4.5 Analysis of emission from stationary sources

4.5.2 Estimation of emission quantities in GTA

4.5.2.1 Energy supply/demand balance in total Iran

4.5.2.2 Energy demand in GTA

4.5.2.3 Energy demand in GTA districts

4.5.2.4 Projection of emission factors for pollutants

4.5.2.5 Emission quantities of pollutants in GTA

4.5.2 Estimation of emission quantities in GTA

4.5.2.1 Energy supply/demand balance in total Iran (Table 4.5.2.1-1)

Table 4.5.2.1-1 is projected through the following procedure.

(1) The energy supply/demand data in the dark cells.

The data in the dark cells in Table 4.5.2.1-1(see Table 4.5.2.1-1A for further detailed data sources) are either collected or calculated mostly based on the energy balance tables of total Iran (1994) prepared by MOE, although the tables cannot always fulfill all sectorial data requirements described in the following. It is believed, however, that these data in Table 4.5.2.1-1 are still reliable at least in the order of magnitude to meet the objectives of this report.

(2) Energy consumption in the manufacturing sector

Since the breakdown of energy consumption of the manufacturing sectors (not dark cells for rows 137-145) are not available, they are provisionally projected in the following manner:

1) Columns of O, R, S, T, Y, Z and AD (fluid fuel and electricity)

The figures of row 136 of the total manufacturing sector crossing the above columns are collected from the energy balance sheet of Iran and are proportionally allocated based on the energy consumption of large industries (>10 personnel) in Table 4.5.2.1-2(2). Table 4.5.2.1-2(1) is the original table for Table 4.5.2.1-2(2), differentiated only by indicators of the units.

2) Columns of J, K and X (solid fuel)

They are similarly allocated provisionally by the corresponding energy consumption ratios in Japan, since data in large industries (>10 personnel) in Iran are currently not available, based on the assumption that the consumption pattern of solid fuels in the corresponding industrial sectors in Iran is similar to Japan.

(3) Energy consumption in the transport sector

The cells of O152, O153, Q152, Q153, S152 and S153 are also allocated by the corresponding energy consumption ratios in Japan.

4.5.2.2 Energy demand in GTA (Table 4.5.2.2-1)

Table 4.5.2.2-1 is produced in the following procedure:

For projecting the energy demand in the manufacturing sectors of GTA, available data common for both total Iran and GTA are ①the number of large workshops (> 10 personnel) and ②their energy consumption of fluid fuel (not solid), both of which are sourced from ISC. Accordingly, in the allocation of fuel consumption (from total Iran to GTA) for items under "Total Manufacturing", the number of industrial units (> 10 personnel) are used, on the assumption that unit fuel consumption per company (>10 personnel) be almost the same in principle between total Iran and GTA.
The projecting procedure is described below, although the basic procedure is the same with the case of total Iran.

(1) Firstly, unit energy consumption in large industries (>10 personnel) in Iran is calculated as shown in Table 4.5.2.2-2 based on Table 4.5.2.1-2(2).

(2) Secondly, energy consumption in large industries (>10 personnel) in GTA is calculated as shown in Table 4.5.2.2-3 based on the unit consumption of Table 4.5.2.2-2 and the unit number of the companies of GTA in Table 4.5.2.2-3.

(3) Thirdly, based on the energy consumption of small industries employing personnel below 6 (Table 4.5.2.2-4) and from 6 to 9 (Table 4.5.2.2-5), energy consumption of all small industries($1 \leq$personnel≤ 10) is calculated as shown in Table 4.5.2.2-6.
These tables show that the share of small size industries (≤ 10 personnel) in the energy consumption of the manufacturing sector is about 33%.

(4) Fourthly, sectorial all energy consumption for the total manufacturing sectors (≥ 1 personnel) in GTA is calculated as shown in Table 4.5.2.2-7 based on Table 4.5.2.2-3 and Table 4.5.2.2-6, except natural gas for which total manufacturing amount (cell:Z77) is adjusted by the actual data supplied by AQCC.
The following shows the brief calculation procedure for Table 4.5.2.2-1.
1) Columns of O, R, S, T, Y, Z and AC (fluid fuel and electricity)

The same procedure with Table 4.5.2.1-1 in the case of total Iran is applied.

2) Columns of J, K and X (solid fuel)

Cells of J77, K77 and X77 are projected proportionally by the total number of companies (10<personnel) in GTA/Iran, then allocated by the corresponding energy consumption ratios in Japan as in the case of total Iran.

(5) All the other data indicated by the dark cells (see Table 4.5.2.2-1A) for General Service & Household, Transport and Energy Conversion are collected from the energy balance tables of MOE and by questionnaires.

4.5.2.3 Energy demand in GTA districts (1994)

For allocation of fuel consumption from GTA to GTA districts, the number of industrial and commercial/household units shown in Table 4.5.2.3-4 is used. Questionnaires for data collection (see Table 4.5.2.3-7) were delivered to 550 workshops excluding factories of military service and about 190 responses were recovered. About 40 critical units among the recovered 190 were interviewed by AQCC engineers for further verification. The full compilation of responses and summary sheet for the companies having more than 100 employee are tabulated in Tables 4.5.2.3-1 and 2. The data in these tables are incorporated in the projection of district-wise fuel consumption as described below.

(1) The size-wise energy balance of total manufacturing and energy balance of general service & household in GTA (1994)

Table 4.5.2.3-3 is prepared as a result of the combination of Table 4.5.2.2-1 and Table 4.5.2.3-2.

(2) Number of sector-wise units in GTA (1994) (Table 4.5.2.3-4)

Table 4.5.2.3-4 is sourced by AQCC mainly on the basis of the data compiled by the Iran Statistical Center (ISC).

