...	...	...	...	...	...	...	...	84.1
Other water supplies	...	...	...	...	...	...	...	...	34.9 ²
<i>Sabah</i>	...	...	...	...	...	...	...	...	36.0
Kota Kinabalu II	...	...	...	...	...	...	...	...	12.0
Tawau	...	...	...	...	...	...	...	...	1.2
Labuan II	...	...	...	...	...	...	...	...	1.0
Sandakan II	...	...	...	...	...	...	...	...	1.7
Sandakan III	...	...	...	...	...	...	...	...	4.0
Semporna	...	...	...	...	...	...	...	...	3.5
Kota Kinabalu III	...	...	...	...	...	...	...	...	2.0
Others	...	...	...	...	...	...	...	...	10.6
<i>Sarawak</i>	...	...	...	...	...	...	...	...	59.7
Bau/Lundu	...	...	...	...	...	...	...	...	5.0
Kuching	...	...	...	...	...	...	...	...	19.7
Lubok Antu	...	...	...	...	...	...	...	...	4.3
Miri	...	...	...	...	...	...	...	...	3.0
Sibu	...	...	...	...	...	...	...	...	6.0
Others	...	...	...	...	...	...	...	...	21.7
								TOTAL	592.1
SEWERAGE									
<i>Peninsular Malaysia</i>	...	...	...	...	...	...	...	...	134.5
Kuala Lumpur	...	...	...	...	...	...	...	...	134.5 ³
Other projects to be identified	...	...	...	...	...	...	...	...	(10) ⁴
<i>Sabah</i>	...	...	...	...	...	...	...	...	(10) ⁴
<i>Sarawak</i>	...	...	...	...	...	...	...	...	4.0
Kuching, Miri and Sibu	...	...	...	...	...	...	...	...	4.0
								TOTAL	138.5

¹ Includes FELDA schemes in Jengka Triangle.

² Includes surveys and investigations.

³ Includes the continuation projects.

⁴ Token.