

CHAPTER 2

**PRESENT CONDITION OF
THE STUDY AREA**

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2.1 Natural and Other Conditions

2.1.1 General

The official name of the nation is the Republic of Indonesia in English (hereinafter referred as "Indonesia"). Indonesia is situated between Long. 94°45'E and 141°05'E, and between Lat. 6°08'N and 11°15'S. The capital city of Indonesia is Jakarta. The area of whole nation of Indonesia is around 1,937,000 km² consisting mainly of the Sumatra island, the Java island, the Nusa Tenggara islands, the Kalimantan island, the Sulawesi island, the Maluku island and the Irian Jaya.

Indonesia has 27 provinces as of 1997. Central Java Province is one of them situated between Long. 108°30'E and 111°30'E, and between Lat. 5°30'S and 8°30'S. The capital city of Central Java Province is Semarang City which is one of municipalities (it is called as "Kotamadya Semarang" in Indonesian language). The area of the Province is around 32,550 km² consisting of several regencies and some municipalities as mentioned below, and located in the central part of the Java island neighbored West Java Province in the westward and East Java Province in the eastward. Central Java Province faces to the Java sea in the northward and the Indonesia ocean in the southward.

Central Java Province has 29 regencies (called as "Kabupaten" in Indonesian language) and 6 municipalities ("Kotamadya") as of 1997. The Municipality of Semarang (hereinafter called as "Semarang City") is one of those municipalities functioning as the capital city of Central Java Province as mentioned above situated between Long. 109°35'E and 110°50'E, and between Lat. 6°50'S and 7°10'S. The area of Semarang City is around 370 km² consisting of several districts ("Kecamatan") facing to the Java sea.

2.1.2 Climatic Characteristics

The Garang river basin is located in the northern central region of Java Island, where monsoon and trade wind give strong influence and two (2) distinct seasons, namely rainy season and dry season.

The average annual rainfall amounts 2,378 mm according to the climatological data at BMG-Semarang station (refer to Table 2.1.1 and Fig. 2.1.1). The amount of 70 percent out of annual

rainfall falls during rainy season from November to April. Usually, January has the largest quantity of rainfall and August has the least.

Isohyetal lines shown in Fig. 2.1.1 illustrate areal distribution of rainfall. Annual rainfall in lowland area near the seashore averages some 2,100 mm, but the amount in highland area near Mt. Ungaran exceeds 3,000 mm.

Temperature ranges between 23 °C and 34 °C and annual temperature averages 27 °C. Humidity ranges between 70 % and 84 %, and the average is 77 %. Temperature and humidity in this area are very high throughout the year with annual pan evaporation as high as 1,610 mm.

Monthly pan evaporation parallels monthly maximum temperature, and runs counter to monthly rainfall. Maximum pan evaporation (5.7 mm/day) occurs in September near the end of dry season, and minimum pan evaporation (3.3 mm/day) in January in the middle of rainy season.

Climatic Characteristics in the study area is shown in Fig. 2.1.2.

2.1.3 Geomorphology and Geology

Geomorphology

The study area is located in the northern slope of Mt. Ungaran which has an altitude of 2,050 m. The area can be divided into three topographical types: mountainous region, hilly region and alluvial plain.

(1) Mountain Region

Mountainous regions ranging widely in elevation from about 300 to 2,050 m bound the catchment area of the study area of the southern, western and eastern parts. Small plateaus characterized by the volcanic region are distributed here and there. Rivers in this mountainous region are characterized with steep slope and long and slender catchment area. Volcanic rocks are commonly distributed in this region.

(2) Hilly region

Hilly region widely extend in the study area with elevations of about 50 to 300 m which have the distinctive feature of an undulated plateau and a steep-walled valley. This geographical feature is in the young stage of development. The catchment area

of river in this region is long and slender, same as in the mountainous regions. Volcanic rocks and sedimentary rocks of marine origin are distributed.

(3) Alluvial Plain

Alluvial plains with elevation of about 0 to 50 m extend along shorelines and rivers in the study area. Rivers in this region are characterized with meandering and wide and gentle valley. Flood plain deposit, coastal plain deposit and shallow marine deposit are distributed in this region.

The Kreo River, on which Jatibarang Multipurpose Dam is planned, originates from Mt. Ungaran and flows approximately from south to north in the study area. In the mountainous and hilly regions, the river is characterized with steep slope because of the short stream length and large difference in ground elevation. In addition, the catchment area is long and slender. The geographical feature of this area is still in the young stage development, with the vertical erosion being stronger than horizontal erosion.

Regional Geology and Stratigraphy

The regional geology and stratigraphy in and around the study area are shown in Fig. 2.1.3. Geology of this area is roughly divided into three categories; volcanic rock, sedimentary rock which is marine in origin, and alluvial deposits which cover these basement rocks. Volcanic rocks consist of lahar, lava flow of Mt. Ungaran, Notopuro Formation and intrusive rock. Sedimentary rocks consist of Damar Formation, Kalibiuk Formation, Banyak Member and Penyatan Formation.

The geological history of the study area has started from the Tertiary Period. The study area is in the shallow marine from the Miocene Epoch of the Tertiary Period to the Pleistocene Epoch of the Quaternary Period. Penyatan Formation, Banyak Member, Kalibiuk Formation, Lower Damar Formation and Lower Notopuro Formation have sedimented in this sedimentary environment. At the same time, volcanic activity had occurred in and around the study area and supplied the Upper Damar and Upper Notopuro Formation with volcanic product. In addition, folding and faulting activity was caused by this volcanic activity.

In the Pliocene Epoch of the Quaternary Period, volcanic activity of Mt. Ungaran occurred along the North Serayn Mountains south of the study area.

The geology and stratigraphy around the Jatibarang dams site are explained in Chapter 5.

2.1.4 Features of Project Area

Features of Garang river and Kreo River

Garang River flows from Mt. Ungaran to the north, meeting its two (2) major tributaries, Kripik and Kreo rivers, at about 12 km and 10 km upstream from the river mouth, respectively. The whole catchment area of Garang River is about 204 km² including the catchment area of 70 km² for Kreo River and 34 km² for Kripik River. The total river lengths of Garang, Kreo and Kripik rivers are about 36 km, 24 km and 8 km, respectively

Kreo River, on which Jatibarang Multipurpose Dam is planned, is the largest left tributary of Garang River. Kreo River originates from Mt. Ungaran with an altitude of 2,050 m and flows down in northeast direction forming deep valley at the hill region (refer to Fig. 2.1.4). The upper and lower reaches of Kreo River with a relatively high ground elevation are sparsely populated and are used as farm lands, paddy fields, small-scale plantations or forest area. Cobble stone and boulder mining activities are found in some places.

Simongan Weir located about 5.3 km upstream from the river mouth is a major river structure of Garang River. The downstream from the weir is called West Floodway, and the flood discharge from Garang River flows into Java Sea through the floodway. The river flow in the downstream from the Weir is completely affected by tide.

Garang River including West Floodway are characterized as very gentle flood plain channel in the downstream, relatively gentle in midstream, steep stream in a hilly area and very steep stream in a mountain area. Simongan Weir exists at the lowest end of Garang River giving a riverbed elevation difference of about 5 m between upstream and downstream.

A densely populated area spreads out in the lower reaches from the confluence of Kreo River, particularly the downstream from Simongan Weir (West Floodway). The land on both sides of the floodway is highly utilized as the residential, commercial/official and industrial areas. New residential areas have been developed on the reclaimed land at the river mouth area, and the private land developers are still undertaking the land reclamation. The existing floodplain with a large open space is used as farmland, sports ground, fishpond and so on.

Features of Reservoir Area

The reservoir area located in the upstream of the damsite shows a wide basin shape surrounded by relatively large hills (refer to Fig. 2.1.5). It is presently used for paddy, upland, small plantation, woods and so on, and no people are living there. A relatively low saddle

portion, whose lowest level is EL. 162.0 m, exists on the right bank of the reservoir in the direction of entrance road to Goa Kreo Park.

Goa Kreo Park with a symbolic cave as Moslem's holy place is situated on a residual hill projecting from the right bank. The park is managed by Tourism Agency (Dinas Pariwisata) under Municipality. It will become isolated, but not affected when the reservoir is filled up with water. A pedestrian bridge will be constructed to approach Goa Kreo Cave.

Power transmission line is crossing the reservoir area. At least four (4) towers have to be relocated as one of compensation works. State Electricity Company (PT Perusahaan Listrik Negara) will take charge of elaborating relocation plan.

Topography at Damsite

The damsite on Kreo River has an advantage topographically with a wide valley upstream, which changes into a deep V-shaped gorge at the proposed dam axis (refer to Fig. 2.1.5).

The riverbed width is about 15 m at EL. 90 m. The side slope gradient is about 75 degrees from the riverbed to 20 m height on the left bank. And the side slope gradient is about 60 degrees from the riverbed to 40 m height on the right bank. The slope gradient of the above portion changes to 40 degrees for the left bank, and 30 degrees for the right bank. The gorge width is 175 m at the proposed dam crest elevation of EL. 157.0 m.

The topographic characteristics of the left bank at the dam axis shows a thin and long right shape projecting into the river course. It suggests the geological problems concerned with weathering and permeability of the foundation rock at the left abutment. The right bank hill forms also a ridge shape projecting into the river course, but it is larger than the left thin ridge and it has enough size as a dam abutment.

2.1.5 Environmental Condition

Solid waste management and river water quality are significant parameters showing present environmental conditions in Semarang City and the Garang river basin. These can be described as follows:

(1) Solid Waste Management

Semarang Municipality assumes responsibility for solid waste management. Garbage collection service is provided every day with city-owned equipment such as 75 arm load-typed trucks and 4 dump trucks. In addition 7 trucks and one (1) compactor truck are also

mobilized on contract basis from the private companies. The number of daily trips for the truck will be five (5) on the average to over the area where containers or garbage bins are placed at the designated location. The garbage collection rate is estimated at 55 %, which is rather a small share to deal with solid waste management. The rest remain disposed in improper places. It can be noticed that some open ditches or canals are full of domestic refuse which may cause clogging the flow and generating stench.

The landfill site is located on the left bank of Kreo River at about 1.7 km downstream from the proposed damsite. According to the information from the City Cleaning Agency (Dinas Kebersihan Kotamadya), it started in 1992 as an authorized landfill site, but no record is available since monitoring has not been carried out for the first 3 years. In 1995 truck scale was installed at site to facilitate management system, and it is reported that the amount of garbage dumped here is estimated to be 1,130 m³ a day. However attention should be paid to the fact that all types of garbage generated in the City are brought here and disposed of, that means it contains not only domestic refuse, but also industrial waste and medical waste as well.

In view of these facts, the Municipality is conducting the study to construct a new landfill site as part of SSUDP. In the meantime the present disposal site is planned to be improved in the hope that it can be used until the year 2002. The improvement plan is shown in such a way that the sanitary landfill method be applied from the environmental point of view. In this sense, water pollution control should be taken into consideration.

As an environmental management strategy, the sanitary landfill site is absolutely necessary to be constructed in other appropriate location. The major reasons are described as follows;

- (a) The location of the present site is so close to Kreo River that the water quality is potentially affected by the leachate or by-products of the disposed waste;
- (b) Water intake facilities managed by the Regional Government Water Supply Enterprise (PDAM) is located at 8.5 km downstream from the site. If water is polluted by hazardous waste, it may affect human health;
- (c) The topographic feature provides a large open space in the valley for the dumping site, but it will be filled to the capacity in next 5 years; and
- (d) The managing system needs to be improved and strengthened to control people who bring and dispose the waste in illicit way.

The solid waste shall be collected and treated in proper way as it is provided in the Decree of the Government No.12, 1995 regarding Storing and Collection of Hazardous Waste. However, it is practically neglected due to the inefficient control system and lack of public concern. Consequently, solid waste management program should be formulated at an early stage possible as one of the major components of the Urban Development Plan.

Besides the construction of new landfill site, it is important to take two key points into account, which certainly lead the project to the successful way; firstly, it is people's participation in the program, and secondly, institutional strengthening. Both can be achieved in joint efforts between residents and administration agency, and it may be required to perform tough activities in order to gain understanding and collaboration of the citizens.

(2) Water Quality of Garang River

In collecting information on water quality of Garang River, two (2) approaches are considered. The first one is Clean River Project (Proyek Kali Bersih: PROKASIH), which is promoted as a nationwide campaign to clean the river and to create better environment in the river basin. Secondary, PDAM, which is an enterprise owned by the Regional Government dealing with the treatment and supply of potable water. The details are described as follows;

(a) PROKASIH

Since there is no sewerage system in Semarang City, all wastewater is discharged into the open channels at the extreme end, resulting in the pollution of water resources. Under such critical conditions, the Local Government and Municipality have taken an action to watch carefully the river water quality in an effort to improve river environment. Environmental Office of the Semarang Municipality (BAPEDALDA II.) has been undertaking monitoring work for the water quality of Babon River under PROKASIH since 1994. Monitoring is also carried out for the industrial wastewater discharged into Babon River. Six (6) companies have been selected for this purpose.

Environmental Bureau in the Provincial Government is in charge of PROKASIH, too covering three (3) rivers such as Bengawan Solo, Kupang-Sambong and Garang. As for Garang River, monitoring started in 1989 by taking water samples to analyze

water quality.

According to the report of the Environmental Bureau, the water quality of Garang River represented by BOD, COD and DO is gradually improved after breaking through the most critical period between August and September in 1994. It is remarkable that COD is high in every location. BOD and COD values in the upstream are slightly better than those in the downstream, but in recent years, these values show constantly not more than 8 mg/l and 50 mg/l respectively, without resort to the location and season.

All of the nine (9)-selected factories are equipped with the treatment plant for liquid waste. However, some of them are reported to be not managing well their treatment. Those companies are identified as tiles, textile, pipes and steel manufacturers. BOD, COD and TSS are regarded as key parameters for PROKASIH to evaluate the quality of wastewater. In the last fiscal year (1995/96), however, BOD and COD have been reduced by 56.17 % and 54.23 % respectively from the previous year, while TSS was only 23.89 % of reduction. This outcome is certainly attributed to the efforts made by the selected manufacturers under PROKASIH.

It shall be noted that there are 89 registered industrial companies in the Garang river basin, so that the above selected factories are only minor sources of pollution, and if the river environmental issue needs to be further discussed, a complete monitoring system may be required to cover the whole river basin.

(b) PDAM

Water intake facilities are located on the right bank of Garang River at about one (1) km upstream from the Simongan Weir. Sample is taken every day and analyzed after the water has been pumped up to the reservoir at Gajahmungkur. Monthly report is compiled based on the weekly analysis covering 20 key parameters. The 1996 report shows the following characteristics of the raw water quality;

- (i) Throughout the year both BOD and DO meet requirements of standard Group B (6 mg/l and 3 mg/l) established by the Ministry of Health in 1990.
- (ii) The turbidity is constantly high. The maximum value is recorded at 878 NTU at the beginning of December and the minimum is 40 NTU in

August. However, the value sometimes shows enormous increase in flooding period as it is over 3,000 NTU.

- (iii) Ammonia (NH_3) concentration is overwhelming the standard (0.500 mg/l) throughout the year. 6.190 mg/l is the highest concentration shown at the beginning of December and 0.665 mg/l is the lowest in February.
- (iv) Sulfide (H_2S) concentration is recorded high only in the rainy season, showing more than 6 times as much as the standard value (0.1 mg/l) in the first week of December.
- (v) High concentration of Cadmium is constantly observed in the sample water, showing 0.05 mg/l as the highest, while 0.01 mg/l as the lowest which is just limited value.
- (vi) The concentration of Chromium in the middle of November is 0.139 mg/l which is the highest level of the year. High concentration is also observed in August and September showing nearly the limit of 0.050 mg/l.
- (vii) Other hazardous substances to the human health such as Cyanide, Copper and Zinc have been observed in certain period. Cyanide reached limited value (0.1 mg/l) in July, and Copper concentration was over the standard requirement (1.0 mg/l) in December.

Based on the weekly analysis data on BOD, COD and DO for the last five(5) years, monthly average value of each parameter is graphically shown in Fig. 2.1.6 with its fluctuation throughout the year. Although BOD has never been over the limit of 6 mm/l, it tends to show a gradual increase from 1995. The analysis results show that COD is characterized by its large fluctuation. No limit is specified for COD in the water standard Group B, but its value is generally high and shows sometimes ten(10) times as high as BOD. In the meantime, DO has been recovered since 1995 to meet the minimum requirement of 3 mmg/l.

2.1.6 Land Use Pattern

(1) Existing Land Use

Fig. 2.1.7 shows land use pattern of Garang River basin which was elaborated on the basis of available land use maps from Provincial Development Planning Board

(BAPPEDA) of Semarang City as well as the related regencies.

The land use map for the river basin consists of seven (7) classifications such as agricultural land, water area, conservation area, industrial area, business area, housing area and others. The agricultural land includes paddy, upland fields and plantation. It covers predominantly large area (52.9 %) which consists of mainly small-scaled farmlands extending over the upper river basin. This pattern is particularly dominant in the area administered by the two regions. The housing area ranks second in land use share followed by the conservation area. These are 21.9% and 19.8% respectively. In the meantime, it is notable that both business and industrial area have minor shares (0.5% and 0.3%) in the basin. The land use pattern is summarized in the following table.

Land Use Pattern of Garang River Basin

Classification	Area (ha)	Share (%)
Agricultural Land	10,813	52.9
Water Area	110	0.5
Conservation Area	4,033	19.8
Industrial Area	58	0.3
Business Area	103	0.5
Housing Area	4,467	21.9
Others	846	4.1
Total	20,430	100.0

According to the land use map of Semarang City prepared in 1993 by BAPPEDA, housing area covers about 13,538 ha of land corresponding to 36.4% of the total area, whereas agricultural land and conservation area are estimated at 10,723 ha and 6,752 ha accounting for 28.8% and 18.1% respectively. It should be noted that the industrial zone is concentrated in the coastal area, but it is minor portion showing as small as 2.8% of the total land.

(2) Future Land Use

Future land use map targeted at 2005, the housing area is increased by 2,930 ha from the 1993-based land use to 16,467 ha, which is nearly 44% of the whole area of the municipality. Meanwhile, the agricultural land shows drastic change in its area because it is reduced by 65% from 1993 amounting to 3,730 ha. The other characteristic changes in the land use pattern during the same period is a triple increase in both industrial area and "others". It is noted that category "others" involves transportation facilities, university campus, warehouse, mixed facilities (housing area combined with commercial and business center) and so on.

Fig. 2.1.8 present the land sue of Semarang municipality in 1993 and the proposed land use for the year 2005 respectively, and its summary is tabulated below.

Land Use Pattern of Semarang Municipality

Classification	Land Use in 1993		Future Land Use (2005)	
	Area (ha)	Share (%)	Area (ha)	Share (%)
Agricultural Land	10,723	28.8	3,730	10.0
Water Area	3,068	8.3	590	1.6
Conservation Area	6,752	18.1	8,185	21.8
Industrial Area	1,043	2.8	3,250	8.7
Business Area	684	1.8	652	1.7
Housing Area	13,538	36.4	16,467	43.9
Others	1,421	3.8	4,600	12.3
Total	37,229	100.0	37,474	100.0

Note: The difference in total area between the two periods is caused by the reclaimed land in the coastal zone.

2.2 Floods and Flood Control Works

2.2.1 Major Floods and Flood Damages

The recent major floods which brought a tremendous damages to the areas along West Floodway/Garang River occurred in 1973, 1990 and 1993. The inundated area and damages/calamities of the above floods were confirmed by the Ministry of Public Works and the Semarang City Office as presented in the table below, and the inundation areas of 1990 and 1993 floods are shown in Fig. 2.2.1.

Year and Month	1973 February	1990 January	1993 February
Inundation Area			
(1) Location (Seriously affected area)		Panjangran area	Sampangran area
(2) Affected Area (ha.)	175	145	200
(3) Number of Affected Houses	420	540	230
(4) Number of Affected House Holds	-	186	17
(5) Inundation Depth (Max. m)	-	2	2.5
(6) Inundation Duration (Average hour)	2.5	3	4
Flood Calamities			
(1) Death	-	47	2
(2) House Collapsed	35	25	60
(3) House Damaged	120	126	145
(4) Public Building	5	15	5
Estimated Flood Damage (Rp)	4 billion	8.5 billion	6.9 billion

Source: Sub Dinas Pengairan, PU, Central Java.

The serious flood overflow occurred particularly along the downstream of Garang River between the confluence of Kreo River and Simongan Weir associated with the destruction of river dike. In addition, the flood overflow occurred in the left bank area of the midstream near National Road Bridge in West Floodway.

2.2.2 River Flow Capacity

The flow capacity of the existing channel is estimated for West Floodway and Garang River using the results of the channel survey conducted in 1997 under the JICA Study Team. The detail of the calculation is explained in the report of West Floodway/Garang River Improvement.

(1) West Floodway (River mouth to Simongan Weir)

- (a) For the downstream stretch from North Ring Road to the river mouth, the flow capacity ranges from 200 m³/s to 1,200 m³/s. The stretch, where the land reclamation has been completed on both banks, has a high flow capacity more than 800 m³/s, while the lowermost stretch near the river mouth is quite low in flow capacity because of the low elevation of river banks.
- (b) For the stretch between Railway Bridge and North Ring Road, although the flood walls are provided, the flow capacity does not reach 800 m³/s. The lowest capacity is about 400 m³/s (about 4-year return period). When the freeboard of 1.0 m is applied for the flood walls, the flow capacity is estimated at 200 m³/s to 400 m³/s.
- (c) For the stretch between Railway Bridge and Simongan Weir, the figure indicates a high capacity of 800 m³/s or more except for a portion immediately upstream of National Road Bridge. The high flow capacity is due to the higher bank elevation and riverbed degradation.

(2) Garang River (Simongan Weir to Confluence of Garang and Kreo rivers)

- (a) The flow capacity is relatively high at 800 m³/s or more throughout the river stretch except a few portions. This high flow capacity is attributed to the high earth dikes and floodwalls constructed after 1990 flood.
- (b) If the freeboard of 1.0 m is applied for the existing dikes and floodwalls, the average flow capacity decreases to about 600 m³/s.