(3) Fuel consumption of district-wise non-big units in GTA (Table 4.5.2.3-5)

Since the information on the district-wise fuel consumption of big units (employee>100 in the questionnaire) in GTA is partly available by the recovered questionnaires, district-wise fuel consumption of non-big units (other than big units in the questionnaires) in GTA are projected. Table 4.5.2.3-5 is made based on Table 4.5.2.3-3 by allocating to the GTA districts in proportion to the number of units in each district in Table 4.5.2.3-4 in order to prepare Table 4.5.2.3-6.

4.5.2.4 Projection for emission factors of pollutants

(1) Mesh of emission factors

As widely known, emission factors of pollutants vary in a wide range depending on the kind of fuels, equipment and their combustion conditions. It is, therefore, decided in this report to collect the emission factors in correspondence with items of the energy demand sheet of GTA in a similar mesh of the factors adopted in the literatures published by IEA, OECD and so on. Hence, these emission factors are regarded as the weighted average of the corresponding sectors.

(2) Fuel-wise & sector-wise emission factors by combustion

The emission factors by combustion in Table 4.5.2.4-1 are screened out of Table 4.5.2.4-2 by giving priority to the figures supplied by AQCC.
In the case of SOx, they are primarily determined by sulfur content of fuel as calculated in Table 4.5.2.4-2(1A). Table 4.5.2.4-2A illustrates emission factors published by IEA for further reference.
Table 4.5.2.4-3 is prepared in the same format with the energy demand sheet of GTA to verify the figures in the sequential order with a birdseye view and for the sake of convenience for calculating the emission quantity with a computer.

(3) Database for hydrocarbon emission

The Tokyo Metropolitan Municipality has conducted a large scale survey about hydrocarbon emission sources in Tokyo, covering the facilities of petroleum depots and commercial shops (petrol-filling, printing, dry cleaning, etc.) in cooperation with the Petroleum Association in Japan. Table 4.5.2.4-1(2) shows these average statistical figures collected through the survey and also the data compiled by the National and Local Governments of Japan.

4.5.2.5 Emission quantities of pollutants in GTA

(1) Sector-wise emission quantify of pollutants

Table 4.5.2.5-1 is calculated as a result of multiplying the energy consumption in Table 4.5.2.2-1 with the corresponding emission factor in Table 4.5.2.4-3.

(2) District-wise emission quantity of pollutants

Table 4.5.2.5-2 is prepared in correspondence to Table 4.5.2.3-6.

(3) Emission quantity from energy conversion sector in GTA

Table 4.5.2.5-3 is prepared principally based on the data collected through interviews.

(4) Evaporation quantity of HC in GTA (Table 4.5.2.5-4)

Tables 4.5.2.5-4(1),(2),(3) show direct hydrocarbon evaporation quantity in GTA, while Table 4.5.2.5-4(4) shows their total amount on the assumption that the emission factors collected in Japan are applicable to GTA. The other similar emission sources such as painting and electric metal plating shops are not covered by this table, since the numbers of these workshops are not available in GTA.

(5) Fugitive quantity of natural gas in GTA

It is said that there is a large volume of fugitive natural gas escaping from pipelines leading to commercial/household units as well as industrial units, although no definite estimation is announced by the authorities concerned. No projection is, therefore, made on such leakage in this report.

(6) Adjustment for emission quantity by combustion

Emission quantities in the following factories are adjusted as shown in Table 4.5.2.5-5.

1) Cement factories

- SOx : Most of SOx generated in kilns is removed by chemical reaction with CaCO3.
- SPM: A portion of SPM generated in the process is vented out of cyclones and/or electrostatic precipitators

2) Refinery

About 0.34% of crude oil inputs is combusted in a flare stack of the refinery as fugitive gases from processes or gases for pilot burners.

Table 4.5.2.1-1 : Sectorwise Demand and Supply Energy Balance in Total Iran (1994)

(10^10kcal)

	Sector	Total Energy Supply/Cons. including Electricity	Total Fuel Supply or Consumption	Coal	Cokes, etc.	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Hydro Electric Power	Total Electric Power	Commercial (MOE)	Domestic
1	Total Domestic Supply of Primary Energy	106,479	107,830	3,336		70,346	-2,012	-1,620	652			1,806	3,486	-7,566		-392				37,997			640			
1	Production	247,497	246,857	1,189		207,590														36,096			640			
2	Imports	6,340	6,340	392			5,248	5,948	652			1,806	3,486													
3	Exports	-145,358	-145,366	-25		-137,244	-7,260	-7,568						-7,566		-392				-131						
4	Inventory Changes																									
2	Total Energy Conversion	-17,412	-23,726	-996	-744	-66,396	-57,906	-49,911	-8,771		-774	-8,152	-16,703	-16,421	-671	-2,461		-2,566	-2,065	-14,906			-640	-9,954	-6,629	-325
1	Electric Power Enterprises	-12,223	-18,212				-6,592	-6,592					-1,915	-5,577						-11,620			-640	-9,029	-6,629	
2	Industrial Plants	-570	-1,119				-443	-443					-73	-370						-676				-440		-440
3	Heat Suppliers																									
4	City Gas																									
5	Coke Production	-122	-122	-996	-744																					
6	Refined Petroleum	-4,027	-3,912			-66,396	-51,229	-36,940	-8,771		-774	-8,152	-14,681	-21,366	-518	-2,461		-2,566	-1,719	-1,743				-115		-115
7	Petro Chemical	-666	-666				0	0												-666						
8	Others	-505	-505				-305	0							-153				-302							
3	Self-consumption & Loss	-9,329	-9,907			-2,992														-1,215				-1,422	-1,339	-53
4	Statistical Error	-1,309	771	-114		-1,259	-445	-60	-164			-367	-270	-97				-131	-516	-1,471				-632	-445	-67
5	Total Final Energy Production	87,041	80,977	-786	-744	0	56,129	48,351	9,567		-774	10,727	20,002	7,761	671	2,069		2,437	2,581	23,318			0	6,064	5,735	329
6	Total Final Energy Consumption	87,041	80,977	-786	-744	0	56,129	48,351	9,567		-774	10,727	20,002	7,761	671	2,069		2,437	2,581	23,318				6,064	5,735	329
6	Industry	33,940	30,095	-287	-744		17,135	14,593	239			1,059	7,905	6,461				2,437	103	11,929				7,645	2,516	329
1	Agri.Forestry	6,420	5,965				5,965	5,965				371	5,594											455	455	
2	Mining & Construction																							132	132	
3	Total Manufacturing	26,268	24,730	-287	-744		11,170	8,630	239			679	2,311	5,681				2,437	103	11,929				7,058	1,929	329
3.1	31 Food Products	3,136	2,913	0	0		1,060	1,056	40			120	409	1,096				0	16	1,230				223		
3.2	32 Textile	1,600	1,300	1	0		697	694	29			117	231	277				25	8	615				297		
3.3	33 Wood Products	137	111	0	0		103	102	5			7	51	39				0	1	8				26		
3.4	34 Paper & Products	598	491	18	0		272	143	9			8	66	60				129	1	200				54		
3.5	35 Industrial Chemicals	2,764	2,623	16	8		1,240	600	42			46	446	156				542	7	1,357				143		
3.6	36 Ceramics Products	8,504	7,941	123	13		4,566	4,402	99			231	500	3,605				467	19	2,917				563		
3.7	37 Iron & Steel	7,273	6,540	126	702		642	464	22			20	279	142				153	26	5,079				724		
3.8	38 Machinery	1,274	1,061	2	11		529	503	45			126	226	104				0	26	516				213		
3.9	39 Other Industries	145	141	0	10		127	5	1			1	2	1				1,121	0	4				4		
7	General Service and Household	29,707	26,466	499			16,333	14,377				9,177	2,920	2,280					1,956	9,956				3,219	3,219	
1	Household	23,417	21,420	111			12,837	11,076				8,588	2,490						1,781	8,472				1,997	1,997	
2	Commercial & General	6,290	5,065	388			3,496	3,301				591	430	2,280					195	1,184				1,222	1,222	
8	Transport	19,901	19,901				19,901	19,379	9,328		774		9,277						522							
1	Passenger	11,616	11,616				11,616	11,094	8,318		676		2,100						522							
2	Cargo	8,285	8,285				8,285	8,285	1,010		98		7,177													
9	Non-energy	4,493	4,493				2,760								-671	2,069				1,733						
	Heat Values for Conversion	(kcal/unit)		6950/kg	7200/kg	9250/l			8400/l	8000/l	8700/l	8300/l	9200/l	9700/l	9600/l	10100/l	9400/m3	8600/kg	12000/kg	9600/m3	13000/kg	10000/m3	860/kwh	860/kwh	860/kwh	860/kwh

(Note) ▭ Data available from data source in Iran

Table 4.5.2.1-1A

セル: B108
メモ: J:600*150*10^6*9750/10^10 88245(1997)
AAB/P248:724.52*150*0.825 100558

セル: L104
メモ: BC/p6:1083*10^3*150*365*9750/10^10 58134(1997)

セル: Z108
メモ: BC/p6:843*10^9*0.028317*8800/10^10 24504(1992)

セル: B110
メモ: AAB/P248:1689.71*150*0.825 248514

セル: J110
メモ: AAB/P191:1682029*10^3*6850/10^10 1183
AAB/P268:J110/B110 0.75%

セル: L110
メモ: AAB/P22:3867*10^3*150*365*9750/10^10 207590
AAB/P268:L110/B110 207590/248565 83.52%

セル: Z110
メモ: AAB/P248:250.44*150*0.8750 38098
AAB/P268:Z110/B110 15.33%

セル: AA110
メモ: AAB/P248:3.39*150*0.825 490
AAB/P268:AA110/B110 0.2%

セル: AC110
メモ: AAB/P258:7444.8*0.086 640
AAB/P268:AC110/B110 0.60%

セル: J111
メモ: AAB/P194:563800*10^3*6850/10^10 397
AAB/P268:J111/B108 0.39%

セル: B111
メモ: I:60*150*10^6*9750*10^10 7081
BC/p40:158*150*365*10^3*9750/10^10 8442(1992)
AAB/P268:B111/B108 5.51%

セル: O111
メモ: AAB/P54:776*10^6*8400 652

セル: R111
メモ: AAB/P54:2027*10^6*8800 1808

セル: S111
メモ: AAB/P54:3791*10^6*8700 3488

セル: B112
メモ: AAB/P248:983.70*150*0.825 165427

セル: I112
メモ: I: 127086*10^6*8750*10^13 / 118110

セル: J112
メモ: AAB/P195:33497*10^3*6950 23

セル: L112
メモ: AAB/P53:2556.6*10^3*150*365*8250 137244
Economic data:2270*10^3%/4 118175

セル: T112
メモ: AAB/P54:7802*10^6*9700 7568

セル: V112
メモ: BC/p66: 4*150*365*10000*10^3/10^10 2346(1992)
AAB/P54:300*1.04 392

セル: Z112
メモ: AAB/P114:133700*9800/10^10 131
AAB/P248:0.84*150*0.825 124
AAB/P268:Z112/B110 0.05%

セル: B116
メモ: J:80*150*10^6*9250/10^10 11706

セル: I116
メモ: AAB/P248:135*150*0.825 19655
AAB/P263:B116/0.3353 20054

セル: S116
メモ: I:1183*10^6*9290/10^10
+1015
AY/P7:20892*0.053 1107

セル: T116
メモ: I:4853*10^6*9700/10^10 4707
AY/7:14892*0.3745 5577
AAB/P63:14882*0.3745 5577

セル: Z116
メモ: AAB/P14:12540874*9000/10^10 12780
AAB/P263:79.01*150*0.825 11820
AAB/P283:Z116/I116 57.05%
AY/P8:11500*0.96 11074