- (c) In the upstream from Toll Road Bridge, the flow capacity is as low as about $600 \text{ m}^3/\text{s}$

2.2.3 Previous and Ongoing Flood Control Works

The river improvement/rehabilitation works for West Floodway/Garang River had been executed under the Central Java River Improvement and Maintenance Project by DINAS PU PENGAIRAN. In 1994, this project was taken over by JRATUNSELUNA River Development Project Office. The improvement works for the River were almost completed in accordance with the river improvement plan given below.

Immediately after the serious flood in January 1990, of which flood discharge is estimated to be around $1,000 \text{ m}^3/\text{s}$ at Simongan Weir, the comprehensive river improvement works was commenced for the river stretch from Simongan Weir up to the confluence of Kreo River (about 4.3 km). Reconstruction/modification of Simongan Weir was not included in the Works. The design scale and discharge of the river improvement works applied were 100-year return period and $1,100 \text{ m}^3/\text{s}$, respectively. It is herein noted that the probable discharge of 100-year return period is estimated at $1,010 \text{ m}^3/\text{s}$ in this Study instead of the $1,100 \text{ m}^3/\text{s}$.

2.3 Water Utilization

2.3.1 Existing Water Sources and Future Water Demand

(1) Existing Water Sources

Public water is being supplied by Water Supply Public Corporation (PDAM) in Semarang City, except a part of industrial water being pumped up from deep wells. Shown in Table 2.3.1 are the kinds and capacities of existing water sources. The existing supply capacity amounts to $1.853 \text{ m}^3/\text{s}$, of which approximately half volume of $0.901 \text{ m}^3/\text{s}$ depends on intake from Garang River.

The transition of supplied water quantities of Semarang City in the past 10 years is shown in Table 2.3.2. As of 1995, the Service ratio is still low at 33.4 percent, water usage per capita is 170 l/day, and total water supplied amounts to $1.305 \text{ m}^3/\text{s}$ (= $41,155,567 \text{ m}^3/\text{year}$).

(2) Future Water Demand

The latest plan concerning future water demand up to target year 2015 have been arranged in "SFCP Final Project Preparation" Report in 1996, following confirmation

from concerned officials (PDAM, BAPPEDA, Jratunseluna Project Office).

According to that report, future water demand in three areas (Eastern, Western, and Upper areas) of Semarang City were estimated as shown in Table 2.3.3. The summary is shown in the table below. The future water demand in target year 2015 is 12.218 m³/s. This value is almost similar to 12.12 m³/s, which was estimated in the Feasibility Study in 1993.

Year	Water Demand (m ³ /s) modified in 1996				F/S by JICA in 1993 Total Demand (m ³ /s)
	Eastern	Western	Upper	Total	
1995	1.060	1.946	0.304	3.310	5.37
2000	1.924	2.823	0.493	5.240	6.54
2005	3.419	4.419	0.725	8.563	8.58
2010	4.524	5.385	0.893	10.802	9.85
2015	4.953	6.231	1.034	12.218	12.12

2.3.2 Water Supply Program and Ongoing Project

(1) Water Supply Program

Existing and future water sources for Semarang City are summarized in Table 2.3.3 and Fig. 2.3.1. Ongoing or new water sources development projects count eight (8), which include five (5) projects (Jatibarang Multipurpose Dam, Mundingan Dam, Inter-basin Transfer, Kedung Suren Dam, Babon Dam) proposed in the Master Plan by the JICA Study Team in 1992 (refer to Fig. 2.3.2).

In Table 2.3.4, the production capacity by intake from Garang River is set at 0.580 m³/s which was the design capacity of intake facilities under the Feasibility Study in 1993. The existing intake capacity from Garang River has been increased to 0.980 m³/s (production capacity at 0.901 m³/s). However, this quantity of intake water is not secured in drought time without a dam reservoir as a water source, as described later.

(2) Ongoing Project

Shown in Fig. 2.3.3 are ongoing projects for water supply. The conveyance channel (net capacity of 2.50 m³/s) from Klambu Barrage is under construction, and supposed to be completed in 1998. Kudu Water Treatment Plant, which is located at the end of the conveyance channel, is also supposed to be constructed in accordance with the completion of the channel, and the water treatment capacity will be extended by three

(3) steps up to 2.25 m³/s at the final stage.

Dolok Dam Project is still at the stage of review of the feasibility study. The study on economic effect is ongoing, thereby, the financial sources are under consideration by the related agencies.

As to the Tuntang Jragung Regulation Tunnel Project, the detail design of tunnel was finished, but its implementation is deadlocked because of the opposition by farmers who worry about decrease of river water in the downstream due to the water diversion.

Besides, water conveyance from springs in Kendal was planned before, but the project was canceled because the production capacity of this new resources is not as much as expected in dry season.

Under these circumstances, the Jatibarang Multipurpose Dam Project is being much expected to be put into operation.

2.4 Socio-Economic Condition

2.4.1 Population and Labor Force

(1) Population

According to the statistical data, population in Indonesia has increased from 147 million in 1980 to 198 million in 1996 with 1.87 % of an annual average population growth ratio as for these 16 years shown in Table 2.4.1. The annual average population growth rate was decreased from 1.98 % during the period between 1980 and 1990 to 1.69 % between 1990 and 1996.

Average family size of whole Indonesia was also decreased from 4.86 persons per household (HH) in 1980 to 4.27 persons per HH in 1996 through 4.52 persons per HH in 1990.

Population of Central Java Province was 29,881 thousand in 1996 as shown in the above-mentioned table. However, the population of regencies and municipalities in Central Java Province was reported only up to 1995 even by the newest provincial level statistical data named as "the Central Java in Figures" (Jawa Tengah Dalam Angka).

In 1995, the population of Central Java Province was 29,653 thousand as shown in

Table 2.4.2 with 1.04 % the annual average increasing ratio for 15 years since 1980. The annual average population growth rate was decreased from 1.19 % during the period between 1980 and 1990 to 0.74 % between 1990 and 1995. Average family size of Central Java Province was also decreased from 4.53 persons per HH in 1990 to 4.51 persons per HH in 1995 .

In Semarang City, the population was 1,252 thousand in 1996 according to the municipality level statistical data named as "the Semarang City in Figures" (Kotamadya Semarang Dalam Angka) with 1.21 % of annual average increasing ratio from 1,096 thousand in 1985. This annual population increasing ratio was increased from the said one to 1.47 % since 1990, and 2.06 % since 1993 as shown in Table 2.4.3. It seems that Semarang City is under developing municipality. It is supported by population density shown as, for example, the higher density of 15,814 person per km² in a district of Semarang Tengah than that of 14,068 persons per km² in Jakarta, and those in other districts as Semarang Selatan, Gayamsari, Semarang Timur, Candisari, Semarang Utara are almost near that of the said Jakarta's one. The Semarang Legislative Assembly has agreed a legislative bill on a new administration unit system submitted by the Mayor of Semarang in 1992. Therefore, the number of districts has been set as 16 districts from 9 districts since 1993 to ease to govern taking into account of the above mentioned population growth.

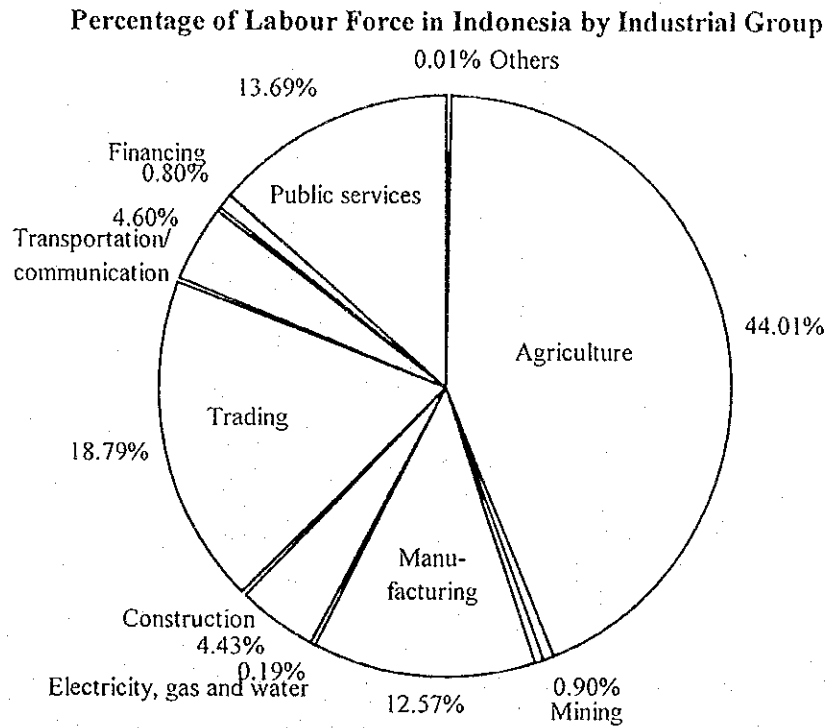
On the other hand, the family size in Semarang City has decreased from 4.86 persons per HH in 1985 to 4.50 persons per HH in 1996. But, this rate is still slightly higher than that in average of whole Indonesia as 4.27 persons per HH in the same year shown in Table 2.4.1.

(2) Labour Force

Among the household population who are 10-years and over in age of 110 million in 1985, 153 million in 1995 and 154 million in 1996 in Indonesia, the economic active population was 60 million, 86 million and 90 million with participation rates of 54 %, 57 % and 58 % respectively as shown in Table 2.4.4.

The actual labour force among the economic active population in Indonesia mentioned above in 1985, 1995 and 1996 was fluctuated as 58 million, 80 million and 86 million with the employed rate of 97 %, 93 % and 95 % respectively. Thus, the unemployed rates in Indonesia were 3 % in 1985, 7 % in 1995 and 5 % in 1996.

Following figure shows the share rates of actual labour forces by industrial group in both sexes in Indonesia as of 1996:



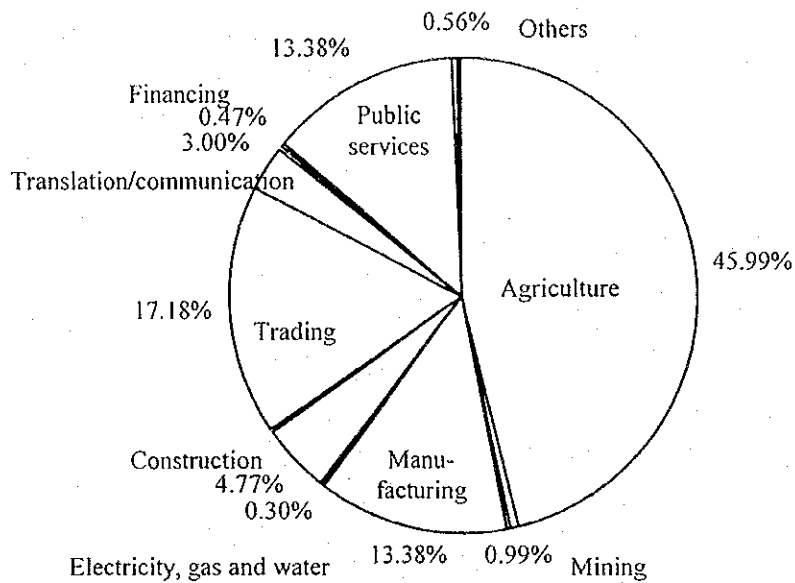
As shown in the above figure, Indonesia is still the agricultural established country from the viewpoint of the labour force as indicated at 44 % in its share rate to the total labour force as of 1996.

On the other hand, among the household population who are 10-years and over in age of 18 million in 1980, 21 million in 1988 and 24 million in 1995 in Central Java Province, the economic active population was 10 million, 13 million and 15 million with participation rates of 55 %, 63 % and 62 % respectively as shown in Table 2.4.5.

The actual labour force among the economic active population in Central Java Province mentioned above in 1980, 1988 and 1995 was fluctuated as 10 million, 13 million and 14 million with the employment rate of 99 %, 98 % and 96 % respectively. Thus, the unemployment rates in Indonesia were 1.34 % in 1980, 2.02 % in 1988 and 3.96 % in 1995.

Following figure shows the share rates of actual labour forces by industrial group in both sexes in Central Java Province as of 1995:

Percentage of Labour Force in Central Java Province by Industrial Group



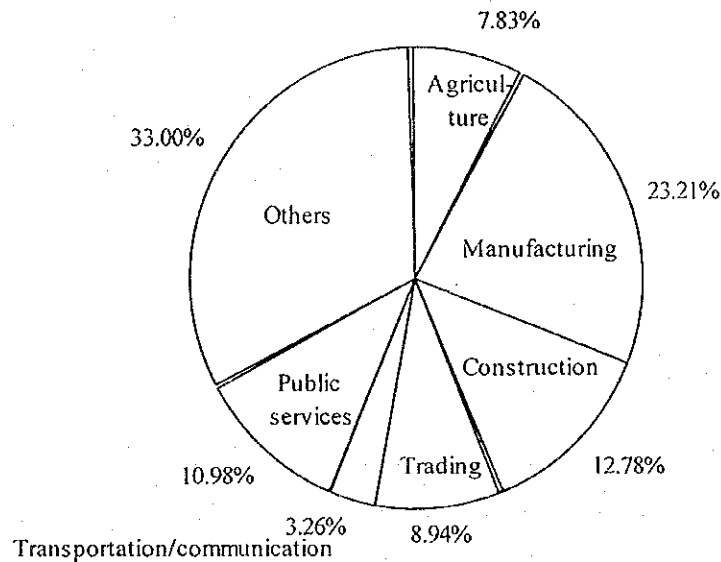
Sharing pattern of labour forces by industrial group in Central Java Province is almost the same with that in Indonesia as shown in the above figure, namely Central Java Province is also the agriculturally established province from the viewpoint of the labour force as indicated at 46 % in its share rate to the total labour force as of 1995.

However, Semarang City shows a different pattern. Among the household population who are 10-years and over in age of 836 thousand in 1985, 894 thousand in 1990, 993 thousand in 1995 and 1,016 thousand in 1996 in Semarang City, the economic active population was 511 thousand, 632 thousand, 841 thousand and 822 thousand with participation rates of 61 %, 71 %, 85 % and 81 % respectively as shown in Table 2.4.6.

The actual labour force among the economic active population in Semarang City mentioned above in 1985, 1990, 1995 and 1996 was fluctuated as 452 thousand, 415 thousand, 678 thousand and 655 thousand with the employment rate of 88 %, 66 %, 81 % and 80 % respectively. Thus, the unemployment rates in Semarang City were 12 % in 1980, 34 % in 1990, 19 % in 1990 and 20 % in 1996.

Semarang City has no statistical data on actual labour force by industrial group in detail. So following figure shows the share rates of economic active population by industrial group in both sexes in the Municipality as of 1996:

Percentage of Economic Active Population in Semarang by Industrial Group



Mining industry in Semarang City does not appear in the statistical data summarized as the said table. The share rate of agriculture is only 8 %, while that of manufacturing shows at 23 % which is almost two times comparing with that in whole Indonesia and whole Central Java Province. The rate of trading is only 9 %. Transportation and communication shares at 3 % which is rather low comparing with that in whole Indonesia, but is almost the same with that in whole Central Java Province.

It seems that those sharing patterns reflect a function of Semarang City as the capital city of Central Java Province. A group not be able to be classified as a specific industrial group named as “others” with 33 % of share rate looks to reflect the city-diversity too.

Unemployment rate is rather high in Semarang City comparing with that of whole Indonesia and whole Central Java Province as 20 % as mentioned above. This is also a fatal phenomenon in such a city gathering a lot of people who are seeking opportunities to work.

Table 2.4.7 shows a distribution situation of the said economic active population by district (Kecamatan). According to this table, there is no any agricultural active population except fisheries in the central area of Semarang City as the districts of

Semarang Timur, Semarang Utara, Semarang Tengah, Semarang Selatan, Candi Sari, and Gajah Mungkur. For fisheries, the district of Semarang Utara has the highest activity, especially almost of the people living in the village of Bandar Harjo are engaged in fisheries at present, so the village is called as "fishers' village ("Kampung Nelayan" in local language)" in general in Semarang City. Districts of Gayam Sari and Semarang Barat are also located around the central area of Semarang City, but those districts have a little agricultural active population. Some of these districts concern directly with this Project.

2.4.2 General Economic Features

(1) Gross Domestic Products

Gross domestic product (GDP) in Indonesia is shown in Table 2.4.8 by current price level, and 1993-constant price level for last three (3) years since 1994.

According to the said table, an economic activity group of manufacturing is the highest contribution factor to GDP as 25 % in share rate at current price level in 1996, while the second contribution factor is the group of wholesales & retail trade, restaurant & hotels as 17 % in share rate at current price level in the same year. The third one is the agriculture, livestock & fisheries as 17 % at current price level in 1996.

On the other hand, an economic activity group of manufacturing shows the highest growth ratio as 23 % per annum and the group of electricity, gas & water is the second one as 20 % per annum since 1994 at current price level, but in the case of 1993-constant price, this ranking has been reversed as the group of electricity, gas & water: 14 % per annum, and the group of manufacturing: 11 % per annum from the viewpoint of annual average growth ratio of GDP.

The economic active groups of construction, banking, insurance & real estate also show high growth as 22 % and 13 % per annum at current price level.

GDP in Indonesia was Rp.533 trillion as of 1996 at current price level and Rp.414 trillion as of 1996 at 1993-constant price level with the annual average growth ratio 18.05 % and 8.10 % at current price level and at 1993-constant price level respectively.

On the other hand, GDP per capita was Rp.2,685 thousand as of 1996 at current price level and Rp.2,089 thousand as of 1996 at 1993-constant price level with 16.21 %

and 6.42 % of annual average growth rates at current price level and at 1993-constant price level.

Gross regional domestic product (GRDP) in Central Java Province is shown in Table 2.4.9 by current price level, and 1993-constant price level for the year of 1994 and 1995.

According to the said table, an economic activity group of manufacturing is the highest contribution factor to the GRDP as 32 % in share rate at current price level in 1995, while the second contribution factor is the group of agriculture as 23 % in share rate at current price leveling the same year.

On the other hand, the economic activity groups of agriculture, manufacturing, electricity/gas/water, wholesale/retail trade/restaurant/hotels show the almost same high level of growth ratio at around 20 % per annum at the current price level from the viewpoint of annual average growth rates of GRDP.

GRDP in Central Java Province was Rp.47 trillion as of 1995 at current price level with 18.62 % of the annual growth rates..

On the other hand, GRDP per capita was lower than that in average in whole Indonesia as Rp.1,570 thousand as of 1995 at current price level with 17.81 % of annual growth rate at current price level.

GRDP in Semarang City is shown in Table 2.4.10 by current price level, and 1993-constant price level for the year of 1994 and 1995.

According to the said table, an economic activity group of wholesales & retail trade, restaurant & hotels is the highest contribution factor to the GDP as 33 % in share rate at current price level in 1995, while the second contribution factor is the group of manufacturing as 29 % in share rate at current price level.

On the other hand, an economic activity groups of manufacturing shows the highest rate of growth rate at 25 % per annum at the current price level. The group of mining and quarrying shows the second growth rate but its amount of products was quite low, so its contribution rate is negligible small. Therefore, significant second growth rate is that in the economic activity group of wholesales & retail trade, restaurant & hotels as 20 % at current price level. It seems that these figures reflect an actual situation of Semarang City where is one of municipalities under industrializing, and under

developing in trading of such products from that industry. These figures support the sharing pattern of economic active population in Semarang City mentioned in previous Clause.

GRDP in Semarang City was Rp.5.3 trillion as of 1995 at current price level with 18.99 % of growth rate.

On the other hand, GRDP per capita was quite high comparing with those in average in whole Indonesia and in whole Central Java Province as Rp.4,305 thousand as of 1995 at current price level with 16.43 % of annual growth rate. This reflects that Semarang City is a quite attractive municipality for local people and this is a motivation of the people who want to get more income by moving to anywhere between cities.

(2) Government Finance

Table 2.4.11 shows a movement of the Government budget since 1993/94 up to 1998/99 of fiscal year. According to this table, the scale of state budget came up from Rp.62 trillion in 1993/94 to Rp.147 trillion in 1998/1999. Increasing ratios against previous years were had come at 11.9 % in 1994/95, 11.9 % in 1995/96, 16.1 % in 1996/97, and 11.6 % in 1997/98 up to the present fiscal year. However, it was changed with quite high rate as 45.6 % in 1998/99 because that the Government of Indonesia has revised its original budget scale following recommendations of the International Monetary Fund (IMF).

On the other hand, the Government's real finance was increased with rather big scale comparing with the budget scale as Rp.60 trillion in 1992/93, Rp.67 trillion in 1993/94, Rp.72 trillion in 1994/95, and Rp.83 trillion in 1995/96 in revenue as shown in Table 2.4.12. The scale of expenditure amount of the Government has changed as Rp.61 trillion, Rp.69 trillion, Rp.72 trillion and Rp.82 trillion in the same respective fiscal year. The change rates against previous year in revenue and in expenditure were 11.5 % and 13.6 % in 1993/94, 8.2 % and 5.3 % in 1994/95, and 14.3 % and 13.8 % in 1995/96.

The main sources of revenue are taxes as 79 % in 1995/96 sharing to the amount of the total revenue consisting of income tax, value added tax on goods and services, import duties, excise duties, export tax, property tax, and so on. The amount of revenue from oil and natural gas has shared at only 20 % in the same fiscal year.

However, the amount of revenue from oil and natural gas will share at 30 % to the total budget scale in 1998/99 according to the said coming budget scale announced by the Government.

A share rate in percentage of development expenditure was quite high as 36 % with Rp.30 trillion to the amount of total expenditure in 1995/96 as indicated in the above table.

The real finance of Central Java Province was increased from Rp.134 billion in 1992/93 to Rp.303 billion in 1995/96 in revenue with change rates against previous fiscal year of 25.7 % in 1993/94, 36.1 % in 1994/95 and 32.4 % in 1995/96 as shown in Table 2.4.13.