セル: AC116
メモ: AAB/P145:7043*0.45 862
AAB/P248AAB/P263:11.61*150*.825 1708
AAB/P258:7444.8*0.086 640
AAB/P283:AC116/I116 8.57%

セル: AE116
メモ: AAB/P144:77086*0.086 6629
AAB/P258:77085.83*0.086 6629

セル: S117
メモ: I:S116*AD117/AD116 1107*440/6629 73

セル: T117
メモ: I: T116*AD117/AD116 370

セル: Z117
メモ: I: Z116*297/5485 676

セル: AF117
メモ: AAB/P144:4795*0.086 412
AAB/P258:5112.07*0.086 440

セル: J120
メモ: Ratio in Japan 45153/3470 0*744 008

セル: I120
メモ: AAB/P197:1033176*10^3*7200/10^10 744

セル: J121
メモ: AAB/P248:25*150*0.825 3677

セル: L121
メモ: AAB/P263:64290*14.75*150*0.825 98306
AAB/P263:(98306 64296)/ 4087 53.00%

セル: B121
メモ: J:300*150*10^6*9850/10^10 44123

セル: O121
メモ: AAB/P31:10442*10^6*8400 8771

セル: Q121
メモ: AAB/P31:890*0.87 774

セル: R121
メモ: AAB/P31:8150*0.89 4152

セル: S121
メモ: AAB/P31:19430*0.92 17881

セル: T121
メモ: AAB/P31:22029*0.97 21368

セル: U121
メモ: AAB/P31:540*0.96 518

セル: V121
メモ: AAB/P31:2450*1.01 2481

セル: X121
メモ: AAB/P31:2878*10^6*1.05*8500 2568

セル: Y121
メモ: AAB/P31:2585*10^6*0.55*12000 1,713

セル: Z121
メモ: AAB/P114:1881041*9000/10^10 1843
AAB/P263:11.85*150*0.825 1743
AAB/P283:Z121/I121 43.29%

セル: AF121
メモ: AAB/P263:0.78*150*0.825 115
AAB/P283:AD121/I121 2.85%

セル: Z122
メモ: AAB/P114:(554000+330000)*8000/10^10 008

セル: U123
メモ: AAB/P31:150*10^6*8000 152

セル: Y123
メモ: AAB/P31:534*10^6*0.55*12000 352

セル: L125
メモ: AAB/P31:(73335-70435)*10^6 *8750 2087

セル: Z125
メモ: AY:1240*10^6*9800/10^10 1215(1994)

セル: AE125
メモ: AB/P149:AE116*20.2% 6620*0.202 1338

セル: AF125
メモ: AB/P149:AF117*20.2% 412*0.202 83

セル: B129
メモ: J:480*150*10^6*9750/10^10 70586(1992)
AAB/P248:574.08*150*0.825 84548

セル: B130
メモ: J:480*150*10^6*9750/10^10 70586(1992)
AAB/P248:574.08*150*0.825 84540
AAB/P140:545*150*.825 26744
AAB/P253:574.08*150*0.825 84540

セル: J130
メモ: AAB/P253:10.4*150*0.825 1530
AAB/P278:J130/B130 1.81%

セル: E130
メモ: * E129

セル: X120
メモ: AAB/P253:368.25*150*0.825 54160
AAB/P278:B130/B130 64.06%

セル: O130
メモ: AAB/P63:11615000*10^3*8400 9547
AY/P1:11.53*10^9*8400/10^10) 9685

セル: U130
メモ: AAB/P70:008.1*10^6*9600 774

セル: Y130
メモ: AAB/P70:(81.07+118.26-160)*10^6*10100/10^10 393

セル: X130
メモ: AAB/P70:2731*10^6*1.05*8500 2437

セル: Y130
メモ: AAB/P63:3108457*10^3*0.55*12000 2052
AY:3.36*10^9*0.55*12000/10^10 2218

セル: Z130
メモ: AY:27853.5*10^6*9800/10^10 27298(1994)
AAB/P253:154.98*150*0.825 22781
AAB/P278:Z130/B130 26.90%

セル: AD130
メモ: AAB/P253:41.24*150*0.825 4085
AAB/P278:AD130/B130 7.17%

セル: X132
メモ: AY:1700*10^6*6850/10^10 1182(1994)

セル: O132
メモ: AY:750*10^6*8800/10^10 673(1994)

セル: R132
メモ: AY/P5:750*10^6*8800/10^10 673(1994)

セル: T132
メモ: AY:2273*10^6*9200/10^10 2091(1994)

セル: X132
メモ: AY:7100*10^6*9800/10^10 7017(1994)

セル: B133
メモ: AAB/P263:28.71*150*0.825 4223

セル: B133
メモ: J:29*150*10^6*9250/10^10 4265(1997)
AAB/P253&AAB/P263:25.61*150*0.825 3767
AAB/P273:B133/B130 6.95%
AAB/P283:B133/B133 88.7%

セル: R133
メモ: AY/P7:R130*0.0385(1994) 9639*0.0385 371

セル: S133
メモ: AY/P7:(S129+S116-S117)*0.2610 21061*0.2619 5501
AY/P7:20897*0.2619 5472

セル: AE133
メモ: AAB/P137:AD129*8.1% 5610*0.081 455

セル: AE134
メモ: AAB/P77:AD129*7.8% 5619*0.078 157
AD134-AE134 132

セル: H136
メモ: AAB/P240:156*159*0.975 22797
AAB/P253:56.99*150*0.925 8342
AAB/P263:100.46*159*0.925 23600

セル: J136
メモ: AY/P5:1700*10^6*8050/10^10 1162(1994)
AAB/P253AAB/P263:Coal+Cokes 7.01*150*0.875 1031
1031-744-287
AAB/P273:J136/J130 67.42%
AAB/P283:J136/H136 4.37%

セル: K136
メモ: K130

セル: R136
メモ: J:29*159*10^6*8750/10^10 4265
AAB/P253AAB/P263:56.99*150*0.975 8342
AAB/P273:R136/R130 15.44%
AAB/P283:R136/H136 35.57%