The main sources of revenue are also taxes as 76 % in 1995/96 sharing to the amount of the total revenue consisting of local taxes as tax on motorized vehicles, motor car transfer duties, unpaid taxes and fine taxes.

No data was available on expenditure in the finance of Central Java Province this time.

The real finance of Semarang City was increased from Rp.68 billion in 1992/93 to Rp.139 billion in 1995/96 in revenue and, from Rp.67 billion to Rp.135 billion in expenditure in the same fiscal year with change rates against previous year of 30.2 % in revenue and 34.5 % in expenditure both in the fiscal year of 1995/96 as shown in Table 2.4.14. No complete data on financial situation in Semarang City was available for the fiscal year of 1993/94, so changes could not cleared for 1994/95.

The main sources of revenue are local originated revenues consisting mainly of local taxes, retribution, and fees/fares from local Government corporation and official services and, the contribution and local aid as from the central Government 28 % and as 25 % respectively in 1995/96.

A share rate in percentage of development expenditure was also quite high as 40 % with Rp.53 billion to the amount of total expenditure in 1995/96 as indicated in the above table.

2.4.3 Industrial Perspective

Industrial Features

As mentioned in the aforementioned clauses, people of around 50 % of actual labour force have been engaged in agricultural sector in Indonesia and in Central Java Province since 1985, and they are still 40 % or more even in 1996, while people of 13 % of labour force are engaged in manufacturing in Indonesia and Central Java Province, and 19 % and 17 % of labour force are engaged in trade & hotels sector in Indonesia and Central Java Province respectively.

On the other hand, people of only 8 % of economic active population are engaged in agriculture in Semarang City, but 23 % of them are engaged in manufacturing in 1996.

From the viewpoint of GDP, the economic activity groups of "manufacturing" and "wholesale & retail trade, restaurant & hotels" are the highest contribution factor to the GDP as 42.2 % and 41.4 % in share rate at current price level and 1993-constant price level respectively in 1996 in Indonesia. Also in Central Java Province, the economic activity groups of "manufacturing" and "wholesale & retail trade, restaurant & hotels" are the highest contribution factor to the GDP as 52.6 % and 52.8 % in share rate at current price level and 1993-constant price level respectively in 1995. Furthermore, the economic activity groups of "manufacturing" and "wholesale & retail trade, restaurant & hotels" are the highest contribution factor to the GDP as 61.8 % and 61.2 % in share rate at current price level and 1993-constant price level respectively in 1995 in Semarang City.

This is to say that, even people engaging in agriculture are more than ones engaging in manufacturing and trading, the factor which is significant to the economic activity in Indonesia and in Central Java Province is the activity of manufacturing and trading. This is supported by the economic situation in Semarang City. As mentioned above, even Semarang City is a local city, the economic active population classified in manufacturing and trading is higher than that in agriculture and, GRDP in Semarang City is dominated by the economic activity of manufacturing and trading reflecting a function of the city where is the capital city of Central Java Province as industrial- and trading-oriented city in local.

Now, the manufacturing situation will be discussed as an economic activities in Semarang City comparing with that in Indonesia and in Central Java Province.

Overall Economic Activities

Table 2.4.15 shows numbers of registered total establishments and permanent employees, and some figures concerned in Indonesia for the period from 1993 to 1996. Industrial sector is classified by 9 kinds of economic activities based on their products as “food, beverage & tobacco”, “textile, wearing & leather products”, “wood & wooden products”, “paper & paper products”, “chemical, petroleum, rubber & plastic”, “non-metalic mineral products”, “basic metal products”, “fabricated metal, machinery and transport equipment”, “not elsewhere specified products”.

As shown in the said table, number of registered establishments has increased from 2.5 million firms in 1993 to 2.8 million firms in 1996 consisting of large and medium scale firms, small scale firms and, household scale firms. Here, large scale firms employ more than 50 persons, medium scale firms employ persons ranging from 20 persons to 50 persons, small scale firms employ persons ranging from 5 persons to 20 persons, and household scale firms employ less than 5 persons.

Among them, the top two economic activity groups are the group of “food, beverage & tobacco” and “wood & wooden products” in number with share rates of the both around 35 % and 34 % respectively in 1996 against the total number of establishments. These sharing pattern has been kept since 1993. And the third one is the group of textile, wearing & leather products with share rate of 15 %. Consequently, the number of persons engaged is also the most in the activity group of food, beverage & tobacco with share rates of 30 %. But, the economic activity group of textile, wearing & leather products is the second top in number of persons engaged as 22 %, and the group of wood & wooden products has become the third one as 20 % in sharing in the same year.

It means that the firm scale of textile, wearing & leather products is larger in general than that of wood & wooden products. Average number of persons engaged may be estimated at 3.3 persons per firm in the group of food, beverage & tobacco (consisting of 172.0 persons/firm in large and medium scale firms, 7.8 persons/firm in small scale firms, and 1.9 persons/firm in household scale firms), 5.9 persons per firm in textile, wearing & leather products (consisting of 297.0 persons/firm, 9.8 persons/firm, and 1.3 persons/firm respectively), and 2.3 persons per firm in wood & wooden products (consisting of 185.0 persons/firm, 8.2 persons/firm, and 1.4 persons/firm respectively) as of 1996.

On the other hand from the viewpoint of salaries and wages, the economic activity group which shows a highest share rate to its total amount in Indonesia is the group of textile,

wearing & leather products as 23.7 %, the second highest one is the group of fabricated metal, machinery & transport equipment as 17.9 %, and the third one is the group of food, beverage & tobacco as 16.9 % in 1996. Therefore, it seems that the most attractive working environment for people is in the group of textile, wearing & leather products in the whole Indonesia.

The per capita expenditure for salaries and wages in the groups mentioned above may be estimated at Rp.2,041,000 per person per annum in the group of textile, wearing & leather products (consisting of Rp.2,850,000 per person per annum in large/medium scale firms, Rp.1,033,000 in small scale firms, and Rp.170,000 in household scale firms), Rp.4,778,000 per persons per annum in the group of fabricated metal, machinery and transport equipment (consisting of Rp.6,143,000, Rp.1,239,000 and Rp.727,000), and Rp.1,077,000 per persons per annum in the group of food, beverage & tobacco (consisting of Rp.2,982,000, Rp.688,000 and Rp.135,000) in 1996.

Number of persons engaged includes entrepreneurs (owners and officials of establishments), therefore, the above mentioned expenditure for salaries and wages is not all to pay out for employees, but only a part of it.

From the viewpoint of gross output, the group of food, beverage & tobacco shows the most amount as Rp.63 trillion with share rate of 23.0 % to the total amount of gross output of Rp.274 trillion in 1996 consisting of 21.0 % in large/medium scale firms, 39.8 % in small scale firms and, 47.8 % in household scale firms. The economic activity groups of textile, wearing & leather products, and fabricated metal, machinery & transport equipment are almost the same scale in amount of gross output as Rp.53 trillion and Rp.54 trillion respectively with share rate of 19.3 % (consisting of 19.4 % in large/medium scale firms, 24.9 % in small scale firms, and 11.4 % in household scale) and 19.6 % (consisting of 21.1 %, 3.5 % and 5.4 %) respectively in 1996.

The share rate of the gross output of household scale firms in food, beverage & tobacco is higher than those in the group of textile, wearing & leather products, and in the group of fabricated metal, machinery & transport equipment as mentioned above. According to these figures, it seems that the economic activity group of food, beverage & tobacco is suited for small scale business as household scale.

Table 2.4.16 shows numbers of registered total establishments and permanent employees, and some figures concerning to the large and medium scale firms in Central Java Province for the

period from 1993 and in 1996. Industrial sector is also classified by 9 kinds of economic activities based on their products by the same manner in Indonesia as mentioned above.

As shown in the said table, number of registered establishments has increased from around 2,730 firms in 1993 to 3,061 firms in 1996 consisting of large and medium scale firms only which reaches almost the 15 % in number of the total large/medium scale establishment in Indonesia.

Among them, the top two economic activity groups are the group of "food, beverage & tobacco" and "textile, wearing & leather products" in number with share rates of the both around 33 % and 24 % respectively in 1996 against the total number of establishments. These sharing pattern has been kept since 1993. And the third one is the group of wood & wooden products with share rate of 13.1 % in the same year. However, the number of persons engaged which show the highest share rate to the total number of persons engaged is that in the activity group of textile, wearing & leather products with share rates of 40 % and, the economic activity group of food, beverage & tobacco is the second highest in number of persons engaged as 27 %.

It means that the firm scale in textile, wearing & leather products is larger than that in food, beverage & tobacco in number of persons engaged. Average number of persons engaged may be estimated at 128.7 persons per firm in the group of food, beverage & tobacco, 268.0 persons per firm in textile, wearing & leather products , and 119.8 persons per firm in wood & wooden products as of 1996.

On the other hand from the viewpoint of salaries and wages, the economic activity group which shows a highest share rate to its total amount in Central Java Province is the group of textile, wearing & leather products as 38.3 %, the second highest one is the group of food, beverage & tobacco as 25.2 %, and the third one is the group of chemical, petroleum, rubber & plastic products as 11.4 % in 1996. Therefore, it seems that the most attractive working environment for people is in the group of textile, wearing & and leather products in Central Java Province too.

The per capita expenditure for salaries and wages in the groups mentioned above may be estimated at Rp.1,534,000 per person per annum in the group of textile, wearing & leather products, Rp.1,506,000 per persons per annum in the group of food, beverage & tobacco, and Rp.1,814,000 per persons per annum in the group of chemical, petroleum, rubber & plastic products in 1996.

From the viewpoint of gross output, the group of textile, wearing & leather products shows the most amount as Rp.6.7 trillion with 49.1% in share rate to the total amount of gross output of Rp.13.6 trillion in 1996. The economic activity groups of food, beverage & tobacco is the second one in amount of gross output as Rp.3.6 trillion with share rate of 26.8 %, and the third one is the group of chemical, petroleum, rubber and plastic products as Rp.1.1 trillion with share rate of 7.8 % in 1996.

Table 2.4.17 shows numbers of registered total establishments and permanent employees, and some figures concerning to the large and medium scale firms in Semarang City for the period from 1991 and in 1994. Industrial sector is also classified by the same manner in Indonesia and Central Java Province as mentioned above. The data in 1995 and 1996 was not available for Semarang City.

As shown in the said table, number of registered establishments has increased from around 251 firms in 1991 to 291 firms in 1994 consisting of large and medium scale firms only which reaches almost the 10 % in number of the total large/medium scale establishment in Central Java Province.

Among them, the top economic activity group is the group of "food, beverage & tobacco" in number of 73 firms with share rate of around 25 % in 1994 against the total number of establishments. Number of other economic activity groups as "textile, wearing & leather products", "paper & paper products", "chemical, petroleum, rubber & plastic products", and "fabricated metal, machinery & transport equipment" are almost the same as 48 firms, 38 firms, 55 firms, and 35 firms with their share rates of 16 %, 13 %, 19 %, and 12 % in 1994. These sharing pattern has been kept since 1991. However, the number of persons engaged which show the highest share rate to the total number of persons engaged is that in the activity group of textile, wearing & leather products with share rates of 27 % and, the economic activity group of chemical, petroleum, rubber and plastic products is the second highest in number of persons engaged as 25 %. The third one is the group of food, beverage and tobacco as 17 % in share rate of number of persons engaged in to the total number of persons engaged in 1994.

It means that the firm scale in latter groups is larger than that in food, beverage & tobacco in number of persons engaged. Average number of persons engaged may be estimated at 151.2 persons per firm in the group of food, beverage & tobacco, 367.1 persons per firm in textile, wearing & leather products, 293.8 persons per firm in chemical, petroleum, rubber & plastic products as of 1994.

On the other hand from the viewpoint of salaries and wages, the economic activity group which shows a highest share rate to its total amount in Semarang City is the group of chemical, petroleum, rubber & plastic products as 24.9 %, the second highest one is the group of textile, wearing & leather products as 22.3 %, and the third one is the group of food, beverage & tobacco as 18.6 % in 1994. Therefore, it seems that the most attractive working environment for people is in the group of chemical, petroleum, rubber & plastic products in Semarang City.

The per capita expenditure for salaries and wages in the groups mentioned above may be estimated at Rp.1,861,000 per person per annum in the group of chemical, petroleum, rubber & plastic products, Rp.1,525,000 per persons per annum in the group of textile, wearing & leather products, and Rp.2,032,000 per persons per annum in the group of food, beverage & tobacco in 1994.

From the viewpoint of gross output, the group of food, beverage & tobacco shows the most amount as Rp.513 billion with 25.7% in share rate to the total amount of gross output of Rp.1,999 billion in 1994. The economic activity groups of chemical, petroleum, rubber & plastic products is the second one in amount of gross output as Rp.441 billion with share rate of 22.0 %, and the third one is the group of textile, wearing & leather products as Rp.376 billion with share rate of 18.8 % in 1994.

This is to say that, the group of food, beverage & tobacco is the most important factor for economic activities in Semarang City from the viewpoint of productivity and of amount of salaries and wages received by persons engaged ("expenditure for salaries and wages" from the viewpoint of entrepreneur) in large/medium scale firms.

Table 2.4.18 shows the actual permanent working population classified by the scale of establishment by district and economic activity group in Semarang City in 1994. According to this table, around 20 %, 18 % and 13 % of working population are engaged in the district of Genuk located in north-eastern area of Semarang City, in Semarang Barat and in Ngaliyan. There are several specified industrial zone in Genuk, Semarang Barat and Ngaliyan according to the information from Semarang City.

Furthermore, according to the information from Semarang City and site investigation, there are lot of household scale industry like food makers, repair and spare parts shops for motor cycles, bicycles, electric apparatus for daily use, and so on. But, these are quite small scale in capital, and usually these industries have only family workers with no employees. And they do not appear in number of firms, number of persons engaged in, and their products.

Infrastructure

(1) Roads

In Indonesia as of 1996, there are 385,836 km of road in total consisting of 28,006 km of state level road, 54,025 km of provincial level road and 303,805 km of regency level road as shown in Table 2.4.19 with an expanding rate of road network of 3.85% per annum since 1991. These roads consist of 181,745 km of asphalt paved roads, 173,465 km of non-asphalt paved roads and 30,626 km of non-paved roads with expanding rates of 5.05 %, 3.49 % and -0.35 % respectively since 1991.

In Central Java Province as of 1995, there are 24,265 km of roads in total consisting of 1,206 km of state level road, 2,580 km of provincial level road, 18,311 km of regency level road, and 2,168 km of municipality level road as shown in Table 2.4.20 with an expanding rate of road network of 2.86 % per annum since 1991. These roads consist of 10,879 km of asphalt paved roads, 7,909 km of non-gravel paved roads, 3,990 km of earth paved roads and 1,487 km of others with expanding rates of -8.42 %, 25.83 %, 13.72 %, and 22.19 % respectively since 1991.

Number of bridges has been increased from 2,133 bridges consisting of 65 state level bridges and 1,498 provincial level bridges in 1991 to 3,081 bridges consisting of 1,007, and 2,074 respectively in 1995 with 9.63 % of annual increasing rate in total since 1991.

In Semarang City as of 1996, there are 1,013 km of road in total consisting of 967 km of asphalt paved roads, 10 km of non-gravel paved roads, 13 km of earth paved roads and 22 km of others with expanding rates of 8.95 %, -53.51 %, -38.06 %, and 100.00 % respectively since 1991 as shown in Table 2.4.21.

As indicating the figures mentioned, the gravel and earth paved roads has gradually decreased and, asphalt paved roads has increased. It means that the road network has been improved during these years.

(2) Railways

For the railway network in Indonesia, number of passengers has increased from 62 million people in 1991 to 152 million people in 1996 with 19.49 % of annual increasing rate, and total length of passengers' trip (pax km) has increased from 9,758 million km in 1991 to 15,813 million km in 1996 with an increasing rate of 10.13 %

per annum reflecting a capacity of embarkation of trains in Indonesia.

Number of passengers in Java and Madura islands shares 98 % to the total passengers as 149 million people, and pax km shares 96 % to the total length of passengers' trips as 15,218 km in 1996. Namely, people living in Java and Madura islands are highest railway users comparing with other islands reflecting high transportation capacity of the railway facilities including trains in Java and Madura islands.

Freight transportation by railway has also increased from 13.7 million tons of loaded cargo in 1991 to 18.1 million tons in 1996 with increasing rate of 5.64 % per annum, and gross length of tonnage transported has increased from 3.5 billion km in 1991 to 4.4 billion km in 1996 with 4.68 % of annual increasing rate too.

Capacity of railway transportation in Central Java Province has increased from 7.0 million in passengers in 1991 to 9.2 million in 1995 with the rate of 7.05 % of annual increasing since 1991, and from 1.1 million tons in freight transported in 1991 to 1.7 million tons in 1995 with 11.35 % of annual increasing rate since 1991.

Capacity of railway transportation in Semarang City has increased from 411 thousand in passengers in 1991 to 492 thousand in 1996 with the rate of 3.68 % of annual increasing since 1991, and from 325 thousand tons in freight transported in 1991 to 613 thousand tons in 1996 with 13.54 % of annual increasing rate since 1991 too.

(3) Sea Port

Indonesia is an island country, so it has a lot of sea ports. But statistical data is not available completely. According to the latest statistical data named "Statistical Year Book of Indonesia 1996", total handling volume of sea borne cargo was 519 million tons consisting of 310 million tons of loaded cargo and 209 million tons of unloaded cargo in 1995 in whole Indonesia.

There are 5 major seaports in Central Java Province named as Tanjung Mas Seaport in Semarang City, Cilacap Seaport in the Regency of Cilacap, Tegal Seaport in the Regency of Tegal, Jepara Seaport in the Regency of Jepara, Juwana Seaport in the Regency of Juwana. Total handling volume of sea borne cargo has been increased from 29 million tons consisting of 11 million tons of loaded cargo and 18 million tons of unloaded cargo in 1991 to 30 million tons consisting of 10 million tons of loaded cargo and 20 million tons of unloaded cargo in 1995 with annual increasing rate of -

0.66 % in loaded cargo and 1.96 % in unloaded cargo since 1991. Number of ships arrived has also increased from 5,831 ships in 1991 to 8,018 ships in 1995 with 8.29 % of annual increasing rate since 1991.

There is only one sea port in Semarang City named as the Tanjung Mas Sea Port as mentioned above. Total handling volume of sea borne cargo has been decreased from 4.9 million tons consisting of 0.9 million tons of loaded cargo and 4.0 million tons of unloaded cargo in 1991 to 3.5 million tons consisting of 1.3 million tons of loaded cargo and 2.2 million tons of unloaded cargo in 1996 with annual increasing/decreasing rate of 7.05 % in loaded cargo and -11.13 % in unloaded cargo since 1991, also the number of ships arrived has also decreased from 3,399 ships in 1991 to 3,321 ships in 1996 with -0.46 % of annual decreasing rate since 1991.

(4) Air Port

Indonesia as an island country has also a lot of airports because that the air transportation system is a quite important way for passengers and cargo to transport too, and for some other purposes. Number of aircraft in Indonesia has increased from 835 consisting of 320 belonging to the Government and 515 belonging to private air companies in 1991 to 910 consisting of 330 belonging to the Government and 580 belonging to the private companies in 1995 with increasing rate of 2.17 % per annum in total.

Among them, general aviation is the highest operation as 419 of aircraft with 46 % of share rate to the total aircraft with increasing rate of 0.98 % per annum since 1991. Scheduled operation shares at 31 % to the total aircraft in 1995 with 6.42 % of annual increasing rate also since 1991.

There are 4 airports in Central Java Province named as Achmad Yani Airport in Semarang City, Adi Sumarno Airport in Surakarta, Tunggul Wulung Airport in Cilacap and Karimunjawa Airport in Jepara.

For air transportation, number of aircraft arrived and departure has increased from 7,753 and 7,757 in 1991 to 11,623 and 11,648 in 1995 with 10.65 % and 10.70 % of annual increasing rates, while number of passengers arrived and departure has also increased from 250 thousand persons and 349 thousand persons in 1991 to 538 thousand persons and 520 thousand persons in 1995 with the annual increasing rates of 21.01 % and 10.47 % since 1991.

Also Semarang City has one airport named as Achmad Yani Airport as mentioned above. For air transportation, number of aircraft arrived and departure has increased from 5,618 and 5,621 in 1991 to 9,902 and 9,894 in 1996 with 12.00 % and 11.97 % of annual increasing rates, while number of passengers arrived and departure has also increased from 157 thousand persons and 255 thousand persons in 1991 to 430 thousand persons and 414 thousand persons in 1996 with the annual increasing rates of 22.36 % and 10.24 % since 1991.

(5) Postage Services

Number of facilities for postage services are 315 of general post offices, 834 of supplementary post office, 3,393 auxiliary post offices and 1,838 of mailing houses in 1996 with annual increasing/decreasing rates of -0.44 %, 3.74 %, 6.97 % and 5.53 % respectively since 1991.

(6) Telephone and Telegram

General telex offices have increased from 98 offices in 1991 to 183 offices in 1996 in Semarang City with 16.90 % of annual increasing rate, but the capacity of its connection has increased only from 800 lines in 1991 to 1,000 lines in 1996 with annual increasing rate of 5.74 % since 1991.

There are two kinds of telephone facilities as automatic connection offices and manual connection offices. However, there is no any manual connection office in Semarang City since 1995. Capacity of automatic telephone connection offices has increased from 67,343 lines in 1991 to 154,801 lines in 1996 with actual connection recorded from 46,716 line in 1991 to 109,540 lines in 1996 increasing at 23.14 % per annum in capacity and 23.74 % per annum in actual connection. The automatic telephone offices have increased from 8 offices in 1991 to 22 offices in 1996 in Semarang City.

2.4.4 Family Economy

Table 2.4.22 shows a situation of household income and expenditure by commodities of consumption as of 1996 based on the result of Living Expenditure Survey in Central Java in 1996 made by the Statistic Office of Central Java Province, and as of 1997 based on a result of Property Survey made by JICA Study Team this time.

According to this property survey this time, the income level of household in the study area may be Rp.810 thousand per household (HH) per month as of 1997, however the amount of expenditure may be a sum of around Rp.1,285 thousand per HH per month in the same year. Therefore, the actual income level also should at least be the same amount of expenditure per HH per month which is called as the estimated income level. In the study area, number of economic active persons per HH per month may be estimated at 1.94 persons as shown in the said table. Therefore, an average per capita income per month can be calculated at Rp.662 thousand at present.

The expenditure level of the study area is almost double comparing with that of the whole Semarang City reflecting situation of the center of the city zone of it where is a vital area for retail trading. Namely, prices of all daily articles and services are usually expensive in the central area of the city zone.

The share rate of expenditure for food is rather low as 24.05 % to the total expenditure, but that for housing shares at 41.06 % which is quite high comparing that of the whole Semarang City.

Generally speaking, the amounts of expenditure for fuel, lighting and water range from 2.5 % to 5.0 % in average to the total income in developing countries. From this viewpoint, such amount of expenditure shares as rather high at around 7.3 % to total monthly income in the study area. Especially, the amount of expenditure for electricity and water share at 2.6 %, and 1.3 % respectively to the income with amounts of Rp.34,000 and Rp.16,500 per HH per month.

According to an information from State Electricity Corporation (PLN = Perusahaan Listrik Negara), the average actual unit price of electricity may be estimated at Rp.155 per kWh for domestic electricity sales, and the average electricity volume used by household is counted at 76 kWh per month in 1997. So the average amount to be paid for electricity can be calculated at Rp.11,780 (= Rp.155/kWh x 76 kWh) per month per HH. This amount shares at 1.7 % to the amount of total expenditure (= estimated income level) of Rp.688 thousand in the whole Semarang City which is reasonable amount of expenditure according to the said general speaking.

The above said monthly expenditure of Rp.34,000 per month per HH for electricity is quite high comparing with the above mentioned amount of Rp.11,780 per month per HH. Even if this figure reflects the situation of the central area of the city zone, this amount of expenditure for electricity can be said as a limited amount for ordinary households.

2.4.5 Price Fluctuation

(1) Consumer Price Indexes

Table 2.4.23 shows consumers' price indexes in Indonesia and Semarang City since 1993 and 1992 respectively. According to this table, the annual average increasing ratios of general, food, housing, clothing, and miscellaneous are 8.62 %, 11.20%, 7.95 %, 6.52 % and 6.99 % in Indonesia since 1993 respectively, and 7.62 %, 9.46 %, 6.37 %, 4.78 % and 7.29 % in Semarang City since 1992 respectively..

(2) Foreign Currency Exchange Rates

The fluctuation of exchange rates against US Dollars and Japanese Yen during the period from 1992 to December 1997 is shown in Table 2.4.24.

According to this table, the annual decreasing ratio of Indonesian Rupiah against US Dollar is 7.57 % per annum and that against Japanese Yen is decreased with a rate of 8.02 % per annum for the period from 1992 to 1997. The average exchange rate of Rupiah against US\$ 1 may be estimated at Rp. 2,971, and that against Japanese ¥ 100 is Rp. 2,437 as of 1997.

2.4.6 Relationships with Other Related Projects

In order to improve the living conditions of the rapidly increasing urban population, the Government of Indonesia intends to focus on three principal aspects regarding the provision of urban services in local Governments as:

- Expansion of basic, low-cost urban infrastructure and services in a planned and coordinated manner;
- Decentralization of the planning and much of the implementation of urban development to local Government and to strengthen the higher levels of Government to enable them to provide the technical assistance, training and project appraisal support; and
- Stimulation of increases in local revenue to help finance new investments and improve operation and maintenance of existing facilities at the local level, and to seek measures for long-term finance.

In Central Java Province, there are 6 packages of development plan based on the said Governmental intention. Package A is for development of the Special Municipality of

Yogyakarta (Daerah Istimewa Yogyakarta) and its surrounding area, Package B is for development of the municipalities of Semarang and Surakarta named as "Semarang-Surakarta Urban Development Program (SSUDP)". The other four packages are for development of the other area classified by four regions in Central Java Province.

The package which is likely to relate this Project among them is the SSUDP which is under executing financed by the World Bank (IBRD = the International Bank for Rehabilitation and Development) targeted to complete its whole works by 1999. The finance by the World Bank for this SSUDP includes 9 major programs as (1) to improve the urban roads and transport, (2) to supply water and to distribute it, (3) to drain storm water and to control floods in urban area, (4) to establish solid waste collection and disposal systems, (5) to improve human waste disposal (sewerage and on-site sanitation facilities), (6) to make multi-sectoral programs for villages (Kampung = low income area) for improvements and market investments, (7) to make programs for the development and strengthening of local institutions, (8) to make programs to increase local revenue generation, and (9) to give technical assistance for implementation of the said programs.

On the other hand, the Study made by JICA Team this time consists of three components as (1) West Floodway/Garang River Improvement, (2) Jatibarang Multipurpose Dam Construction, and (3) Urban Drainage System Improvement in the central area of Semarang City.

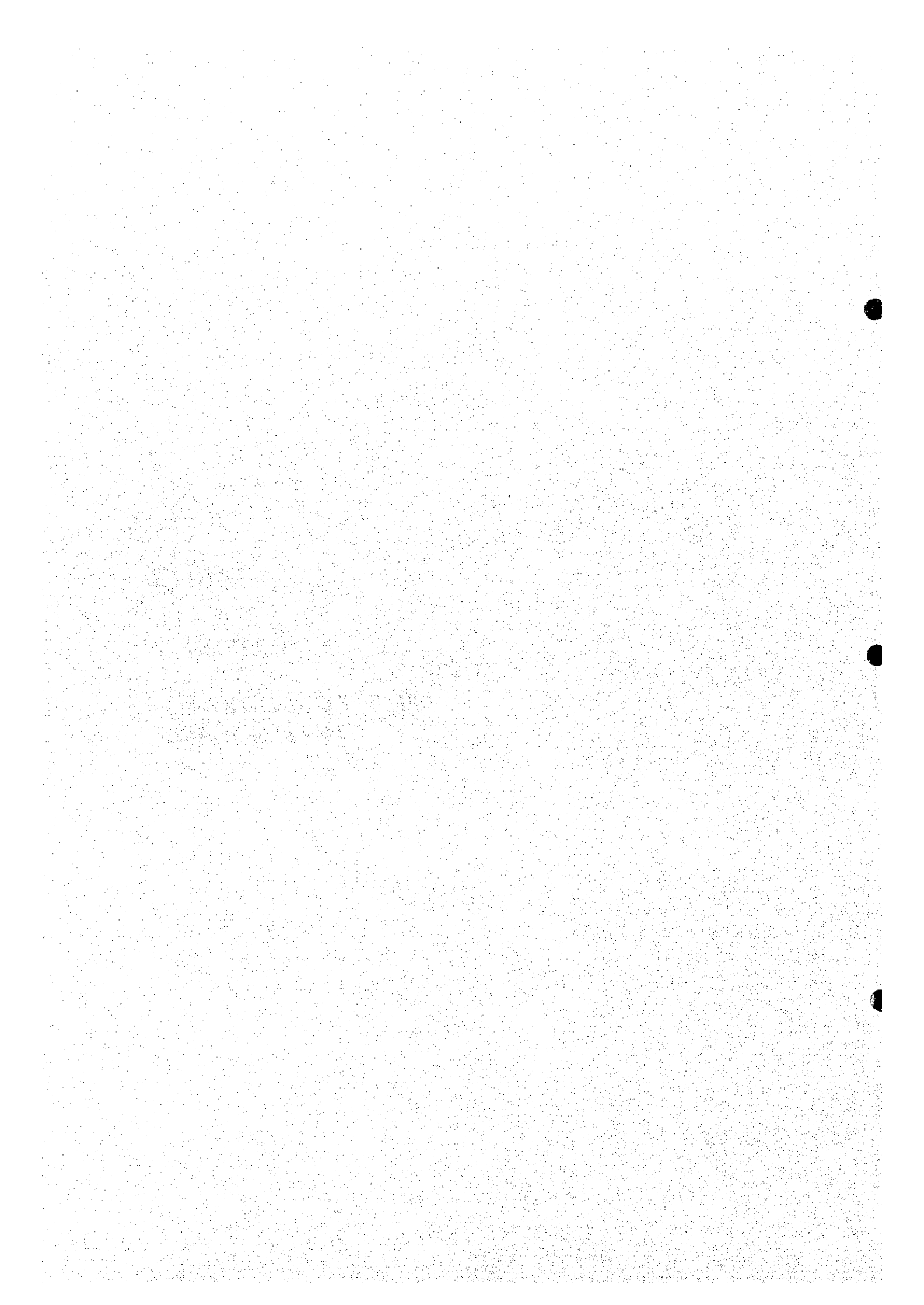
According to an information from the Project Office of SSUDP in Semarang City, there is no any overlapping works in the SSUDP programs of (3), (4) and (5) mentioned above with a component of JICA's study for the urban drainage system improvement in the central area of Semarang City because the scheme is completely different.

The SSUDP has a plan to take some volume of water from Garang River. The design of the Jatibarang Multipurpose Dam of the Project is already taken this water use program in the future into account, so there is no any impact each other between them.

TABLES

CHAPTER 2

**PRESENT CONDITION OF
THE STUDY AREA**



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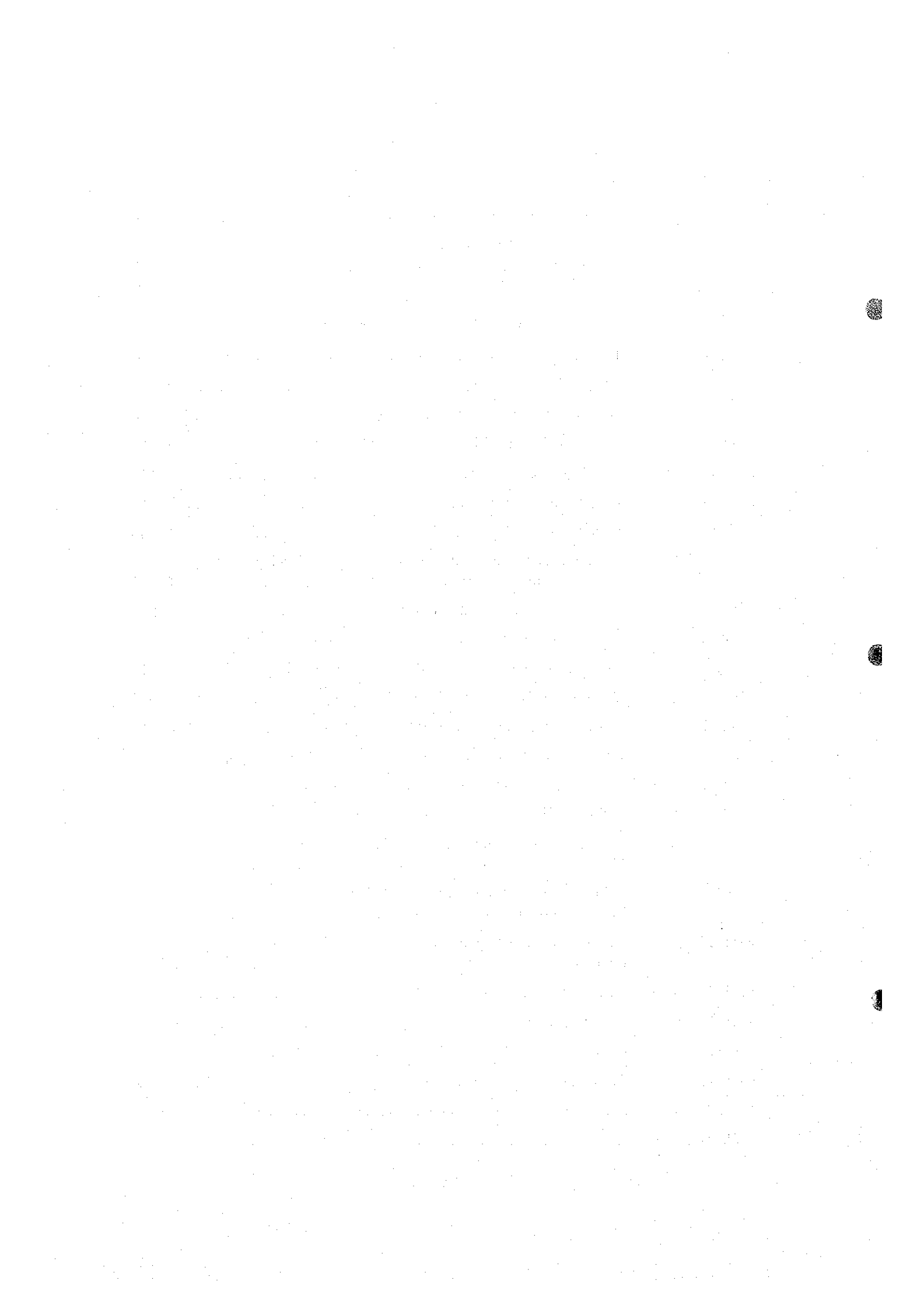


Table 2.1.1 CLIMATOLOGICAL DATA AT BMG-SEMARANG STATION

Element	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total (/year)	Mean	Data Period
Monthly Rainfall	mm/mon	434	292	274	201	178	100	73	67	92	154	228	285	2378	198.2	1968-1996
Pan Evaporation	mm/day	3.3	3.7	3.8	4.0	4.3	4.5	4.8	5.1	5.7	5.5	4.4	3.8	1610	4.4	1978-1996
Average Temperature	deg. C	26.4	26.4	26.8	27.6	27.9	27.4	27.1	27.2	27.8	28.3	27.8	27.0		27.3	1968-1996
Highest Temperature	deg. C	29.9	30.0	30.4	31.7	32.5	32.4	32.6	33.2	33.7	33.7	32.3	30.8		31.9	- do. -
Lowest Temperature	deg. C	23.5	23.6	23.9	24.3	24.2	23.2	22.8	22.7	23.0	23.6	23.7	23.7		23.5	- do. -
Relative Humidity	%	84.4	84.1	83.8	79.8	77.2	74.6	72.2	70.7	70.1	71.7	77.3	81.5		77.3	- do. -
Rainy Days	days	22	18	18	15	11	7	6	5	8	11	16	19	156	13.0	- do. -
Sunshine Duration	%	38	46	52	59	65	65	75	81	74	70	56	46		60.6	- do. -
Wind Velocity	m/s	2.0	2.0	1.6	1.6	1.7	1.8	1.9	2.0	2.0	1.8	1.6	1.6		1.8	- do. -

Source : Badan Meteorologi dan Geofisika, Stasiun Klimatologi Semarang

Table 2.3.1 EXISTING WATER SOURCES AND WATER SUPPLY AMOUNT FOR SEMARANG CITY

Water Sources	Construction Year	Design Capacity (l/s)	Production Capacity (l/s)
Garang River		980	901
WTP Kaligarang-1	1965	500	445
WTP Kaligarang-2	1982	80	56
WTP Kaligarang-3	1995	250	250
WTP Kaligarang-4	1995	150	150
Babon River			
WTP Pucanggading	1995	50	50
Spring around Mt. Ungaran	1911 -	300	644
Deep Well in the city area around Mt. Ungaran	1911 - 1984 1982 -	817	117 700
Total		2,147	1,853

Source : PDAM of Kotamadya Semarang, REPORT "SFPC Final Project Preparation" in 1996
 Note : WTP stands for Water Treatment Plant

Table 2.3.2 WATER USE DATA IN SEMARANG CITY

No.	Item	Unit	Calendar Year			
			1985	1987	1989	1991
(1)	Total Water Supplied	m ³	25,892,450	25,954,887	26,020,247	32,978,734
(2)	Metered Water	m ³	13,390,950	12,555,822	13,272,419	17,784,821
(3)	Uncounted Water (1)-(2)/(1)	%	48.28	51.62	48.99	46.07
(4)	Total Population	Person	1,106,067	1,112,175	1,126,265	1,154,536
(5)	Number of Customers	Nos.	31,180	32,459	35,418	56,021
(6)	Population supplied Water (5)*5	Person	155,900	162,295	177,090	280,105
(7)	Service Ratio (6)/(4)	%	14.09	14.59	15.72	24.26
(8)	Usage per Capita (2)/(6)/365	l/day	235	212	205	174
						198
						1993
						40,250,845
						23,740,957
						41.02
						1,177,562
						1,232,931
						65,838
						328,190
						27.96
						198
						1995
						41,155,567
						25,532,633
						37.96
						1,232,931
						82,444
						412,220
						33.43
						170

Source : PDAM of Kotamadya Semarang, REPORT "SFPC Final Project Preparation" in 1996

Total population in this table was Semarang City only, excluding proposed new service area in Kendal & Sayung(Demak)

Table 2.3.3 FUTURE PUBLIC WATER DEMAND PROJECTION IN SEMARANG CITY

Water Use		Unit	Year				
			1995	2000	2005	2010	2015
Eastern Area							
Domestic Water Demand	m3/s	0.288	0.426	0.643	0.792	0.917	
Population	Person	350,405	369,923	390,528	412,281	435,245	
Service Ratio	%	50	70	90	100	100	
Ratio (House C. : Public H.)	%	80 : 20	80 : 20	80 : 20	80 : 20	80 : 20	
Unit Consumption for House C.	l/c/d	170	170	190	200	220	
Unit Consumption for Public H.	l/c/d	30	30	30	30	30	
Water Demand for House Connection	m3/s	0.276	0.408	0.618	0.763	0.887	
Water Demand for Public Hydrant	m3/s	0.012	0.018	0.024	0.029	0.030	
Non-Domestic Water Demand	m3/s	0.238	0.698	1.409	1.922	2.055	
Industrial Area	ha	610	1,220	1,857	2,580	2,720	
Service Ratio	%	30	60	85	85	85	
Unit Consumption for Industrial Use	l/s/ha	0.75	0.75	0.75	0.75	0.75	
Industrial Water Demand	m3/s	0.137	0.549	1.184	1.645	1.734	
Commercial Water Demand (Dom. *35%)	m3/s	0.101	0.149	0.225	0.277	0.321	
Losses of Water	%	38	27	25	25	25	
Clean Water Demand ((D.+N.D)/(1-Loss))	m3/s	0.848	1.539	2.735	3.619	3.962	
Raw Water Demand (Clean * 1.25)	m3/s	1.060	1.924	3.419	4.524	4.953	
Western Area							
Domestic Water Demand	m3/s	0.625	0.924	1.395	1.719	1.990	
Population	Person	760,504	802,865	847,585	894,797	944,638	
Service Ratio	%	50	70	90	100	100	
Ratio (House C. : Public H.)	%	80 : 20	80 : 20	80 : 20	80 : 20	80 : 20	
Unit Consumption for House C.	l/c/d	170	170	190	200	220	
Unit Consumption for Public H.	l/c/d	30	30	30	30	30	
Water Demand for House Connection	m3/s	0.599	0.885	1.342	1.657	1.924	
Water Demand for Public Hydrant	m3/s	0.026	0.039	0.053	0.062	0.066	
Non-Domestic Water Demand	m3/s	0.340	0.725	1.256	1.512	1.749	
Industrial Area	ha	541	892	1,205	1,428	1,651	
Service Ratio	%	30	60	85	85	85	
Unit Consumption for Industrial Use	l/s/ha	0.75	0.75	0.75	0.75	0.75	
Industrial Water Demand	m3/s	0.122	0.401	0.768	0.910	1.053	
Commercial Water Demand (Dom. *35%)	m3/s	0.219	0.323	0.488	0.602	0.696	
Losses of Water	%	38	27	25	25	25	
Clean Water Demand ((D.+N.D)/(1-Loss))	m3/s	1.557	2.258	3.535	4.308	4.985	
Raw Water Demand (Clean * 1.25)	m3/s	1.946	2.823	4.419	5.385	6.231	
Upper Area							
Domestic Water Demand	m3/s	0.112	0.213	0.322	0.397	0.460	
Population	Person	175,622	185,404	195,732	206,634	218,144	
Service Ratio	%	50	70	90	100	100	
Ratio (House C. : Public H.)	%	80 : 20	80 : 20	80 : 20	80 : 20	80 : 20	
Unit Consumption for House C.	l/c/d	130	170	190	200	220	
Unit Consumption for Public H.	l/c/d	30	30	30	30	30	
Water Demand for House Connection	m3/s	0.106	0.204	0.310	0.383	0.444	
Water Demand for Public Hydrant	m3/s	0.006	0.009	0.012	0.014	0.015	
Non-Domestic Water Demand	m3/s	0.039	0.075	0.113	0.139	0.161	
Commercial Water Demand (Dom. *35%)	m3/s	0.039	0.075	0.113	0.139	0.161	
Losses of Water	%	38	27	25	25	25	
Clean Water Demand ((D.+N.D)/(1-Loss))	m3/s	0.243	0.394	0.580	0.715	0.827	
Raw Water Demand (Clean * 1.25)	m3/s	0.304	0.493	0.725	0.893	1.034	
Total	m3/s	3.310	5.240	8.563	10.802	12.218	

Population in this table includes proposed new service area in Kendal & Sayung(Demak)

Population growth per year is supposed as 1.09 % based on the data of 1985 to 1995

Source : REPORT "SFCP Final Project Preparation" in 1996

Table 2.3.4 PROPOSED WATER SOURCES FOR SEMARANG CITY WATER SUPPLIES

No.	Water Source	Capacity (m ³ /s)	Cumulative (m ³ /s)	Year	Remarks
(a)	Existing	1.532	1.532	1996	Garang 0.580(F/S in 1993) + Others 0.952 = 1.532 m ³ /s
(b)	(Existing)	(1.853)		(1996)	Garang 0.901 + Others 0.952 = 1.853 m ³ /s
1	Water transfer from Klambu to Kudu	2.500	4.032	1998	Under Construction
2	Jatibarang Reservoir	1.460	5.492	2003	Proposed by JICA
3	Dolok Reservoir	0.750	6.242	2003	1.460-(1.853-1.532)= 1.139 m ³ /s from (b)
4	Tuntang Jragung Regulation Tunnel	1.750	7.992	2003	
5	Mundingan Reservoir	1.020	9.012	2005	Proposed by JICA
6	Interbasin Transfer	0.680	9.692	2005	Proposed by JICA
7	Kedung Suren Reservoir	1.700	11.392	2009	Proposed by JICA
8	Babon Reservoir	1.300	12.692	2011	Proposed by JICA
	Total	12.692			