セル: O136
メモ: AY/P5:195*10^6*4400/10^10 164(1994)
AY/P7:9547*.0.027 258

セル: R136
メモ: AY/P7:R130*0.0705(1994)*9836*0.0705 879
AY/P5:753*0.89 670

セル: S136
メモ: AY:(S129+S116+S117)*0.1035 21361*0.1035 2211(1994)
AY/P5:2273*0.92 2091
AY/P7:20692*0.1035 2162

セル: T136
メモ: AY/P7:*(T129+T116+T117)*0.4073(1994) 13623*0.4073 5481
AY/P5:5725*0.97 5553
AY/P7:14492*0.4073 5901

セル: Y136
メモ: AY/P5:156*10^6*0.55*12000/10^10 103(1994)

セル: Z136
メモ: AAB/P114:7782423*9800/10^10 7627(1992)
AAB/P253AAB/P263:81.11*150*0.975 11970
AAB/P273:Z136/Z130 52.34%
AAB/P263:Z136/H136 50.35%
AY/P5:7160*.98 7017
AY/P8:7748.8*0.98 7592

セル: AD136
メモ: AAB/P177:AD129*37.3% 5619*0.372 1809
AAB/P253AAB/P263:15.35*150*0.975 2254
AAB/P273:AD136/AD130 37.22%
AAB/P283:AD136/H136 9.57%
AY/P5:14983*0.086 1289

セル: AE136
メモ: AE136-AF136 1809 326 1483

セル: AF136
メモ: AF129

セル: J137
メモ: Ratio in Japan:287/14279*0 0
J137 J145:Allocation is based on Energy
Balance of Japan

セル: K137
メモ: Ratio in Japan:744/74274*0 0
K137 K145:Allocation is based on Energy
Balance of Japan

セル: O137
メモ: 758/151*73
O137 O145:Allocation is based on AY(Table 38)

セル: R137
メモ: 678/33*6 120
R137 R145:Allocation is based on AY(Table 38)

セル: S137
メモ: 2711/3580*292 409
S137 S145:Allocation is based on AY (Table 38)

セル: T137
メモ: 5481/3794*680 1098
T137 T145:Allocation is based on AY(Tabe 38)

セル: X137
メモ: Ratio in Japan2437/2476*0 0
X137 X145:Allocation is based on Energy Balance
sheet of Japan

セル: Y137
メモ: 103/99*16 16
Y137 Y145:Allocation is based on AY(Table 38)

セル: Z137
メモ: 11929/7200*751 1230
Z137 Z145:Allocation is based on AY(Table 38)
AY:11970/7540*203 1019

セル: AD137
メモ: AD137 AD145:Allocation is based on AY(Table 38)
AY:2254/1720*170 223

セル: H147
メモ: AAB/P240:190*159*0.975 27944
AAB/P263:106.30*150*0.975 16440

セル: J147
メモ: AAB/P253AAB/P263:Coal+Cokes:3.39*150*0.975 490
AAB/P273:J147/J130 32.58%
AAB/P283:J147/H147 1.77%

セル: H147
メモ: AAB/P253:109*150*0.975 16031
AAB/P263:109*150*0.925 16031
AAB/P273:H147/H130 28.6%
AAB/P283:H147/H147 55.51%

セル: R147
メモ: AY/P7:R130*0.891(1994) 9836*0.891 8586

セル: S147
メモ: AY:(S129+S116+S117)*0.1472 21361*0.1472 3140

セル: T147
メモ: AY:(S129+S116+S117)*0.1473 21361*0.1473 3146

セル: Z147
メモ: AAB/P253:62.05*150*0.925 9126
AAB/P263:62.07*159*0.925 8176
AAB/P273:Z147/Z130 40.00%
AAB/P283:Z147/H147 31.61%

セル: AD147
メモ: AAB/P253:21.89*159*0.925 3218
AAB/P263:21.89*150*0.925 3129
AAB/P273:AD147/AD130 53.00%
AAB/P283:AD147/H147 11.12%

セル: J148
メモ: Ratio in Japan:495/30*8 111

セル: K148
メモ: J:83*150*10^6*8750*10^10 17207

セル: R148
メモ: AY/P8:8420*10^6*8900/10^10 7510(1994)
AY:0405*8438/(8438*864) 5938
AY/P7:9836*0.891 8586

セル: S148
メモ: AY/P8:2708*10^6*8200/10^10 2409(1994)
AY:S130*0.1473(1994)

セル: T148
メモ: AY:2608*10^6*0.55*17000/10^10 1701(1994)

セル: Z148
メモ: AAB/P114:8844437*9800/10^10 8472
AY/P8:5209*0.98 5105
AY/P8:6697.6*0.98 6620

セル: AE148
メモ: AAB/P177:AD129*35.3% 5619*0.353 1984
AE148 AD148 1997
AY/P8:22054*0.086 1897

セル: J149
メモ: Ratio in Japan:498/30*28 344

セル: K148
メモ: J:19*150*10^6*8250/10^10 2794

セル: R149
メモ: AY/P6:604*10^6*8900/10^10 591
(1994)
AY:0405*664/(8438+664) 487

セル: S149
メモ: AY/P6:487*10^6*8200/10^10 430
(1994)

セル: T149
メモ: AY/P8:2351*0.97 2280

セル: Y149
メモ: AY/P6:200*10^6*0.56*12000/10^10 195(1994)

セル: Z149
メモ: AAB/P114:1207509*9800/10^10 1184
AY/P8:2920*0.96 2871

セル: AD149
メモ: 3219*1214/3198 1222

セル: AE149
メモ: AAB/P177:AD129*21.0% 5619*0.350 1214
AD149 AE149 1222
AY/P8:16378*0.086 1408

セル: H151
メモ: AAB/P240:Transportation+Agriculture 170*150*0.975 25003
AAB/P263:141.04*159*0.925 20743

セル: H151
メモ: AAB/P253:141.04*150*0.925 20743
AAB/P273:H151/H130 30.3%
AAB/P283:H151/H151 100%

セル: O151
メモ: AY/P7:O130*0.973(1994) 9547*0.973 9228

セル: S151
メモ: AY/P7:(S129+S116+S117)*0.4343 21361*0.4343 9277
AY/P7:20892*0.4343 9073

セル: O152
メモ: Ratio in Japan:35232/(35232+4200)*9328 8318

セル: Q152
メモ: Ratio in Japan:3041/3481*774 676

セル: S152
メモ: Ratio in Japan:8487/20851*8277 2100

セル: O153
メモ: Ratio in Japan:4200/(35232+4200)*9328 1010

セル: Q153
メモ: Ratio in Japan:440/3481*774 98

セル: S153
メモ: Ratio in Japan:22164/20851*8277 7177

セル: Z155
メモ: AAB/P114:330000*9800/10^10 323
AAB/P253:11.78*150*0.975 1723
AB/P273:Z155/Z130 7.0%

Table 4.5.2.2-1 : Sectorwise Energy Demand in GTA (1994)

(10^10 kcal)

	Sector	Total Energy Consumption incld. Electricity	Total Fuel Consumption	Coal	Cokes, etc.	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
5	Final Energy Consumption(Iran)(1)	87,041	80,977	786	744	0	66,129	48,361	9,587		774	10,227	20,002	7,761	671	2,069		2,437	2,681	23,316			6,064	5,735	329	0
5	Final Energy Consumption(Iran)(2)(3)	111,386	105,207	908	744	0	65,332	67,564	9,587		774	10,227	21,178	15,788	671	2,069		2,437	2,681	39,223			6,179	5,735	444	0
5	Total Energy Consumption(Tehran)	22,491	20,601	126	332	0	11,430	9,877	2,306			1,481	3,071	3,017				1,061	472	6,713			1,890			
6	Industry	10,490	9,396	126	332		6,200	4,094	100			295	1,727	1,966				1,061	65	3,980			1,092			
1	Agri,Forestry																									
2	Mining																									
3	Construction																									
4	Total Manufacturing	10,490	9,396	126	332		6,200	4,094	100			295	1,727	1,966				1,061	65	3,980			1,092			
4.1	31 Food Products	1,307	1,304	0	0		1,123	1,106	9			169	735	193				0	17	181			93			
4.2	32 Textile	770	545	0	0		311	293	13			36	133	109				11	7	237			173			
4.3	33 Wood Products	99	94	0	0		42	42	3			4	23	12				0	0	2			21			
4.4	34 Paper & Products	287	228	6	0		132	74	4			3	40	27				37	1	55			39			
4.5	35 Industrial Chemicals	1,105	1,031	7	3		839	293	16			7	211	59				241	5	462			74			
4.6	36 Non-metal Products	2,269	2,146	54	6		1,855	1,644	12			30	204	1,398				207	4	230			104			
4.7	37 Iron & Steel	3,339	2,945	55	313		366	299	10			3	176	110				55	19	2,191			394			
4.8	38 Machinery	618	532	1	5		356	327	33			36	199	59				0	31	268			164			
4.9	39 Other Industries	501	501	0	4		614	16	3			6	6	1				497	1	2			10			
7	General Service and Household	7,329	6,621				2,742	2,374				1,166	839	369					366	3,779			806			
1	Household	6,057	5,495				2,155	1,824				1,109	715						331	3,340			562			
2	Commercial & General	1,272	1,026				587	550				76	124	350					37	439			246			
8	Transport	2,661	2,661				2,661	2,642	2,206				337						19							
1	Passenger	2,661	2,661				2,661	2,642	1,966				76						19							
2	Cargo	500	500				500	500	239				261													
9	Energy Conversion	2,121	2,120				997	997					166	699						1,254						
1	Power Plant	1,068	1,068				381	381					147	204						737						
2	Refinery	1,053	1,053				616	616					21	495						517						
	Heat Values for Conversion (kcal/unit)				6950/kg	7200/kg	9250/l		8400/l	8000/l	8700/l	8900/l	9200/l	9700/l	9600/l	10100/l	9400/m3	8500/kg	12000/kg	9600/m3	10000/m3	2860/kwh				

(Note) (1) Exclusive of fuels for Energy Conversion sector
(2) Inclusive of fuels for Energy Conversion sector
3) Crude oil portion(2169) is allocated to gas oil and heavy oil in proportion to the ratio in Tehran refinery

Data available from data sources in Iran

Table 4.5.2.2-1A

セル: S97
メモ: AAC/P5:150,835×0.97=147

セル: T97
メモ: AAC/P5:210,675×0.97=204

セル: Z97
メモ: AAD/P108:2006905×8400/10^10=3035
AX:9.0×365×.98=3219
AAC/P5:737

セル: S98
メモ: AZ:731×0.97=713

セル: T98
メモ: AZ:510×0.97=495

セル: V98
メモ: AZ:529×0.98=517

セル: Z98
メモ: AAD/P108:420324×8600/10^10=431

セル: AC98
メモ: AZ:0.27529×0.085=0

メモ: AQCC:2.[illegible]×365×10^6×[illegible]/10^10=[illegible]
1486-301=1185

セル: S68
メモ: AQCC:2.408275×10^6×365×9200/10^10=838

セル: T68
メモ: AQCC:0.080727×365×10^6×9700/10^10=250

セル: Y68
メモ: 443-(56+19)=368

セル: R80
メモ: Iron ratio:1185/9177×8586=1109

セル: S80
メモ: Iron ratio:838/7820×2400=715

セル: Y80
メモ: Iron ratio:368/1056×1781=331

セル: Z80
メモ: AR/P108:3407887×9800/10^10=3340
AX:9.3×365×0.98=3327

セル: AC80
メモ: AAD/P178:5619×10.0%=562
AY/P2:5837.2×0.088=511

セル: R90
メモ: Iron ratio:1185/9177×501=78

セル: S90
メモ: Iron ratio:838/7820×430=124

セル: Y90
メモ: Iron ratio:367/1056×105=37

セル: Z90
メモ: AAD/P107:448036×9800/10^10=439
AX:1.2×366×0.98=429

セル: AC90
メモ: 808-562=246

セル: O82
メモ: AAA/p117.5×10^6×365×8400/10^10=2300
AQCC:7734.82×0.84=2297
Terataní:2824.558×0.84=2705