Note : Modified from REPORT "SFCP Final Project Preparation" in 1996
 "Others" consists of Babon River, Springs and Deep Wells (refer to Table 2.3.1)

Table 2.4.1 AREA AND POPULATION IN INDONESIA

Province	Area (km ²)	Population			Households (HHs)			Family size (persons/HH)			Annual average growth rate of population (%)			Population density as of 1996 (persons/km ²)
		(persons in 1,000)	1980	1990	(persons in 1,000)	1980	1990	1980	1990	1996	'80-'90		'80-'96	
											1980	1990		
Sumatra island	482,393	28,016	36,502	41,841	5,375	7,474	9,201	5.21	4.88	4.55	2.68%	2.30%	2.54%	87
Dista Aceh	55,390	2,611	3,416	3,945	531	697	832	4.92	4.90	4.74	2.72%	2.43%	2.61%	71
Sumatera Utara	71,680	8,361	10,252	11,306	1,548	2,023	2,367	5.40	5.07	4.78	2.06%	1.64%	1.90%	158
Sematera Barat	42,898	3,407	4,000	4,390	704	868	1,004	4.84	4.61	4.37	1.62%	1.56%	1.60%	102
Riau	94,561	2,168	3,304	4,057	413	679	923	5.25	4.87	4.40	4.30%	3.48%	3.99%	43
Jambi	53,436	1,446	2,020	2,459	300	438	577	4.82	4.61	4.26	3.40%	3.33%	3.37%	46
Sematera Selatan	109,254	4,630	6,313	7,413	857	1,266	1,631	5.40	4.99	4.55	3.15%	2.71%	2.99%	68
Bengkulu	19,789	768	1,179	1,464	150	252	343	5.12	4.68	4.27	4.38%	3.68%	4.12%	74
Lampung	35,385	4,625	6,018	6,806	872	1,251	1,525	5.30	4.81	4.46	2.67%	2.07%	2.44%	192
Jawa island	127,499	91,270	107,581	116,379	19,623	24,908	28,268	4.65	4.32	4.12	1.66%	1.32%	1.53%	913
DKI Jakarta	664	6,503	8,259	9,341	1,164	1,740	2,117	5.59	4.75	4.41	2.42%	2.07%	2.29%	14,068
Jawa Barat	43,177	27,454	35,384	40,118	6,101	8,180	9,575	4.50	4.33	4.19	2.57%	2.11%	2.40%	929
Jawa Tengah	32,549	25,373	28,521	29,881	5,286	6,414	7,077	4.80	4.45	4.22	1.18%	0.78%	1.03%	918
DI Yogyakarta	3,186	2,751	2,913	2,915	593	729	769	4.64	4.00	3.79	0.57%	0.01%	0.36%	915
Jawa Timur	47,923	29,189	32,504	34,124	6,479	7,845	8,730	4.51	4.14	3.91	1.08%	0.81%	0.98%	712
Nusa Tenggara islands	87,744	8,487	10,165	11,133	1,684	2,136	2,480	5.04	4.76	4.49	1.82%	1.53%	1.71%	127
Bali	5,633	2,470	2,778	2,924	485	601	704	5.09	4.62	4.15	1.18%	0.86%	1.06%	519
Nusa Tenggara Barat	20,153	2,725	3,370	3,708	594	767	883	4.59	4.39	4.20	2.15%	1.60%	1.94%	184
Nusa Tenggara Timur	47,349	2,737	3,269	3,641	496	619	715	5.52	5.28	5.10	1.79%	1.81%	1.80%	77
Timor Timur	14,609	555	748	860	109	149	178	5.09	5.02	4.83	3.03%	2.35%	2.77%	59
Kalimantan island	547,891	6,723	9,099	10,808	1,323	1,942	2,533	5.08	4.69	4.27	3.07%	2.91%	3.01%	20
Kalimantan Barat	146,807	2,486	3,229	3,732	458	640	795	5.43	5.05	4.69	2.65%	2.44%	2.57%	25
Kalimantan Tengah	153,564	954	1,396	1,686	186	306	408	5.13	4.56	4.13	3.88%	3.19%	3.62%	11
Kalimantan Selatan	36,535	2,065	2,597	2,960	444	597	748	4.65	4.35	3.96	2.32%	2.21%	2.28%	81
Kalimantan Timur	210,985	1,218	1,877	2,429	235	399	581	5.18	4.70	4.18	4.42%	4.39%	4.41%	12
Sulawesi island	191,800	10,409	12,521	14,020	1,923	2,558	3,018	5.41	4.89	4.64	1.86%	1.90%	1.88%	73
Sulawesi Utara	27,488	2,115	2,478	2,686	399	549	637	5.30	4.51	4.22	1.60%	1.35%	1.51%	98
Sulawesi Tengah	63,689	1,290	1,711	1,997	233	347	438	5.54	4.93	4.56	2.86%	2.61%	2.77%	31
Sulawesi Selatan	62,483	6,062	6,982	7,693	1,117	1,399	1,605	5.43	4.99	4.79	1.42%	1.63%	1.50%	123
Sulawesi Tenggara	38,140	942	1,350	1,643	174	263	339	5.41	5.13	4.84	3.66%	3.33%	3.54%	43
Maluku and Irian Jaya	499,852	2,585	3,507	4,163	445	677	900	5.81	5.18	4.62	3.10%	2.90%	3.02%	8
Maluku	77,871	1,411	1,858	2,142	229	344	435	6.16	5.40	4.92	2.79%	2.40%	2.64%	28
Irian Jaya	421,981	1,174	1,649	2,021	216	333	465	5.44	4.95	4.35	3.46%	3.45%	3.45%	5
Total in Indonesia	1,937,179	147,490	179,375	198,343	30,373	39,695	46,401	4.86	4.52	4.27	1.98%	1.69%	1.87%	102

Source : Indonesia in Figures (Indonesia Dalam Angka) 1996, Central Statistic Bureau of Indonesia.

Table 2.4.2 AREA AND POPULATION IN CENTRAL JAVA

Kabupaten/Kotamadya (Regency/Municipality)	Area (km ²)	Population		Households (HHs)		Family size (persons/HH)		Annual average growth rate of population(%)		Population density in 1995 (persons/km ²)		
		1980	1990	1995*	1990	1995	1990	1995	80-90		90-95	
		(persons in 1,000)	(persons in 1,000)	(persons in 1,000)	(HHs in 1,000)	(HHs in 1,000)	(persons in 1,000)	(persons/HH)	(%)		(%)	
Kabupaten(Regency)												
Cilacap	2,143	1,344	1,459	1,535	326	348	4.48	4.41	0.82%	1.02%	0.89%	716
Banyumas	1,328	1,228	1,351	1,402	304	317	4.44	4.42	0.96%	0.74%	0.89%	1,055
Purbalingga	778	671	756	786	159	165	4.75	4.76	1.20%	0.78%	1.06%	1,010
Banjarnegara	1,070	678	773	808	178	176	4.34	4.59	1.32%	0.89%	1.17%	755
Kebumen	1,283	1,038	1,151	1,182	320	244	3.60	4.84	1.04%	0.53%	0.87%	922
Purworejo	1,035	694	724	733	158	165	4.58	4.43	0.42%	0.26%	0.36%	709
Wonosobo	985	601	671	705	140	146	4.79	4.82	1.12%	0.99%	1.07%	716
Magelang	1,086	935	1,017	1,038	235	238	4.32	4.36	0.84%	0.41%	0.70%	956
Boyolali	1,015	786	870	888	191	199	4.55	4.47	1.03%	0.40%	0.82%	875
Klaten	656	1,086	1,180	1,204	250	257	4.72	4.69	0.83%	0.41%	0.69%	1,836
Sukoharjo	467	605	696	727	140	159	4.96	4.56	1.41%	0.89%	1.24%	1,558
Wonogiri	1,822	953	1,026	1,050	203	213	5.06	4.93	0.74%	0.47%	0.65%	577
Kalanganyar	772	610	707	744	138	162	5.11	4.59	1.49%	1.01%	1.33%	963
Sragen	946	765	845	863	180	190	4.69	4.55	1.00%	0.43%	0.81%	912
Grobogan	1,976	1,020	1,176	1,242	262	300	4.49	4.14	1.44%	1.09%	1.32%	629
Blora	1,794	698	757	788	179	185	4.24	4.26	0.82%	0.79%	0.81%	439
Rembang	1,014	443	511	526	115	120	4.43	4.38	1.44%	0.56%	1.15%	518
Pati	1,491	971	1,070	1,110	259	275	4.13	4.03	0.97%	0.74%	0.89%	744
Kudus	425	537	610	635	127	141	4.80	4.51	1.27%	0.83%	1.13%	1,495
Jepara	1,004	701	776	827	190	203	4.08	4.08	1.03%	1.28%	1.11%	824
Demak	897	645	807	854	187	199	4.32	4.29	2.27%	1.15%	1.90%	953
Semarang	982	709	772	763	170	174	4.54	4.38	0.86%	-0.23%	0.50%	777
Temanggung	870	558	606	632	128	136	4.73	4.65	0.84%	0.82%	0.83%	726
Kendal	1,002	701	789	819	181	186	4.35	4.40	1.20%	0.74%	1.04%	817
Batang	789	531	593	616	130	135	4.57	4.58	1.10%	0.79%	1.00%	781
Pekalongan	836	653	701	734	142	146	4.93	5.02	0.72%	0.92%	0.78%	878
Pemalang	1,012	949	1,085	1,147	217	237	5.00	4.83	1.34%	1.13%	1.27%	1,134
Tegal	880	1,103	1,242	1,268	263	272	4.72	4.67	1.19%	0.43%	0.94%	1,441
Brebes	1,658	1,267	1,529	1,546	334	342	4.57	4.52	1.90%	0.23%	1.34%	933
Kotamadya (Municipality)												
Kotamadya (Municipality)												
Magelang	18	123	117	115	26	26	4.54	4.44	-0.47%	-0.36%	-0.43%	6,406
Surakarta	44	459	517	528	113	116	4.58	4.57	1.19%	0.44%	0.94%	12,010
Salatiga	18	80	86	143	18	30	4.92	4.76	0.80%	10.59%	3.97%	7,948
Semarang	374	996	1,147	1,221	251	274	4.58	4.46	1.42%	1.26%	1.37%	3,264
Pekalongan	45	133	235	242	48	51	4.87	4.78	5.89%	0.57%	4.08%	5,370
Tegal	34	132	230	230	48	49	4.82	4.67	5.69%	0.04%	3.77%	6,770
Total		32,549	25,402	28,582	29,653	6,576	4.53	4.51	1.19%	0.74%	1.04%	911

Source : Central Java in Figures (Jawa Tengah Dalam Angka) 1990, 1991, 1992, 1993, 1994, and 1996, Statistic Office of Central Java Province.

(Note) * Modified the data from the Central Java in Figures based on the Statistical Year Book of Indonesia.

Table 2.4.3 AREA AND POPULATION IN SEMARANG CITY

Kecamatan (district)	Area (km ²)	Population (persons)					Households (HHs)					Family size (persons/HH)			Annual average growth rate of population(%) '93-96	Population density in 1996 (persons/km ²)
		1985	1990	1993 ¹⁾	1996	1996	1985	1990	1993 ¹⁾	1996	1985	1990	1993	1996		
Mijen	57,55	35,364	37,276	32,767	35,726	7,595	5,919	7,954	8,527	4,66	6,30	4,12	4,19	2,92%	621	
Gunungpati	52,63	38,185	43,946	48,591	54,237	7,862	10,797	11,378	12,907	4,86	4,07	4,27	4,20	3,73%	1,031	
Semarang Selatan	5,92	196,660	204,491	79,743	79,138	37,852	41,036	17,344	18,076	5,20	4,98	4,60	4,38	-0,25%	13,368	
Banyumanik	27,73	0	0	81,561	93,681			19,025	20,713			4,29	4,52	4,73%	3,378	
Gajahmungkur	10,78	0	0	52,711	54,625			10,941	11,506			4,82	4,75	1,20%	5,067	
Genuk	27,39	85,417	137,504	48,631	55,872	18,092	31,622	10,777	12,034	4,72	4,35	4,51	4,64	4,74%	2,040	
Pedurungan	20,72	0	0	98,134	117,770			22,852	27,594			4,29	4,27	6,27%	5,684	
Gayamsari	5,26	0	0	54,355	61,182			12,327	13,509			4,41	4,53	4,02%	11,632	
Semarang Timur	7,12	205,428	201,280	96,260	88,413	46,573	43,162	20,848	20,153	4,41	4,66	4,62	4,39	-2,79%	12,414	
Candisari	6,80	0	0	76,006	76,640			15,780	16,521			4,82	4,64	0,28%	11,271	
Tembalang	44,20	0	0	79,148	85,402			16,646	18,386			4,75	4,64	2,57%	1,932	
Semarang Utara	10,97	169,330	152,457	122,705	129,299	34,366	35,182	27,090	27,816	4,93	4,33	4,53	4,65	1,76%	11,787	
Semarang Tengah	5,14	72,473	62,756	84,652	81,283	14,669	13,048	20,030	19,247	4,94	4,81	4,23	4,22	-1,34%	15,814	
Semarang Barat	19,96	248,254	251,707	132,754	139,189	49,876	53,656	28,083	29,519	4,98	4,69	4,73	4,72	1,59%	6,973	
Ngaliyan	39,97	0	0	68,917	76,753			15,811	16,862			4,36	4,55	3,65%	1,920	
Tugu	29,38	45,160	55,514	20,627	22,635	8,608	12,663	4,886	5,002	5,25	4,38	4,22	4,53	3,14%	770	
Total	371,52	1,096,271	1,146,931	1,177,562	1,251,845	225,493	247,085	261,772	278,372	4,86	4,64	4,50	4,50	2,06%	3,370	

(Note) 1) The administration units belonging to several districts had been revised at the end of 1992. So the new administration system is used since 1993.

- : Lack of data.

n.a.: Not available.

Source : Semarang City in Figures (Kotamadya Semarang Dalam Angka) 1985, 1990, 1993, and 1996, Statistic Office of Semarang City.

Data Monografi Kotamadya Dati II Semarang 1996, BAPPEDA Kotamadya Dati II Semarang.

Table 2.4.4 LABOUR FORCE IN INDONESIA

Item	1985 ¹⁾	1995 ²⁾	1996 ³⁾
Labour Force Participation (Current) of the Household Population, 10 Years & Over in Both Sexes			
Household population (10-years & over)	110,441,199	152,514,964	154,464,763
Economic active population (Labour force in total)	59,598,626	86,361,261	90,109,582
Participation rate(%)	53.96%	56.62%	58.34%
Actual Labour Force Situation			
Employed force	57,802,801 (100.00%)	80,110,060 (100.00%)	85,701,813 (100.00%)
Employed rate(%)	96.99%	92.76%	95.11%
Unemployed force	1,795,825	6,251,201	4,407,769
Unemployed rate(%)	3.01%	7.24%	4.89%
Currently Employed Persons by Major Industrial Groups in Both Sexes			
	(Share in %)	(Share in %)	(Share in %)
Agriculture, forestry, hunting & fishery	31,593,314 (54.66%)	35,233,270 (43.98%)	37,720,251 (44.01%)
Mining & quarrying	390,661 (0.68%)	643,332 (0.80%)	774,211 (0.90%)
Manufacturing	6,021,929 (10.42%)	10,127,047 (12.64%)	10,773,038 (12.57%)
Electricity, gas & water	61,666 (0.11%)	216,128 (0.27%)	164,142 (0.19%)
Construction	2,146,210 (3.71%)	3,768,080 (4.70%)	3,796,228 (4.43%)
Wholesales, retail trade, hotel and restaurant	8,553,919 (14.80%)	13,883,682 (17.33%)	16,102,552 (18.79%)
Transportation, storage & communication	1,796,112 (3.11%)	3,458,155 (4.32%)	3,942,799 (4.60%)
Finance, insurance, real estate, & business services	112,859 (0.20%)	658,497 (0.82%)	689,733 (0.80%)
Public services	7,125,419 (12.33%)	12,121,869 (15.13%)	11,728,495 (13.69%)
Others	712 (0.00%)	0 (0.00%)	10,364 (0.01%)

Source :

1) Statistics of Indonesia 1985, Central Statistic Bureau of Indonesia

2) Statistics of Indonesia 1995, Central Statistic Bureau of Indonesia

3) Statistics of Indonesia 1996, Central Statistic Bureau of Indonesia

Table 2.4.5 LABOUR FORCE IN CENTRAL JAVA

Item	1980 ¹⁾	1988 ²⁾	1995 ³⁾
Labour Force Participation (Current) of the Household Population, 10 Years & Over in Both Sexes			
Household population (10-years & over)	18,392,419	21,251,543	23,650,214
Economic active population (Labour force in total)	10,101,217	13,396,583	14,642,604
Participation rate(%)	54.92%	63.04%	61.91%
Actual Labour Force Situation			
Employed force	9,966,183 (100.00%)	13,125,817 (100.00%)	14,062,056 (100.00%)
Employed rate(%)	98.66%	97.98%	96.04%
Unemployed force	135,034	270,766	580,548
Unemployed rate(%)	1.34%	2.02%	3.96%
Currently Employed Persons by Major Industrial Groups in Both Sexes			
Agriculture, forestry, hunting & fishery	5,408,177 (54.27%)	6,562,533 (50.00%)	6,466,506 (45.99%)
Mining & quarrying	47,336 (0.47%)	-	138,817 (0.99%)
Manufacturing	1,191,985 (11.96%)	1,418,789 (10.81%)	1,881,367 (13.38%)
Electricity, gas & water	9,148 (0.09%)	-	41,813 (0.30%)
Construction	344,369 (3.46%)	-	670,068 (4.77%)
Wholesales, retail trade, hotel and restaurant	1,433,316 (14.38%)	-	2,415,213 (17.18%)
Transportation, storage & communication	231,760 (2.33%)	2,320,670 (17.68%)	422,517 (3.00%)
Finance, insurance, real estate, & business services	31,463 (0.32%)	-	65,413 (0.47%)
Public services	1,219,549 (12.24%)	1,940,913 (14.79%)	1,881,043 (13.38%)
Others	59,080 (0.59%)	879,912 (6.70%)	79,299 (0.56%)

Source :

- 1) Central Java in Figures (Jawa Tengah Dalam Angka) 1985, Statistic Office of Central Java Province.
- 2) Central Java in Figures (Jawa Tengah Dalam Angka) 1990, Statistic Office of Central Java Province.
- 3) Central Java in Figures (Jawa Tengah Dalam Angka) 1996, Statistic Office of Central Java Province.

Table 2.4.6 LABOUR FORCE IN SEMARANG CITY

Item	1985 ¹⁾	1990 ²⁾	1995 ³⁾	1996 ³⁾
Labour Force Participation (Current) of the Household Population, 10 Years & Over in Both Sexes				
Household population	835,577	893,708	993,298	1,016,433
(10-years & over)				
Economic active population (Labour force in total)	510,821 (100.00%)	631,885 (100.00%)	840,903 (100.00%)	822,176 (100.00%)
Participaion rate(%)	61.13%	70.70%	84.66%	80.89%
Consist of:				
Farmer	30,910 (6.05%)	32,957 (5.22%)	29,966 (3.56%)	28,749 (3.50%)
Farm labour	31,399 (6.15%)	30,995 (4.91%)	29,980 (3.57%)	32,771 (3.99%)
Fishery	1,002 (0.20%)	1,815 (0.29%)	2,861 (0.34%)	2,852 (0.35%)
Entrepreneur	5,087 (1.00%)	10,389 (1.64%)	17,761 (2.11%)	15,442 (1.88%)
Manufacturing	90,744 (17.76%)	143,434 (22.70%)	169,212 (20.12%)	175,361 (21.33%)
Construction	83,696 (16.38%)	95,464 (15.11%)	109,328 (13.00%)	105,080 (12.78%)
Trader	38,264 (7.49%)	43,941 (6.95%)	70,468 (8.38%)	73,505 (8.94%)
Transportation & communication	16,537 (3.24%)	16,934 (2.68%)	27,137 (3.23%)	26,806 (3.26%)
Public servants & personal services	82,326 (16.12%)	83,233 (13.17%)	89,560 (10.65%)	90,270 (10.98%)
Pensionary	24,742 (4.84%)	26,884 (4.25%)	31,759 (3.78%)	27,804 (3.38%)
Other activities	106,114 (20.77%)	145,839 (23.08%)	263,172 (31.30%)	243,536 (29.62%)
Actual Labour Force Situation				
EMPLOYMENT force	451,599	414,965	677,713	655,326
EMPLOYMENT rate(%)	88.41%	65.67%	80.59%	79.71%
UNEMPLOYMENT force	59,222	216,920	163,190	166,850
UNEMPLOYMENT rate(%)	11.59%	34.33%	19.41%	20.29%

Source :

- 1) Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1985, Stitistic Office of Semarang City.
- 2) Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1990, Stitistic Office of Semarang City.
- 3) Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1996, Stitistic Office of Semarang City.