セル: S82
メモ: Terataní:366.585×10^6×8200/10^10=337

セル: O83
メモ: Ratio in Japan :2205/9378×8316=1066

セル: S83
メモ: Japan ratio:331/9277×2100=76

セル: Y83
メモ: AQCC:10×10^6×12000/10^10=19

セル: O84
メモ: Ratio in Japan :2205/8028×1010=230

セル: S84
メモ: Japan ratio:307/9277×7177=201

セル: O71
メモ: AAR/P63:3[illegible]×10^3×8800=2887

セル: R71
メモ: AAR/P63:1690662×10^3×8800=1486

セル: S71
メモ: AAR/P63:4142007×10^3×9200=3811

セル: T71
メモ: AAR/P63:2338280×10^3×9700=2268

セル: Y71
メモ: AAR/P63:653574×10^3×0.55×12000/10^10=431
AX:367.183×1.2=435

セル: Z71
メモ: AQCC name:8806×10^6×0800/10^10=8627

セル: AC71
メモ: AAR/P178:8054×25.0%=1565

セル: Z73
メモ: AAR/P108:1408818×9800/10^10=1378
8627-3778-1164=3680

セル: J77
メモ: Iron balance/No. of company:
287/8161×7734=127

セル: K77
メモ: 744/8161×2734=232

セル: O77
メモ: Table 4.5.2-65

セル: R77
メモ: Table 4.5.2-65

セル: S77
メモ: AX:3[illegible]×.92=2915
Table 4.5.2-55

セル: T77
メモ: AY:[illegible]×0.97=868
Table 4.5.2-55

セル: X77
メモ: 7437/8161×2734=7081

セル: Y77
メモ: Table 3F

セル: Z77
メモ: AX(X00):5.6×365×10^6×0800/10^10=2003(1994)
8621-(3779+1164)=3680
AR/p108:1408.918×0.98=1378
Table 3F

セル: AC77
メモ: AY:Industrial&Commercial=
6517.2×10^6×[illegible]/10^10=732
Table 4.5.7-95

セル: Y96

Table 4.5.2.1-2(1) : Energy Consumption in large Industries(>10 personnel) in Iran (1994)

(Unit : m3, liter, kwh)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of Iran
Kcal/Unit	9800/m3	12000/kg	8400/liter	8900/liter	9200/liter	9700/liter	860/kwh		
Unit	10^6 m3	10^6 liter	10^6 liter	10^6 liter	10^6 liter	10^6 liter	10^6 kwh		
Code No. 31	766	24	27	7	318	701	1,977		920
32	383	12	20	6	180	177	2,633		920
33	5	1	3	0	40	25	230		107
34	125	1	6	0	51	38	570		285
35	846	10	29	3	347	100	1,269		561
36	1,818	28	46	13	389	2,301	4,985		2,051
37	3,166	37	16	1	217	90	6,414		107
38	323	37	31	7	176	66	1,889		1,010
39	3	0	1	0	2	1	35		200
Total	7,435	150	179	37	1,717	3,499	20,001		6,161

(Source) AQCC : Estimation of Fuel Consumption in Five Year Plan in Iran

Table 4.5.2.1-2(2) : Energy Consumption in large Industries(>10 personnel) in Iran (1994)

(Unit : 10^10kcal)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of Iran
Unit	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	
Code No. 31	751	16	23	6	292	680	170	1,938	920
32	376	8	17	6	165	171	226	969	920
33	5	1	3	0	37	24	20	89	107
34	122	1	5	0	47	37	49	261	285
35	829	7	24	2	319	97	109	1,387	561
36	1,782	18	38	11	357	2,232	429	4,868	2,051
37	3,103	25	13	1	199	88	552	3,980	107
38	317	24	26	6	162	64	162	762	1,010
39	3	0	1	0	1	1	3	9	200
Total	7,286	99	151	33	1,580	3,394	1,720	14,263	6,161

Table 4.5.2.2-2 : Unit Energy Consumption in large Industries(>10 personnel) in Iran (1994)

(Unit : 10^10kcal/unit)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of Iran
Kcal/unit	10^10kcal/unit	10^10kcal/unit	10^10kcal/unit	10^10kcal/unit	10^10kcal/unit	10^10kcal/unit	10^10kcal/unit	10^10kcal/unit	
Code No. 31	0.816	0.017	0.025	0.006	0.318	0.739	0.185		920
32	0.408	0.008	0.018	0.006	0.180	0.186	0.246		920
33	0.048	0.005	0.027	0.003	0.342	0.227	0.185		107
34	0.429	0.002	0.019	0.001	0.164	0.130	0.172		285
35	1.478	0.012	0.043	0.004	0.568	0.173	0.195		561
36	0.869	0.009	0.019	0.005	0.174	1.088	0.209		2,051
37	28.995	0.230	0.122	0.009	1.864	0.820	5.155		107
38	0.314	0.024	0.026	0.006	0.160	0.064	0.161		1,010
39	0.013	0.001	0.003	0.000	0.007	0.003	0.015		200
Total									6,161

Table 4.5.2.2-3 : Energy Consumption in large Industries(>10 personnel) in GTA (1994)