Table 2.4.7 ECONOMIC ACTIVE POPULATION BY DISTRICTS AND WORKING GROUP IN SEMARANG CITY

Kecamatan	Year	Farmer	Farm labour	Fish-eries	Enter-preneur	Manu-facture	Const-ruktion	Trader	Trans- port	Public officer	Pensi-onaries	Others	Total
Mijen	1993	4,971	8,958	0	359	1,636	1,564	1,144	610	700	203	3,612	23,757
	1994	5,333	8,346	0	179	1,291	1,191	1,401	706	875	567	7,276	27,165
	1995	5,712	6,875	0	195	1,425	1,302	1,523	762	956	612	4,874	24,236
	1996	4,211	6,706	0	298	5,045	3,704	1,705	549	704	346	4,120	27,388
Gunung Pati	1993	13,297	8,294	0	127	1,862	1,996	1,568	391	1,257	143	2,592	31,527
	1994	16,554	10,366	0	158	2,166	2,553	1,998	510	1,570	187	3,281	39,343
	1995	13,394	8,387	0	129	1,762	2,094	1,637	422	1,275	168	2,663	31,931
	1996	13,506	8,495	0	134	1,894	2,207	1,699	428	1,296	237	1,998	31,894
Banyumanik	1993	215	314	0	12	3,453	12,144	1,572	350	12,297	4,328	8,017	42,702
	1994	356	512	0	25	5,807	20,394	2,673	584	20,637	7,263	13,462	71,713
	1995	2,093	1,580	0	215	13,228	7,781	2,103	1,730	13,971	4,338	11,268	58,307
	1996	1,803	4,553	0	249	15,076	7,305	3,291	1,125	13,268	3,065	13,404	63,139
Tembalang	1993	815	1,274	0	89	10,447	7,774	1,084	829	8,006	787	1,844	32,949
	1994	1,018	1,790	0	217	21,491	16,580	2,220	1,730	17,195	3,425	2,102	67,768
	1995	1,650	2,982	0	157	11,427	14,086	3,698	1,207	5,275	2,308	18,491	61,281
	1996	1,492	2,967	0	163	11,572	14,026	3,913	1,196	5,311	2,382	19,246	62,268
Pedurungan	1993	1,389	3,150	0	521	16,503	8,574	2,632	2,207	7,944	1,024	14,209	58,153
	1994	1,427	3,045	0	85	24,393	17,289	3,504	2,322	9,114	1,172	16,466	78,817
	1995	1,273	2,949	0	187	27,357	16,730	3,941	2,848	9,357	1,461	14,343	80,446
	1996	1,284	2,939	0	95	19,591	12,735	4,431	3,265	10,309	1,405	10,687	66,741
Genuk	1993	3,776	2,711	5	158	8,173	3,066	1,733	340	985	258	14,978	36,183
	1994	3,262	2,319	6	987	12,855	4,212	1,629	638	1,303	902	11,530	39,643
	1995	2,584	1,796	0	806	10,077	3,784	1,456	537	1,051	729	12,148	34,968
	1996	3,401	2,613	0	871	13,743	4,396	1,884	602	1,373	197	13,068	42,148
Semarang Timur	1993	0	0	0	1,273	12,831	3,870	5,849	2,283	4,463	2,359	15,232	48,160
	1994	0	0	0	2,292	13,725	3,991	16,738	4,746	3,613	1,300	32,831	79,236
	1995	0	0	0	2,326	13,809	4,124	18,820	4,787	3,624	1,302	21,869	70,661
	1996	0	0	0	2,314	13,768	4,120	16,613	4,545	3,361	1,178	25,258	71,157
Semarang Utara	1993	0	2	2,536	1,559	22,416	7,140	5,508	3,874	8,629	3,885	38,225	93,774
	1994	0	0	2,750	1,689	24,306	7,744	5,977	4,196	9,358	4,214	41,446	101,680
	1995	0	2	2,596	5,484	24,315	10,935	6,339	3,689	9,913	2,501	31,494	97,268
	1996	0	0	2,566	5,414	24,223	10,932	6,341	3,615	9,916	2,509	34,730	100,246
Semarang Tengah	1993	0	0	0	1,827	4,203	3,531	6,255	1,253	3,315	1,646	20,562	42,592
	1994	0	0	0	2,819	6,740	7,778	9,897	2,815	3,972	3,187	33,621	70,829
	1995	0	0	0	3,778	6,543	5,833	5,968	2,120	3,149	1,622	36,564	65,577
	1996	0	0	0	1,650	5,449	3,013	6,877	1,979	3,011	1,646	18,617	42,242
Semarang Selatan	1993	0	0	0	455	8,086	6,478	3,511	708	8,767	2,627	5,069	35,701
	1994	0	5	0	780	14,109	11,842	9,363	1,659	12,391	4,510	12,349	67,008
	1995	0	0	0	483	9,123	7,849	5,891	933	7,688	2,852	7,734	42,553
	1996	0	0	0	479	10,173	9,126	5,543	988	6,842	2,602	12,132	47,885
Gayam Sari	1993	46	133	34	617	8,968	6,848	1,274	755	3,280	741	5,866	28,562
	1994	63	184	48	849	12,339	9,427	1,762	1,040	4,516	1,021	8,070	39,319
	1995	46	135	36	619	8,982	6,861	1,284	760	3,289	745	5,879	28,636
	1996	45	132	37	620	8,981	6,243	1,295	761	3,287	752	5,884	28,037
Candi Sari	1993	0	0	0	420	5,298	7,997	5,678	1,629	5,979	1,984	5,644	34,629
	1994	0	0	0	907	9,083	13,536	10,985	2,823	10,130	3,381	12,194	63,039
	1995	0	0	0	523	8,128	12,693	8,117	2,169	7,564	3,700	9,406	52,300
	1996	0	0	0	543	8,173	12,743	8,132	2,204	7,589	3,710	5,438	48,532
Gajah Mungkur	1993	0	0	0	349	3,210	2,835	1,373	1,779	9,166	5,279	20,178	44,169
	1994	0	0	0	348	3,387	3,055	1,383	1,998	9,187	5,299	18,594	43,251
	1995	0	0	0	389	3,410	3,129	1,394	1,968	9,296	5,282	12,138	37,006
	1996	0	0	0	207	6,435	3,196	2,482	1,801	10,464	4,120	7,141	35,846
Semarang Barat	1993	68	502	80	861	16,065	4,450	4,304	2,142	8,596	3,067	53,806	93,941
	1994	75	590	97	1,078	19,762	5,386	5,343	2,602	10,451	3,727	65,568	114,679
	1995	56	460	76	893	16,467	4,448	4,512	2,150	8,633	3,081	54,302	95,078
	1996	39	467	69	893	16,469	4,452	4,553	2,154	8,935	3,021	53,750	94,802
Ngaliyan	1993	7,168	8,784	0	869	7,176	3,705	2,615	917	2,431	979	9,633	44,277
	1994	3,372	3,959	0	1,589	13,794	5,328	3,760	1,319	5,683	568	17,640	57,012
	1995	2,354	2,755	0	1,115	9,707	5,776	2,685	917	3,967	902	14,971	45,149
	1996	2,212	2,674	0	1,483	11,867	5,179	3,441	1,409	4,051	462	13,241	46,019
Tugu	1993	823	2,938	239	85	2,862	2,725	1,167	122	559	166	1,849	13,535
	1994	1,019	2,654	303	108	3,641	2,137	1,354	160	669	182	5,500	17,727
	1995	804	2,059	153	464	3,152	1,903	1,097	138	552	156	5,028	15,506
	1996	756	1,225	180	29	2,902	1,703	1,305	185	553	172	4,822	13,832
Total in whole	1993	32,568	37,060	2,894	9,581	133,189	84,697	47,267	20,189	86,374	29,476	221,316	704,611
Semarang	1994	32,479	33,770	3,204	14,110	188,889	132,443	79,987	29,848	120,664	40,905	301,930	978,229
	1995	29,966	29,980	2,861	17,763	168,912	109,328	70,465	27,137	89,560	31,759	263,172	840,903
	1996	28,749	32,771	2,852	15,442	175,361	105,080	73,505	26,806	90,270	27,804	243,536	822,176

Source : Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1992, 1993, 1994, 1995, and 1996, Statistic Office of Semarang City.

Table 2.4.8 GROSS DOMESTIC PRODUCT IN INDONESIA

A. Gross Domestic Product (GDP)								(Rp.10 ⁵)
Industry of origin	GDP at current price			Annual average growth ratio(%)	GDP at 1993-constant price			Annual average growth ratio(%)
	1994 ¹⁾	1995 ²⁾	1996 ²⁾		1994 ¹⁾	1995 ²⁾	1996 ²⁾	
Agriculture, livestock & fisheries	66,072	77,896	88,041	15.43%	59,291	61,885	63,743	3.69%
Mining & quarrying	33,507	40,195	45,916	17.06%	33,262	35,502	37,569	6.28%
Crude petroleum and natural gas	23,070	25,410	28,120	10.40%	23,720	23,720	24,063	0.72%
Others	10,437	14,785	17,796	30.58%	9,542	11,782	13,506	18.97%
Manufacturing	89,241	109,669	135,581	23.26%	82,649	91,537	102,260	11.23%
Oil and gas manufacturing	10,439	11,399	14,194	16.61%	10,269	9,782	10,864	2.86%
Petroleum refinery	5,855	6,599	8,340	19.35%	5,548	5,392	6,292	6.49%
Liquified natural gas	4,584	4,800	5,854	13.01%	4,721	4,390	4,572	-1.59%
Others	78,802	98,270	121,387	24.11%	72,380	81,755	91,396	12.37%
Electricity, gas & water	4,577	5,655	6,594	20.03%	3,703	4,292	4,841	14.34%
Construction	28,017	34,452	42,025	22.47%	25,858	29,198	32,924	12.84%
Wholesale & retail trade, restaurants & hotels	63,859	75,640	88,878	17.97%	59,504	64,231	69,372	7.97%
Transport & communication	27,353	30,795	34,926	13.00%	25,189	27,329	29,701	8.59%
Banking, insurance & real estate	34,506	39,510	44,371	13.40%	30,901	34,313	37,401	10.02%
Public services	22,755	26,555	29,753	14.35%	22,752	23,046	23,338	1.28%
Private services	12,335	14,127	16,545	15.81%	11,533	12,360	13,272	7.27%
GDP in total	382,222	454,494	532,630	18.05%	354,642	383,693	414,421	8.10%
GDP per capita (Rp.10 ³)	1,988	2,327	2,685	16.21%	1,845	1,965	2,089	6.42%
Population(10 ³)	192,217	195,283	198,343	-1.58%	192,217	195,283	198,343	1.58%

B. Share Rate of Gross Domestic Product (% of GDP)

Industry of origin	GDP at current price			Annual average growth ratio(%)	GDP at 1993-constant price			Annual average growth ratio(%)
	1994	1995	1996		1994	1995	1996	
Agriculture, livestock & fisheries	17.29%	17.14%	16.53%	-2.21%	16.72%	16.13%	15.38%	-4.08%
Mining & quarrying	8.77%	8.84%	8.62%	-0.83%	9.38%	9.25%	9.07%	-1.69%
Crude petroleum and natural gas	6.04%	5.59%	5.28%	-6.47%	6.69%	6.18%	5.81%	-6.83%
Others	2.73%	3.25%	3.34%	10.62%	2.69%	3.07%	3.26%	10.06%
Manufacturing	23.35%	24.13%	25.46%	4.41%	23.30%	23.86%	24.68%	2.90%
Oil and gas manufacturing	2.73%	2.51%	2.66%	-1.22%	2.90%	2.55%	2.62%	-4.85%
Petroleum refinery	1.53%	1.45%	1.57%	1.10%	1.56%	1.41%	1.52%	-1.49%
Liquified natural gas	1.20%	1.06%	1.10%	-4.27%	1.33%	1.14%	1.10%	-8.96%
Others	20.62%	21.62%	22.79%	5.14%	20.41%	21.31%	22.05%	3.95%
Electricity, gas & water	1.20%	1.24%	1.24%	1.68%	1.04%	1.12%	1.17%	5.77%
Construction	7.33%	7.58%	7.89%	3.75%	7.29%	7.61%	7.94%	4.38%
Wholesale & retail trade, restaurants & hotels	16.71%	16.64%	16.69%	-0.06%	16.78%	16.74%	16.74%	-0.12%
Transport & communication	7.16%	6.78%	6.56%	-4.28%	7.10%	7.12%	7.17%	0.45%
Banking, insurance & real estate	9.03%	8.69%	8.33%	-3.94%	8.71%	8.94%	9.02%	1.77%
Public services	5.95%	5.84%	5.59%	-3.13%	6.42%	6.01%	5.63%	-6.31%
Private services	3.23%	3.11%	3.11%	-1.89%	3.25%	3.22%	3.20%	-0.76%
Sub-total	100.00%	100.00%	100.00%		100.00%	100.00%	100.00%	

Source :

- 1) Statistical Year Book of Indonesia 1995, Biro Pusat Statistik Indonesia.
- 2) Statistical Year Book of Indonesia 1996, Biro Pusat Statistik Indonesia.

Table 2.4.9 GROSS REGIONAL DOMESTIC PRODUCT IN CENTRAL JAVA PROVINCE

A. Gross Regional Domestic Product (GRDP)								(Rp.10 ⁹)
Industry of origin	GRDP at current price			Annual* average growth ratio(%)	GRDP at 1993-constant price			Annual* average growth ratio(%)
	1994	1995	1996		1994	1995	1996	
Agriculture, livestock & fisheries	8,779	10,635	-	21.14%	7,782	8,211	-	5.51%
Mining & quarrying	452	527	-	16.59%	433	472	-	9.01%
Manufacturing	12,454	14,863	-	19.34%	11,322	12,260	-	8.28%
Electricity, gas & water	272	331	-	21.69%	265	304	-	14.72%
Construction	1,768	1,983	-	12.16%	1,689	1,808	-	7.05%
Wholesale & retail trade, restaurants & hotels	8,002	9,673	-	20.88%	7,581	8,364	-	10.33%
Transport & communication	1,454	1,722	-	18.43%	1,379	1,511	-	9.57%
Banking, insurance & real estate	1,965	2,275	-	15.78%	1,869	1,974	-	5.62%
Public and private services	4,158	4,614	-	10.97%	4,026	4,128	-	2.53%
GRDP in total	39,304	46,623	n.a.	18.62%	36,346	39,032	n.a.	7.39%
GRDP per capita (Rp.10 ³)	1,333	1,570	n.a.	17.81%	1,233	1,315	n.a.	6.66%
Population(10 ³)**	29,485	29,688	29,881	0.67%	29,485	29,688	29,881	0.67%

B. Share Rate of Gross Regional Domestic Product (% of GRDP)

Industry of origin	GRDP at current price			Annual* average growth ratio(%)	GRDP at 1993-constant price			Annual* average growth ratio(%)
	1994	1995	1996		1994	1995	1996	
Agriculture, livestock & fisheries	22.34%	22.81%	-	2.12%	21.41%	21.04%	-	-1.75%
Mining & quarrying	1.15%	1.13%	-	-1.71%	1.19%	1.21%	-	1.51%
Manufacturing	31.69%	31.88%	-	0.61%	31.15%	31.41%	-	0.83%
Electricity, gas & water	0.69%	0.71%	-	2.59%	0.73%	0.78%	-	6.82%
Construction	4.50%	4.25%	-	-5.45%	4.65%	4.63%	-	-0.32%
Wholesale & retail trade, restaurants & hotels	20.36%	20.75%	-	1.91%	20.86%	21.43%	-	2.74%
Transport & communication	3.70%	3.69%	-	-0.16%	3.79%	3.87%	-	2.03%
Banking, insurance & real estate	5.00%	4.88%	-	-2.40%	5.14%	5.06%	-	-1.65%
Public and private services	10.58%	9.90%	-	-6.45%	11.08%	10.58%	-	-4.52%
Sub-total	100.00%	100.00%	n.a.		100.00%	100.00%	n.a.	

Source : Central Java in Figures 1996 (Jawa Tengah Dalam Angka 1996), Kantor Statistik Provinsi Jawa Tengah.

(Note):

* Annual average growth ratio between 1994 and 1995.

** Based on population projection reported in the Statistical Year Book of Indonesia 1996.

- Lack of data.

n.a. : Not available.

Table 2.4.10 GROSS REGIONAL DOMESTIC PRODUCT IN SEMARANG CITY

A. Gross Regional Domestic Product (GRDP) (Rp.10³)								
Industry of origin	GRDP at current price			Annual [*] average growth ratio(%)	GRDP at 1993-constant price			Annual [*] average growth ratio(%)
	1994	1995	1996		1994	1995	1996	
Agriculture, livestock & fisheries	89	96	-	8.30%	76	77	-	2.14%
Mining & quarrying	10	12	-	21.45%	10	10	-	6.72%
Manufacturing	1,210	1,513	-	25.09%	1,150	1,348	-	17.20%
Electricity, gas & water	86	97	-	12.34%	82	86	-	5.28%
Construction	330	374	-	13.07%	317	342	-	7.75%
Wholesale & retail trade, restaurants & hotels	1,474	1,768	-	19.93%	1,353	1,516	-	12.00%
Transport & communication	289	333	-	15.41%	277	300	-	8.40%
Banking, insurance & real estate	366	436	-	19.25%	356	394	-	10.78%
Public and private services	607	679	-	11.79%	585	608	-	3.95%
GRDP in total	4,461	5,308	n.a.	18.99%	4,206	4,682	n.a.	11.32%
GRDP per capita (Rp.10 ³)	3,698	4,305	n.a.	16.43%	3,486	3,797	n.a.	8.92%
Population(10 ³) ^{**}	1,206	1,233	1,252	1.87%	1,206	1,233	1,252	1.87%

B. Share Rate of Gross Regional Domestic Product (% of GRDP)

Industry of origin	GRDP at current price			Annual [*] average growth ratio(%)	GRDP at 1993-constant price			Annual [*] average growth ratio(%)
	1994	1995	1996		1994	1995	1996	
Agriculture, livestock & fisheries	1.99%	1.81%	-	-8.99%	1.80%	1.65%	-	-8.24%
Mining & quarrying	0.22%	0.23%	-	2.06%	0.23%	0.22%	-	-4.13%
Manufacturing	27.12%	28.51%	-	5.13%	27.35%	28.79%	-	5.28%
Electricity, gas & water	1.93%	1.82%	-	-5.59%	1.95%	1.85%	-	-5.42%
Construction	7.41%	7.04%	-	-4.97%	7.54%	7.30%	-	-3.21%
Wholesale & retail trade, restaurants & hotels	33.05%	33.31%	-	0.79%	32.17%	32.37%	-	0.61%
Transport & communication	6.47%	6.28%	-	-3.01%	6.58%	6.41%	-	-2.62%
Banking, insurance & real estate	8.20%	8.22%	-	0.22%	8.47%	8.42%	-	-0.49%
Public and private services	13.61%	12.79%	-	-6.05%	13.91%	12.98%	-	-6.62%
Sub-total	100.00%	100.00%	n.a.		100.00%	100.00%	n.a.	

Source : Semarang Municipality in Figures 1996 (Kotamadya Daerah Tingkat II Semarang Dalam Angka 1996), Kantor Statistik Kotmadya Semarang.

(Note) :

* Annual average growth ratio between 1994 and 1995.

** Based on population projection reported in the Statistical Year Book of Indonesia 1996.

- Lack of data.

n.a. : Not available.

Table 2.4.11 GOVERNMENT FINANCE OF INDONESIA IN BUDGET

Items	1993/94 ¹⁾		1994/95 ¹⁾		1995/96 ¹⁾		1996/97 ¹⁾		1997/98 ²⁾		1998/99 ²⁾	
	Amount	Amount	Change against previous year (%)	Amount	Change against previous year (%)	Amount	Change against previous year (%)	Amount	Change against previous year (%)	Amount	Change against previous year (%)	
REVENUE												
A. Domestic Revenues	52,769	59,738	13.21%	66,265	10.93%	78,203	18.02%	88,061	12.61%	114,966	30.55%	
I. Oil and natural gas	15,128	12,851	-15.05%	13,276	3.31%	14,120	6.36%	14,871	5.32%	34,582	132.55%	
Oil	-	-	n.a.	-	n.a.	-	n.a.	10,688	n.a.	24,061	125.12%	
Natural gas	-	-	n.a.	-	n.a.	-	n.a.	4,183	n.a.	10,521	151.52%	
II. Non-oil and non-gas	37,641	46,887	24.56%	52,989	13.01%	64,083	20.94%	73,190	14.21%	80,384	9.83%	
Income tax	14,848	18,843	26.91%	19,239	2.10%	23,708	23.23%	29,118	22.82%	25,618	-12.02%	
Value added tax on goods and services	11,682	13,239	13.33%	16,655	25.80%	21,788	30.82%	24,601	12.91%	27,872	13.30%	
Import duties	3,106	3,443	10.85%	3,543	2.90%	3,451	-2.60%	3,322	-3.74%	3,562	7.22%	
Excise duties	2,498	2,623	5.00%	3,299	25.77%	4,033	22.25%	4,436	9.99%	4,922	10.96%	
Export tax	30	16	-46.67%	45	181.25%	160	255.56%	160	-37.50%	115	15.00%	
Property tax	1,320	1,629	23.41%	1,923	18.05%	2,277	18.41%	2,505	10.01%	3,411	36.17%	
Other taxes	364	282	-22.53%	319	13.12%	570	78.68%	633	11.05%	540	-14.69%	
Non-tax revenues	3,583	4,293	19.82%	6,491	51.20%	7,268	11.97%	8,226	13.18%	14,344	74.37%	
Fuel sales profit	210	2,519	1099.52%	1,475	-41.45%	828	-43.86%	249	-69.93%	0	-100.00%	
B. Development Revenues	9,553	10,012	4.80%	11,759	17.45%	12,413	5.56%	13,026	4.94%	32,255	147.62%	
I. Programs aid	427	0	-100.00%	0	0.00%	0	0.00%	0	0.00%	8,500	0.00%	
II. Projects aid	9,126	10,012	9.71%	11,759	17.45%	12,413	5.56%	13,026	4.94%	23,755	82.37%	
TOTAL	62,322	69,750	11.92%	78,024	11.86%	90,616	16.14%	101,087	11.56%	147,221	45.64%	
EXPENDITURE												
A. Routine Expenditures	37,095	42,351	14.17%	47,241	11.55%	56,114	18.78%	62,159	10.77%	97,829	57.39%	
I. Civil services	10,894	13,011	19.43%	15,347	17.95%	18,281	19.12%	21,192	15.92%	22,591	6.60%	
Salaries/pension	-	-	n.a.	-	n.a.	-	n.a.	17,048	n.a.	17,406	2.10%	
Rice allowance	-	-	n.a.	-	n.a.	-	n.a.	1,310	n.a.	1,588	21.22%	
Food allowance	-	-	n.a.	-	n.a.	-	n.a.	1,234	n.a.	1,484	20.26%	
Other benefits	-	-	n.a.	-	n.a.	-	n.a.	1,010	n.a.	1,155	14.36%	
Diplomat services	-	-	n.a.	-	n.a.	-	n.a.	590	n.a.	958	62.37%	
II. Goods procurement	2,980	3,750	25.84%	4,745	26.53%	6,589	38.86%	8,895	35.00%	10,909	22.64%	
Domestic	-	-	n.a.	-	n.a.	-	n.a.	8,478	n.a.	10,060	18.66%	
External	-	-	n.a.	-	n.a.	-	n.a.	417	n.a.	849	103.60%	
III. Subsidies to autonomous regions	6,029	7,095	17.68%	8,410	18.53%	10,012	19.05%	11,536	15.22%	12,284	6.48%	
Personnel expenses	-	-	n.a.	-	n.a.	-	n.a.	10,968	n.a.	11,601	5.77%	
Non-personnel expenses	-	-	n.a.	-	n.a.	-	n.a.	568	n.a.	683	20.25%	
IV. Debt service payment	16,712	17,970	7.53%	18,215	1.36%	20,227	11.05%	19,571	-3.24%	39,740	103.06%	
Domestic	-	-	n.a.	-	n.a.	-	n.a.	334	n.a.	1,940	480.84%	
External	-	-	n.a.	-	n.a.	-	n.a.	19,237	n.a.	37,800	96.50%	
V. Other expenditures	480	525	9.38%	524	-0.19%	1,005	91.79%	965	-3.98%	12,305	1175.13%	
Petroleum subsidies	-	-	n.a.	-	n.a.	-	n.a.	0	n.a.	7,453	100.00%	
Others	-	-	n.a.	-	n.a.	-	n.a.	965	n.a.	4,852	402.80%	
B. Development Expenditures	25,227	27,398	8.61%	30,783	12.35%	34,502	12.08%	38,928	12.83%	49,392	26.88%	
I. Rupiah financing	16,101	17,386	7.98%	19,024	9.42%	22,089	16.11%	25,902	17.26%	25,637	-1.02%	
II. Projects aid	9,126	10,012	9.71%	11,759	17.45%	12,413	5.56%	13,026	4.94%	23,755	82.37%	
TOTAL	62,322	69,749	11.92%	78,024	11.86%	90,616	16.14%	101,087	11.56%	147,221	45.64%	

Sources :

1) Statistical Year Book of Indonesia 1996, Biro Pusat Statistik Indonesia.

2) A newspaper "The Jakarta Post" dated January 24, 1998.

(Note) - Not clarified.

Table 2.4.12 GOVERNMENT FINANCE OF INDONESIA IN REALIZATION

Items	(Rp.10 ⁸)							
	1992/93 ¹⁾		1993/94 ²⁾		1994/95 ²⁾		1995/96 ²⁾	
	Amount	Amount	Change against previous year (%)	Amount	Change against previous year (%)	Amount	Change against previous year (%)	
REVENUE								
A. Domestic Revenues	48,863	56,113	14.84%	61,370	9.37%	71,558	16.60%	
I. Oil and natural gas	15,331	12,503	-18.45%	13,399	7.17%	14,849	10.82%	
II. Non-oil and non-gas	33,532	43,610	30.05%	47,971	10.00%	56,709	18.22%	
Income tax	12,516	14,759	17.92%	18,350	24.33%	20,520	11.83%	
Value added tax on goods and services	10,742	13,944	29.81%	14,087	1.03%	18,350	30.26%	
Import duties	3,223	3,555	10.30%	3,218	-9.48%	3,248	0.93%	
Excise duties	2,242	2,626	17.13%	3,001	14.28%	3,668	22.23%	
Export tax	9	14	55.56%	120	757.14%	201	67.50%	
Property tax	1,107	1,484	34.06%	1,632	9.97%	1,924	17.89%	
Other taxes	253	283	11.86%	303	7.07%	510	68.32%	
Non-tax revenues	3,440	5,904	71.63%	5,997	1.58%	7,801	30.08%	
Fuel sales profit	0	1,041	100.00%	1,263	21.33%	487	-61.44%	
B. Development Revenues	11,098	10,753	-3.11%	10,983	2.14%	11,170	1.70%	
I. Programs aid	517	0	-100.00%	0	0.00%	0	0.00%	
II. Projects aid	10,581	10,753	1.63%	10,983	2.14%	11,170	1.70%	
TOTAL	59,961	66,866	11.52%	72,353	8.21%	82,728	14.34%	
EXPENDITURE								
A. Routine Expenditures	33,605	40,290	19.89%	43,179	7.17%	52,541	21.68%	
I. Civil services	9,554	11,145	16.65%	13,069	17.26%	15,372	17.62%	
Salaries/pension	7,595	9,145	20.41%	10,490	14.71%	12,351	17.74%	
Rice allowance	891	834	-6.40%	1,038	24.46%	1,134	9.25%	
Food allowance	479	493	2.92%	801	62.47%	866	8.11%	
Other benefits	315	418	32.70%	396	-5.26%	572	44.44%	
Diplomat services	274	255	-6.93%	344	34.90%	449	30.52%	
II. Goods procurement	2,928	3,032	3.55%	4,296	41.69%	5,274	22.77%	
Domestic	2,681	2,848	6.23%	4,071	42.94%	4,969	22.06%	
External	247	184	-25.51%	225	22.28%	305	35.56%	
III. Subsidies to autonomous regions	5,383	6,909	28.35%	7,188	4.04%	8,344	16.08%	
Personnel expenses	4,996	6,575	31.61%	6,756	2.75%	7,863	16.39%	
Non-personnel expenses	387	334	-13.70%	432	29.34%	481	11.34%	
IV. Debt service payment	14,524	17,163	18.17%	18,422	7.34%	19,906	8.06%	
Domestic	275	121	-56.00%	204	68.60%	251	23.04%	
External	14,249	17,042	19.60%	18,218	6.90%	19,655	7.89%	
V. Other expenditures	1,216	2,041	67.85%	204	-90.00%	3,645	1686.76%	
B. Development Expenditures	26,906	28,428	5.66%	29,163	2.59%	29,812	2.23%	
I. Rupiah financing	16,325	17,675	8.27%	18,180	2.86%	18,642	2.54%	
II. Projects aid	10,581	10,753	1.63%	10,983	2.14%	11,170	1.70%	
TOTAL	60,511	68,718	13.56%	72,342	5.27%	82,353	13.84%	

Sources :

1) Statistical Year Book of Indonesia 1995, Biro Pusat Statistik Indonesia.

2) Statistical Year Book of Indonesia 1996, Biro Pusat Statistik Indonesia.

(Note) - Not clarified.

Table 2.4.13 REALIZED LOCAL GOVERNMENT FINANCE IN CENTRAL JAVA PROVINCE

Items	1992/93		1993/94		1994/95		1995/96	
	Amount	Change against previous year (%)	Amount	Change against previous year (%)	Amount	Change against previous year (%)	Amount	Change against previous year (%)
REVENUE								
1. Local Tax	92,939	27.18%	118,196	44.42%	170,703	44.42%	229,850	34.65%
Tax on motorized vehicles	45,499	11.90%	50,913	23.85%	63,056	23.85%	89,843	42.48%
Motor car transfer duties	44,986	43.70%	64,645	61.86%	104,632	61.86%	135,504	29.51%
Unpaid taxes	942	7.32%	1,011	2.57%	1,037	2.57%	1,538	48.31%
Fine taxes	1,512	7.61%	1,627	21.57%	1,978	21.57%	2,965	49.90%
2. Retribution Receipts	20,278	12.75%	22,863	28.37%	29,350	28.37%	36,206	23.36%
3. Receipts from local Government corporatio	3,251	-17.53%	2,681	10.59%	2,965	10.59%	3,163	6.68%
4. Receipts from official services	1,364	8.06%	1,474	2.92%	1,517	2.92%	1,637	7.91%
5. Other receipts	2,750	78.44%	4,907	15.55%	5,670	15.55%	9,002	58.77%
6. Tax shares	9,912	22.29%	12,121	13.40%	13,745	13.40%	17,414	26.69%
7. Non tax shares	3,536	76.19%	6,230	-14.35%	5,336	-14.35%	6,202	16.23%
TOTAL	134,030	25.70%	168,472	36.10%	229,286	36.10%	303,474	32.36%

Sources : Central Java in Figures 1996 (Jawa Tengah Dalam Angka 1996), Kantor Statistik Provinsi Jawa Tengah.

Table 2.4.14 REALIZED LOCAL GOVERNMENT FINANCE IN SEMARANG CITY

Items	(Rp.10 ⁶)						
	1992/93 ¹⁾	1993/94 ²⁾	Change against previous year (%)	1994/95 ³⁾	Change against previous year (%)	1995/96 ⁴⁾	Change against previous year (%)
REVENUE							
A. Local Revenue	56,403	69,076	22.47%	89,621	29.74%	113,896	27.09%
1. Remainder from the account in previous year at the begging of the year	1,075	1,620	50.70%	3,705	128.70%	6,731	81.67%
2. Local revenue	24,861	25,722	3.46%	33,460	30.08%	38,275	14.39%
Local tax	9,820	12,091	23.13%	17,254	42.70%	18,503	7.24%
Retribution	7,741	10,000	29.18%	13,694	36.94%	14,811	8.16%
Receipts from local Government corperation	512	472	-7.81%	368	-22.03%	914	148.37%
Receipts from official services	2,184	2,154	-1.37%	5	-99.77%	2,664	53180.00%
Other receipts	4,604	1,005	-78.17%	2,139	112.84%	1,382	-35.39%
3. Tax shares/non tax shares	5,231	7,687	46.95%	11,058	43.85%	13,674	23.66%
Tax shares	4,585	6,925	51.04%	10,182	47.03%	12,261	20.42%
Non tax shares	646	762	17.96%	876	14.96%	1,413	61.30%
4. Contribution and local aid	22,936	26,547	15.74%	31,863	20.02%	34,957	9.71%
Contribution	11,189	13,745	22.84%	14,912	8.49%	16,944	13.63%
Local aid	11,747	12,802	8.98%	16,951	32.41%	18,013	6.27%
5. Development aid	2,300	7,500	226.09%	9,535	27.13%	20,259	112.47%
Local Government development loans	2,300	7,500	226.09%	9,535	27.13%	20,259	112.47%
Other loans for local Government corperation	0	0	0.00%	0	0.00%	0	0.00%
B. Cash Adjustment and Subsidies	11,537	-	n.a.	17,170	n.a.	25,138	46.41%
TOTAL	67,940	69,076 *	n.a.	106,791	n.a.	139,034	30.19%
EXPENDITURE							
A. Routine Expenditures	29,556	35,717	20.85%	46,487	30.15%	81,403	75.11%
I. Civil services	12,137	14,106	16.22%	16,492	16.91%	18,102	9.76%
Salaries/pension	9,902	-	n.a.	14,200	n.a.	14,713	3.61%
Rice allowance	1,358	-	n.a.	1,456	n.a.	1,519	4.33%
Other benefits	877	-	n.a.	836	n.a.	1,870	123.68%
II. Goods procurement	4,369	5,718	30.88%	7,213	26.15%	9,117	26.40%
III. Operation and maintenance tost for facilities of local government	751	1,040	38.48%	1,443	38.75%	1,705	18.16%
IV. Official transportation cost	399	412	3.26%	419	1.70%	564	34.61%
V. Other expenditures	4,338	5,036	16.09%	7,680	52.50%	10,234	33.26%
VI. Payment of principals and interest for loans	2,638	3,183	20.66%	6,157	93.43%	7,936	28.89%
VII. Reward for subsidies	179	215	20.11%	225	4.65%	162	-28.00%
VIII. Pensionaries	15	15	0.00%	12	-20.00%	18	50.00%
IX. Other expenditures	1,236	1,746	41.26%	1,653	-5.33%	1,893	14.52%
X. Emergent cost	68	68	0.00%	25	-63.24%	15	-40.00%
XI. Operation and maintenance cost for facilities of the city area	3,426	4,178	21.95%	5,168	23.70%	31,657	512.56%
B. Development Expenditures	25,228	28,739	13.92%	36,409	26.69%	53,287	46.36%
C. Deposit and Repayment for Cash Adjustment and Subsidies	12,258	-	n.a.	17,239	n.a.	25,388	47.33%
TOTAL	67,042	64,456 *	n.a.	100,135	n.a.	134,690	34.51%

Sources :

- 1) Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1992, Statistic Office of Semarang City.
- 2) Original information from the Municipality of Semarang.
- 3) Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1994, Statistic Office of Semarang City.
- 4) Semarang City in Figures (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1996, Statistic Office of Semarang City.

(Note)

- * Not completed yet because of lack of data.
- Lack of data.

Table 2.4.16 INDUSTRIAL SITUATION FOR LARGE AND MEDIUM SCALE
MANUFACTURING IN CENTRAL JAVA PROVINCE

Kind of products	Year	Number of establishments	Persons engaged (persons)	Salaries & wages (Rp.10 ⁶)	Value of gross output (Rp.10 ⁶)	Input cost (Rp.10 ⁶)	Value added (Rp.10 ⁶)
Food, beverages & tobacco	1993 ¹⁾	929	125,343	147,245	3,224,970	1,546,486	1,516,284
	1994 ²⁾	967	117,785	159,705	4,317,637	1,617,224	2,357,459
	1995 ³⁾	959	120,577	192,801	12,537,845	9,391,721	2,809,512
	1996 ⁴⁾	1,008	129,741	195,446	3,643,538	2,463,157	891,184
Textile, waering apparel & leather products	1993 ¹⁾	723	153,494	157,417	2,780,287	1,975,681	697,032
	1994 ²⁾	717	160,732	187,573	3,579,757	2,681,946	874,769
	1995 ³⁾	722	180,930	230,004	3,589,531	2,504,729	1,060,059
	1996 ⁴⁾	724	194,002	297,564	6,683,862	3,274,982	3,344,489
Wood & wooden products	1993 ¹⁾	257	30,907	33,557	444,031	303,379	139,555
	1994 ²⁾	293	38,415	51,382	556,017	386,845	166,749
	1995 ³⁾	342	41,541	60,694	770,824	572,987	196,889
	1996 ⁴⁾	400	47,919	77,000	710,336	536,870	166,645
Paper & paper products	1993 ¹⁾	104	10,393	13,731	157,221	106,677	48,237
	1994 ²⁾	106	12,450	23,303	225,683	138,966	81,068
	1995 ³⁾	115	15,657	31,656	322,423	198,099	119,180
	1996 ⁴⁾	125	16,645	28,058	354,950	224,981	123,664
Chemical, petroleum, rubber & plastic products	1993 ¹⁾	211	48,230	65,585	676,262	501,523	163,113
	1994 ²⁾	221	45,911	65,500	945,405	579,837	354,678
	1995 ³⁾	228	45,703	77,635	942,472	658,207	267,206
	1996 ⁴⁾	233	48,877	88,644	1,063,756	750,508	288,461
Non metallic mineral products	1993 ¹⁾	274	17,908	20,362	261,353	145,042	105,030
	1994 ²⁾	297	18,720	43,460	273,600	135,580	133,810
	1995 ³⁾	301	18,643	44,027	300,190	135,041	157,609
	1996 ⁴⁾	301	19,023	30,476	273,291	140,892	117,012
Basic metal products	1993 ¹⁾	7	1,045	3,414	94,994	72,095	22,502
	1994 ²⁾	7	1,100	3,739	144,883	110,415	18,892
	1995 ³⁾	7	1,143	4,379	187,798	150,643	28,690
	1996 ⁴⁾	8	1,268	5,219	231,121	186,198	36,359
Fabricated metal products, machinery & transport equipment	1993 ¹⁾	162	16,285	30,086	315,501	217,731	91,914
	1994 ²⁾	162	16,922	30,952	360,494	245,615	106,713
	1995 ³⁾	169	19,648	43,898	548,025	367,751	161,732
	1996 ⁴⁾	185	20,362	45,265	611,244	424,907	163,647
Manufactured products not elsewhere specified	1993 ¹⁾	62	6,124	5,676	29,916	19,019	10,735
	1994 ²⁾	67	6,396	5,968	33,858	20,335	13,177
	1995 ³⁾	68	7,270	7,698	35,602	21,316	13,858
	1996 ⁴⁾	77	8,681	8,941	46,478	18,516	18,516
Total	1993 ¹⁾	2,729	409,729	483,073	7,983,636	4,889,632	4,889,632
	1994 ²⁾	2,837	418,431	571,579	10,437,334	5,916,771	410,316
	1995 ³⁾	2,911	451,112	692,792	19,234,711	14,000,495	4,814,735
	1996 ⁴⁾	3,061	486,518	776,614	13,618,577	8,029,749	5,149,979

Source : 1) Central Java in Figures 1993(Jawa Tengah Dalam Angka 1993), Kantor Statistik Jawa Tengah.
2) Central Java in Figures 1994(Jawa Tengah Dalam Angka 1994), Kantor Statistik Jawa Tengah.
3) Central Java in Figures 1995(Jawa Tengah Dalam Angka 1995), Kantor Statistik Jawa Tengah.
4) Central Java in Figures 1996(Jawa Tengah Dalam Angka 1996), Kantor Statistik Jawa Tengah.

Table 2.4.17 INDUSTRIAL SITUATION FOR LARGE AND MEDIUM SCALE MANUFACTURING IN SEMARANG CITY

Kind of products	Year	Number of establishments	Persons engaged (persons)	Salaries & wages (Rp. 10 ⁶)	Value of gross output (Rp. 10 ⁶)	Input cost (Rp. 10 ⁶)	Value added (Rp. 10 ⁶)
Food, beverages & tobacco	1991 ¹⁾	60	11,417	16,818	340,190	233,865	106,325
	1992 ¹⁾	61	11,346	17,330	424,051	300,642	123,409
	1993 ¹⁾	70	11,972	23,005	462,763	276,280	186,483
	1994 ²⁾	73	11,035	22,425	513,545	388,440	133,803
Textile, wearing apparel & leather products	1991 ¹⁾	44	15,950	12,427	217,986	163,986	54,530
	1992 ¹⁾	47	16,300	17,456	258,754	207,854	50,900
	1993 ¹⁾	49	17,458	20,530	245,331	193,452	51,839
	1994 ²⁾	48	17,620	26,868	376,071	256,541	139,987
Wood & wooden products	1991 ¹⁾	21	3,838	5,118	267,596	207,504	60,092
	1992 ¹⁾	22	5,518	8,053	50,582	39,543	11,039
	1993 ¹⁾	24	4,124	7,056	53,209	40,532	12,677
	1994 ²⁾	22	4,201	7,621	51,638	36,315	19,159
Paper & paper products	1991 ¹⁾	28	2,246	3,468	77,096	29,593	47,503
	1992 ¹⁾	30	2,772	4,437	49,294	23,246	26,048
	1993 ¹⁾	35	3,038	4,901	47,729	31,528	16,201
	1994 ²⁾	38	3,084	5,976	55,048	41,226	15,329
Chemical, petroleum, rubber & plastic products	1991 ¹⁾	46	11,711	22,106	261,107	212,394	48,712
	1992 ¹⁾	49	13,240	20,550	362,375	264,586	97,790
	1993 ¹⁾	52	14,735	31,282	385,463	311,357	74,107
	1994 ²⁾	55	16,160	30,068	440,514	366,050	92,229
Non metallic mineral products	1991 ¹⁾	9	5,561	5,791	45,199	37,699	7,501
	1992 ¹⁾	9	5,726	7,135	48,261	37,146	11,116
	1993 ¹⁾	10	5,643	8,170	50,249	39,156	11,094
	1994 ²⁾	10	5,701	8,051	56,258	41,054	16,439
Basic metal products	1991 ¹⁾	4	986	3,024	138,997	101,975	37,022
	1992 ¹⁾	4	983	3,565	127,516	115,186	12,329
	1993 ¹⁾	4	993	4,192	180,923	145,097	35,826
	1994 ²⁾	4	1,030	4,662	210,019	174,530	35,545
Fabricated metal products, machinery & transport equipment	1991 ¹⁾	35	4,716	8,072	179,579	132,347	47,232
	1992 ¹⁾	34	5,011	9,043	216,173	160,304	55,869
	1993 ¹⁾	35	5,403	11,958	229,505	185,862	43,543
	1994 ²⁾	35	5,668	14,387	287,302	234,978	57,888
Manufactured products not elsewhere specified	1991 ¹⁾	4	364	516	2,967	2,306	662
	1992 ¹⁾	3	269	453	2,062	1,559	503
	1993 ¹⁾	6	554	943	7,815	6,316	1,499
	1994 ²⁾	6	599	657	9,085	5,934	3,492
Total	1991 ¹⁾	251	56,789	77,340	1,530,717	1,121,669	409,579
	1992 ¹⁾	259	61,165	88,022	1,539,068	1,150,066	389,003
	1993 ¹⁾	285	63,920	112,037	1,662,987	1,229,580	433,269
	1994 ²⁾	291	65,098	120,715	1,999,480	1,545,071	513,871

Source : 1) Statistics of Large and Medium Scale Manufacturing (Statistik Industri Besar - Sedang) for 1992-1993, BAPPEDA Kotamadya Dati II Semarang in cooperation with Kantor Statistik Kotamadya Semarang.
2) Statistics of Large and Medium Scale Manufacturing (Statistik Industri Besar - Sedang) for 1994-1995, BAPPEDA Kotamadya Dati II Semarang in cooperation with Kantor Statistik Kotamadya Semarang.

Table 2.4.18 ACTUAL WORKING POPULATION BY DISTRICTS AND WORKING GROUP IN SEMARANG CITY

As of 1994

Kind of products	Classification by manufacturing scale													Total		
	Mijen	Gunung- pali	Semarang Selatan	Barayu- manik	Gajah- mungkur	Gemik	Pedur- ungan	Gayam- sari	Semarang Timur	Candi- sari	Tembalang	Semarang Utara	Semarang Tengah		Semarang Barat	Ngaliyan
Food, beverages & tobacco	Large/medium ¹⁾	0	0	296	414	0	3,515	257	96	491	0	1,057	1,018	1,075	2,385	421
	Small/HH(formal) ²⁾	74	15	129	255	70	524	325	160	488	242	347	621	625	110	81
	Small/HH(informal) ²⁾	151	174	72	0	0	0	0	55	0	98	429	53	869	0	127
Total	225	189	497	669	70	4,039	582	311	979	340	4	1,533	1,833	2,569	2,505	629
Textile, wearing apparel & leather products	Large/medium ¹⁾	0	0	0	105	0	3,248	2,636	654	399	0	2,659	441	5,354	1,132	992
	Small/HH(formal) ²⁾	0	0	16	46	47	88	20	14	133	0	176	356	159	0	0
	Small/HH(informal) ²⁾	47	28	0	68	24	28	0	0	34	0	0	272	32	0	0
Total	47	28	16	219	71	3,364	2,656	668	566	0	62	2,835	1,069	5,545	1,132	992
Wood & wooden products	Large/medium ¹⁾	0	0	0	0	0	1,460	822	0	0	0	887	0	0	1,032	0
	Small/HH(formal) ²⁾	0	51	127	74	48	285	46	11	184	38	149	396	292	10	31
	Small/HH(informal) ²⁾	80	101	0	0	0	0	0	0	0	0	128	0	0	0	0
Total	80	152	127	74	48	1,745	868	11	184	38	1,164	396	292	10	31	6,241
Paper & paper products	Large/medium ¹⁾	0	0	297	0	0	1,206	0	0	0	0	176	192	624	589	0
	Small/HH(formal) ²⁾	0	14	56	30	35	170	96	11	122	13	77	252	142	0	12
	Small/HH(informal) ²⁾	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	14	353	30	35	1,376	96	11	122	13	253	444	766	589	12	4,114
Chemical, petroleum, rubber & plastic products	Large/medium ¹⁾	0	0	0	3,847	0	1,568	517	510	1,660	0	492	1,020	4,391	1,507	648
	Small/HH(formal) ²⁾	8	0	89	12	14	723	118	42	165	61	234	148	272	7	61
	Small/HH(informal) ²⁾	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	0	89	3,859	14	2,291	635	552	1,825	61	226	1,168	1,468	4,663	1,514	709
Non metallic mineral products	Large/medium ¹⁾	0	0	0	1,544	0	0	0	0	0	0	0	0	166	3,991	0
	Small/HH(formal) ²⁾	0	0	5	0	0	0	7	0	17	0	0	0	0	0	0
	Small/HH(informal) ²⁾	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	5	1,544	0	0	7	0	17	0	0	0	0	166	3,991	0
Basic metal products	Large/medium ¹⁾	0	0	0	0	0	1,030	0	0	0	0	0	0	0	0	0
	Small/HH(formal) ²⁾	0	0	0	0	0	13	10	0	0	0	0	0	0	0	0
	Small/HH(informal) ²⁾	0	0	0	0	0	0	0	0	350	0	84	239	106	0	0
Total	0	0	0	0	0	1,043	10	0	350	0	84	239	106	0	0	1,832
Fabricated metal products, machinery & transportation equipment	Large/medium ¹⁾	0	0	0	1,466	0	1,904	315	0	312	0	828	0	366	477	0
	Small/HH(formal) ²⁾	8	14	21	45	2	395	23	24	203	40	163	191	53	48	0
	Small/HH(informal) ²⁾	70	0	0	0	0	0	0	0	0	0	270	0	179	0	0
Total	78	14	21	1,511	2	2,299	338	24	515	40	1,261	191	598	525	0	7,417
Manufactured products not elsewhere specified	Large/medium ¹⁾	0	0	0	0	0	83	0	0	0	0	0	0	0	0	0
	Small/HH(formal) ²⁾	59	79	314	209	146	1,729	351	97	943	176	799	1,674	1,104	65	113
	Small/HH(informal) ²⁾	157	130	48	0	0	275	80	0	0	60	0	0	0	0	191
Total	216	209	362	209	146	2,087	431	97	943	176	799	1,674	1,104	65	320	9,443
Total	Large/medium	0	0	593	7,376	0	14,014	4,547	1,260	2,862	0	6,059	2,671	11,976	11,123	2,577
	Small/HH(formal)	149	173	757	671	362	3,927	996	348	2,253	570	49	3,638	2,647	240	298
	Small/HH(informal)	505	433	120	68	24	303	80	55	384	98	206	564	1,186	0	318
Total	654	606	1,470	8,115	386	18,244	5,623	1,663	5,501	668	255	8,871	6,873	15,809	11,363	3,193

Source: 1) Statistik Industri Besar - Sedang Tahun 1994-1995, BAPPEDA Kotamadya Dati II Semarang in cooperation with Kantor Statistik Kotaamadya Semarang.
2) Information from Kantor Statistik Kotaamadya Semarang.
(Note) - Large/medium scale manufacturings are more than Rp. 50,000,000 in capital, those of small scale (formal) are more than Rp. 5,000,000, and those of small scale (informal) are less than Rp. 5,000,000 both in their capital.

Table 2.4.19 INFRASTRUCTURE IN INDONESIA

Kind of infrastructure	1991	1992	1993	1994	1995	1996	Annual increasing ratio (%)
Road Length (km)							
By level of Government	319,370	325,441	344,892	356,878	372,414	385,836	3.85%
State level road	22,239	22,119	23,483	26,351	28,006	28,006	4.72%
Provincial level road	43,245	43,730	46,231	49,693	51,257	54,025	4.55%
Regency level road	253,886	259,592	275,178	280,834	293,151	303,805	3.66%
By type of surface	319,370	325,441	344,892	356,878	372,414	385,836	3.85%
Asphalted	142,053	150,930	159,329	164,866	175,358	181,745	5.05%
Non asphalted	146,157	146,239	155,119	159,220	166,040	173,465	3.49%
Others	31,160	28,272	30,444	32,792	31,016	30,626	-0.35%
Railway Transportation							
Passenger traffic							
Java and Madura							
Passenger embarked (10 ⁶ persons)	60	71	96	114	138	149	19.95%
Pax km (10 ⁶ km)	9,281	9,994	11,847	13,166	14,125	15,218	10.40%
North Sumatra							
Passenger embarked (10 ³ persons)	1,311	1,215	1,209	1,038	1,405	1,442	1.92%
Pax km (10 ⁶ km)	199	208	195	193	169	221	2.12%
West Sumatra							
Passenger embarked (10 ³ persons)	8	9	21	21	28	30	30.26%
Pax km (10 ⁶ km)	0.3	0.5	1.1	1.1	1.4	1.5	37.97%
South Sumatra							
Passenger embarked (10 ³ persons)	909	833	970	807	1,092	1,126	4.37%
Pax km (10 ⁶ km)	278	269	336	274	358	372	6.00%
Whole Indonesia							
Passenger embarked (10 ⁶ persons)	62	73	98	116	141	152	19.49%
Pax km (10 ⁶ km)	9,758	10,472	12,379	13,634	14,653	15,813	10.13%
Freight transportation							
Java and Madura							
Volume of cargo loaded (10 ³ tons)	4,900	5,450	6,069	6,415	6,100	6,734	6.57%
Gross kilometer tonnage (10 ⁶ tons.km)	1,095	1,162	1,302	1,379	1,373	1,435	5.56%
Sumatra							
Volume of cargo loaded (10 ³ tons)	8,826	9,538	9,621	9,953	10,768	11,324	5.11%
Gross kilometer tonnage (10 ⁶ tons.km)	2,375	2,616	2,653	2,475	2,799	2,926	4.26%
Whole Indonesia							
Volume of cargo loaded (10 ³ tons)	13,726	14,988	15,690	16,368	16,868	18,058	5.64%
Gross kilometer tonnage (10 ⁶ tons.km)	3,470	3,778	3,955	3,854	4,172	4,361	4.68%
Sea Transport							
Volume of Loaded and Unloaded of Inter and International Sea Borne Cargo (10³ tons)							
Loaded	-	-	-	-	310,246	-	-
Unloaded	-	-	-	-	208,871	-	-
Total handling volume	-	-	-	-	519,117	-	-
Air Transport							
Number of aircraft							
By ownership							
Government	835	867	874	895	910	-	2.17%
Fixed wing	320	327	326	326	330	-	0.77%
Rotary wing	276	283	289	289	298	-	1.94%
Private	44	44	37	37	32	-	-7.65%
Fixed wing	515	540	548	569	580	-	3.02%
Rotary wing	348	369	381	400	418	-	4.69%
Rotary wing	167	171	167	169	162	-	-0.76%
By classification of operation							
Scheduled operation	835	867	875	895	910	-	2.17%
Non scheduled operation	223	257	274	281	286	-	6.42%
Supplementary airline operation (air taxi)	146	126	120	123	125	-	-3.81%
Aerial work	57	60	61	61	62	-	2.12%
General aviation	6	6	18	18	18	-	31.61%
General aviation	403	418	402	412	419	-	0.98%
Postal Facilities							
General post office	322	315	317	317	315	315	-0.44%
Supplementary post office	694	712	755	803	826	834	3.74%
Auxiliary post office	2,422	2,992	3,377	3,385	3,384	3,393	6.97%
Mailing house	1,404	1,713	1,411	1,560	1,709	1,838	5.53%
Total	4,842	5,732	5,860	6,065	6,234	6,380	5.67%

Source : Statistical Year Book of Indonesia 1996, Biro Pusat Statistik Indonesia.

Table 2.4.20 INFRASTRUCTURE IN CENTRAL JAVA PROVINCE

Kind of infrastructure	1991	1992	1993	1994	1995	Annual increasing ratio (%)
Road Length (km)						
By level of Government	21,674	22,350	22,325	21,702	24,265	2.86%
State level road	1,010	1,010	1,010	1,010	1,206	4.53%
Provincial level road	1,848	1,818	1,848	1,848	2,580	8.70%
Regency level road	16,729	17,396	17,380	18,648	18,311	2.28%
Municipality level road	2,087	2,126	2,087	196	2,168	0.96%
By type of surface	21,674	22,350	23,325	23,702	24,265	2.86%
Asphalted	15,466	16,480	17,199	17,729	10,879	-8.42%
Gravel	3,155	2,964	3,049	2,883	7,909	25.83%
Earth	2,386	2,150	2,418	2,456	3,990	13.72%
Others	667	756	659	634	1,487	22.19%
Bridges						
State level bridges	2,133	2,273	1,874	3,025	3,081	9.63%
Provincial level bridges	635	933	751	1,137	1,007	12.22%
Provincial level bridges	1,498	1,340	1,123	1,888	2,074	8.47%
Railway Transportation						
Passenger traffic (10 ³ persons)	6,993	7,203	7,777	8,497	9,182	7.05%
Freight transportation (10 ³ tons)	1,083	1,351	1,351	1,753	1,665	11.35%
Sea Transport						
Number of ships arrived	5,831	6,207	8,045	7,080	8,018	8.29%
Loaded (10 ³ ton)	10,440	11,024	10,917	9,987	10,165	-0.66%
Unloaded (10 ³ ton)	18,280	19,001	19,682	18,444	19,760	1.96%
Air Transport						
Number of aircraft						
Arrival	7,753	10,939	9,489	10,602	11,623	10.65%
Departure	7,757	10,926	10,643	10,635	11,648	10.70%
Number of passenger						
Arrival	250,888	361,391	376,962	471,036	537,905	21.01%
Departure	349,369	363,348	367,902	455,979	520,265	10.47%

Source : Statistical Year Book of Central Java 1992, 1993, 1994, 1995 and 1996, Kantor Statistik Jawa Tengah.

Table 2.4.21 INFRASTRUCTURE IN SEMARANG CITY

Kind of infrastructure	1991	1992	1993	1994	1995	1996	Annual increasing ratio (%)
Road Length (km)							
By type of surface	1,012	954	989	1,196	1,013	1,013	0.02%
Asphalted	684	887	867	962	964	967	8.95%
Gravel	229	48	44	11	11	10	-53.51%
Earth	99	19	79	224	15	13	-38.06%
Others	0	0	0	0	24	22	100.00%
Railway Transportation							
Passenger traffic (10 ³ persons)	411	401	534	794	571	492	3.68%
Freight transportation (10 ³ tons)	325	227	522	681	612	613	13.54%
Sea Transport (At Tanjung Mas Sea Port)							
Number of ships arrived	3,399	3,661	4,033	3,146	3,531	3,321	-0.46%
Loaded (ton)	944,643	1,059,512	1,081,657	1,046,054	1,067,070	1,328,017	7.05%
Unloaded (ton)	3,955,246	4,227,372	4,533,459	4,255,622	4,816,357	2,193,078	-11.13%
Air Transport (At Achmad Yani Airport in Semarang)							
Number of aircraft							
Arrival	5,618	7,996	7,183	8,396	8,740	9,902	12.00%
Departure	5,621	7,997	7,239	8,418	8,725	9,894	11.97%
Number of passenger							
Arrival	156,884	254,886	273,248	350,823	396,804	430,379	22.36%
Departure	254,550	248,647	259,009	333,331	380,063	414,391	10.24%
Facilities for Telex and Telegraph							
Telegraph office	-	1	1	1	1	1	0.00%
General Telex office	-	98	104	128	148	183	16.90%
Capacity of telex connection (line)	-	800	800	1,000	1,000	1,000	5.74%
Actual number of connection	-	650	670	668	671	665	0.57%
Telephone Facilities							
Automatic connection office	-	8	8	10	18	22	28.78%
Capacity (line)	-	67,343	74,187	85,349	115,841	154,801	23.13%
Actual connection (line)	-	46,716	53,766	73,601	100,294	109,540	23.74%
Manual operation office	-	2	2	2	0	0	-100.00%
Capacity (line)	-	800	800	980	0	0	-100.00%
Actual connection (line)	-	478	763	993	0	0	-100.00%
Public telephone facilities (booth)	-	-	-	1,481	1,957	1,924	13.98%

Source : Semarang City in Figure (Kotamadya Daerah Tingkat II Semarang Dalam Angka) 1992, 1993, 1994, 1995 and 1996, Kantor Statistik Kotamadya Semarang.

Table 2.4.22 FAMILY ECONOMY IN SEMARANG CITY

				(Amount/HH in Rp.)
Item				Whole Semarang (Rp./Month)
Back Ground Data (Based on Table 2.2.3 in this Report)				
Population in Semarang as of 1996				1,251,845
Economic active population in Semarang as of 1996				822,176
Share rate of economic active population in Semarang as of 1996				65.68%
Number of Households in Semarang as of 1996				278,372
Number of economic active persons per HH in Semarang				1.94
Item	Whole ¹⁾ Semarang as of 1996	Whole ²⁾ Semarang as of 1997	Study area ³⁾ in Semarang as of Jan. 1998	
Average income				810,897
Average expenditure (case A)				1,263,724
Average expenditure (case B)	637,470	687,588	1,284,578	
Food	232,196	254,162	308,974	
Expenditure for non-food				337,852
Housing : Average floor area (m ²)				98
Average land area for housing (m ²)				150
Capital investment				33,230,769
Monthly repayment amount				
1) Repayment period of (case A):	25		506,544	
2) Repayment period of (case B):	20	202,825 *	216,495 *	527,399
Clothing	38,052	39,871	41,923	
Fuel & light	-	-	77,885	
Electricity	-	-	34,038	
Water	-	-	16,474	
Transport & communication	67,708	72,820	134,615	
Education and recreation	61,894	66,567	127,692	
Education	-	-	111,026	
Recreation	-	-	16,667	
Expenses for medical care and welfare	34,795	37,673	49,615	
Laundry & cleaning	-	-	29,231	
Miscellaneous	-	-	20,385	
Amount of losses caused by inundation	-	-	139,744	

Source :

- 1) Survey on Living Expenditure in Central Java Province (Survei Biaya Hidup 1996 di Jawa Tengah), Kanor Statistik Propinsi Jawa Tengah.
- 2) Modified the above data by using price indexes shown in Table 2.6.1.
- 3) Made by JICA Study Team in February 1998.

(Note)

*: Including the cost for fuel, light and water.

Table 2.4.23 CONSUMERS' PRICE INDEX IN INDONESIA AND IN SEMARANG CITY

(Fiscal year 1988/89 = 100)

Group/Sub group	Composite consumer price indexes of 27 municipalities in whole Indonesia at the end of each calendar year				Consumer price indexes of Semarang Municipality at the end of each calendar year				Average annual increasing ratio(%)**			
	1993 ¹⁾	1994 ²⁾	1995 ³⁾	1996 ³⁾	1993 ¹⁾	1994 ²⁾	1995 ³⁾	1996 ³⁾				
	Average annual increasing ratio(%)*				Average annual increasing ratio(%)**							
General	145.07	157.42	172.27	185.92	134.46	147.52	157.38	171.21	178.82	194.12	7.62%	
Food	136.27	151.08	171.06	187.38	139.08	147.40	164.52	183.93	188.42	218.58	9.46%	
Cereals, cassava and their products	120.56	139.97	167.89	179.67	125.73	132.28				214.13	11.24%	
Meat and its products	161.56	180.34	205.96	225.92	169.60	174.07				250.21	8.09%	
Fresh fish	142.35	159.99	173.97	202.09	140.74	158.71				280.41	14.78%	
Preserved fish	134.12	148.80	162.10	188.63	129.14	141.63				177.17	6.53%	
Eggs, milk and their products	148.56	154.01	161.12	178.56	148.40	151.20				196.16	5.74%	
Vegetables	137.20	165.16	179.34	204.91	122.26	151.53				302.99	19.90%	
Beans and nuts	135.26	147.51	152.27	173.20	157.02	177.38				197.76	4.72%	
Fruits	146.14	160.47	192.67	211.17	130.59	154.25	186.26			308.16	14.84%	
Spices	141.97	150.05	158.25	191.41	10.47%	125.53	125.22			214.11	11.27%	
Fats and oils	126.61	140.41	179.49	187.04	13.89%	116.49	120.72			166.16	7.36%	
Soft drinks	144.12	154.64	176.53	182.01	8.09%	150.21	157.55			229.90	8.88%	
Prepared food and other food items	131.93	141.17	157.03	167.49	8.28%	140.08	142.68			188.06	6.07%	
Housing	154.88	170.09	185.12	194.81	7.95%	133.19	147.91	154.93	162.98	171.04	181.40	6.37%
Costs for housing	165.58	188.30	208.59	220.75	10.06%	131.91	151.03			182.79	6.74%	
Fuel, electricity and water	152.80	160.14	169.21	175.01	4.63%	134.17	153.24			174.29	5.37%	
Household equipment	131.33	136.41	143.29	148.17	4.10%	122.48	124.49			170.39	6.83%	
Household operation	131.04	136.64	143.96	154.86	5.73%	137.52	143.47			190.12	6.69%	
Clothing	135.74	144.53	153.81	164.04	6.52%	124.41	133.57	139.99	148.26	152.02	157.13	4.78%
Clothing for men	139.24	147.89	156.05	167.09	6.27%	138.09	145.33			167.72	3.96%	
Clothing for women	136.46	143.41	151.51	159.12	5.25%	122.40	131.09			149.19	4.04%	
Clothing for children	151.52	163.31	179.21	193.95	8.58%	122.80	134.62			157.63	5.12%	
Personal effects	111.61	120.45	126.38	134.52	6.42%	107.59	116.87			152.60	7.24%	
Miscellaneous	150.71	158.31	168.40	184.60	6.99%	133.81	152.19	157.45	171.90	183.99	190.20	7.29%
Medical care	137.59	157.28	173.67	191.02	11.56%	127.43	142.64			189.60	8.27%	
Personal care and cosmetics	136.60	145.86	156.43	165.43	6.59%	133.96	138.20			164.78	4.23%	
Education	144.95	159.65	177.49	196.25	10.63%	125.76	143.74			180.93	7.55%	
Recreation and sports	137.27	142.88	158.29	169.72	7.33%	129.96	147.61			185.11	7.33%	
Transportation	160.20	162.02	165.66	182.64	4.47%	139.13	163.58			200.18	7.55%	
Tobacco and alcoholic drinks	171.74	174.91	184.00	202.70	5.68%	149.78	157.99			203.59	6.33%	

Source:

1) Statistical Year Book of Indonesia 1995, Biro Pusat Statistik Indonesia.

2) Statistical Year Book of Indonesia 1996, Biro Pusat Statistik Indonesia.

3) Economic Indicator of Semarang City (Indikator Ekonomi Kotamadya Semarang) 1992, Kantor Statistik Kotamadya Semarang.

4) Economic Indicator (Indikator Ekonomi) November 1993, Kantor Statistik Kotamadya Semarang.

4) Economic Indicator (Indikator Ekonomi) November 1997, Kantor Statistik Kotamadya Semarang.

(Note)

* : Annual average increasing ratio from 1993 to 1996.

** : Annual average increasing ratio from the end of 1992 to November 1997.

Table 2.4.24 EXCHANGE RATE

(Unit : Rp.)

Year/month	US Dollar (Per US\$100)	Japanese Yen (¥100)
	Mid.	Mid.
1992	2,062	1,658
1993	2,110	1,891
1994	2,200	2,206
1995	2,308	2,246
1996	2,383	2,058
1997	2,971	2,437
1998		
January	10,375	8,305
February	8,750	6,895
March	8,325	6,316
April	7,970	6,034
May	10,525	7,580
June	14,900	10,584
July	13,000	9,048
August	11,075	7,824
September	10,700	7,921
October	7,550	6,547
November	7,300	5,904
December	8,025	7,000
1998		
January	8,950	7,698
February	8,730	7,314
March	8,685	7,205
April	8,260	6,924
May	8,105	6,674
June	6,726	5,568
July	6,875	5,968
August	7,565	6,829
September	8,386	7,834
October	6,900	6,578
November	7,425	7,276
Dec. III	7,085	6,987
Dec. IV	7,100	6,947

Source : Bank Indonesia.