(Unit : 10^10kcal)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of GTA
Unit	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	
Code No. 31	182	4	6	1	71	165	41	470	223
32	238	5	11	4	105	109	144	615	584
33	2	0	1	0	17	12	9	43	51
34	89	0	4	0	34	27	36	190	207
35	485	4	14	1	186	57	64	811	328
36	231	2	5	1	46	290	56	631	266
37	2,204	17	9	1	142	62	392	2,827	76
38	270	21	22	5	138	55	138	649	860
39	2	0	0	0	1	0	2	6	139
Total	3,703	54	73	14	740	776	882	6,241	2,734

Table 4.5.2.2-4 : Energy Consumption in Small Industries(<6 personnel) in GTA (1994)

(Unit : m3, liter, kwh)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of GTA
Kcal/Unit	9800/m3	12000/kg	8400/liter	8900/liter	9200/liter	9700/liter	860/kwh		
Unit	10^6 m3	10^6 liter	10^6 liter	10^6 liter	10^6 liter	10^6 liter	10^6 kwh		
Code No. 31	169	15	3	181	649	28	403		70,050
32	15	2	1	33	18	0	244		93,795
33	2	0	2	4	3	0	119		33,285
34	2	0	0	2	3	0	24		3,937
35	1	1	1	4	16	1	74		4,004
36	6	1	4	23	71	842	263		17,062
37	0	2	0	2	26	34	17		2,109
38	14	13	10	30	42	3	439		89,959
39	3	2	3	5	3	0	77		20,180
Total	212	38	23	283	832	908	1,659		334,381

(Source) AQCC

Table 4.5.2.2-5 : Energy Consumption in Small Industries(6≦ personnel≦10) in GTA (1994)

(Unit : m3, liter, kwh)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of GTA
Kcal/Unit	9800/m3	12000/kg	8400/liter	8900/liter	9200/liter	9700/liter	860/kwh		
Unit	10^6 m3	10^6 liter	10^6 liter	10^6 liter	10^6 liter	10^6 liter	10^6 kwh		
Code No. 31	16	5	2	8	73	1	82		3,016
32	3	1	1	5	12	0	90		5,027
33	0	0	1	0	2	0	14		725
34	1	0	0	1	4	0	16		697
35	0	1	1	2	10	1	43		756
36	6	1	4	9	100	301	304		3,144
37	0	0	0	1	11	16	12		319
38	4	3	3	4	25	1	87		2,872
39	1	0	1	1	2	0	15		822
Total	31	11	13	31	240	321	663		17,378

(Source) AQCC

Table 4.5.2.2-6 : Energy Consumption in All Small Industries(1≦ personnel≦10) in GTA (1994)

(Unit :10^10 kcal)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of GTA
Unit	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	
Code No. 31	181	13	4	168	664	28	42	1,101	73,066
32	18	2	2	34	28	0	29	112	98,822
33	2	0	2	4	5	0	11	25	34,010
34	2	0	0	2	6	0	3	15	4,634
35	1	1	2	5	24	2	10	46	4,760
36	12	2	7	28	158	1,109	49	1,364	20,206
37	0	1	1	2	34	48	2	90	2,428
38	18	10	11	30	61	4	45	180	92,831
39	4	2	3	5	4	0	8	26	21,002
Total	238	32	31	279	986	1,192	200	2,959	351,759

B C D E F G H I J K

Table 4.5.2.2-7 : Sectorwise Energy Consumption in All Manufacturing Industries in GTA (1994)

(Unit : 10^10kcal)

Item	Natural Gas	LPG	Gasoline	Kerosene	Gas Oil	Heavy Oil	Electricity	(Total)	Unit Number of GTA
Unit	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	10^10kcal	
Code No. 31	181	17	9	169	735	193	83	1,570	73,289
32	237	7	13	38	133	109	173	728	99,406
33	2	0	3	4	23	12	21	68	34,061
34	88	1	4	3	40	27	39	205	4,841
35	482	5	16	7	211	59	74	857	5,088
36	230	4	12	30	204	1,398	104	1,996	20,472
37	2,191	19	10	3	176	110	394	2,916	2,504
38	268	31	33	36	199	59	184	829	93,691
39	2	2	3	5	6	1	10	31	21,141
Total	3,680	86	103	293	1,727	1,967	1,081	9,200	354,493

Table 4.5.2.3-1(1) : List of All Factories Questionnaired

No	Industrial Code	District	Personnel (person)	Amount of Production	Unit of Production	Energy Consumption by Factory: Electricity (kwh/y)	Natural Gas (m3/y)	Heavy Oil (liter/y)	Gas Oil (liter/y)	Kerosene (liter/y)	Gasoline (liter/y)	LPG (liter/y)	Total (10^10kcal)
1	3112		5	54	ton	15,000						7,071	0
2	3112		7	432	ton	32,004	35,004						0
3	3112	9	889	130	ton	4,102,000	7,200,000						7
4	3112	18	1,000	254,100	ton	12,980,000	12,600,000		1,440,000				15
5	3113		70	1,656	ton	924,117		1,000,000	22,500			18,571	1
6	3115	18	1,200	122,500	ton	34,560,000	24,000,000		1,500,000				26
7	3116		68	2,000	ton	34,800	6,240		104,000				0
8	3117		3	149	ton	17,804	19,835						0
9	3117		3	260	ton	24,804	187,714						0
10	3117		3	284	ton	83,326	180,000						0
11	3117		4	177	ton	2,652	39,624						0
12	3117		4	207	ton	3,780	65,520						0
13	3117		40	438	ton	188,988	147,859						0
14	3117		50	2,175	ton	180,000			672,000				1
15	3118		6	450	ton	66,667		432,000					0
16	3119		3	14	ton	21,175	20,124						0
17	3119		8	18	ton	333,333	90,492						0
18	3119		12	36	ton	41,916	17,158						0
19	3119		50	2,000	ton	194,667			590,000				1
20	3119	10	260	1,800	ton	864,000			150,000			31,821	0
21	3119	18	778	14,000	ton	1,584,000	150,000						0
22	3123		40	2,500	ton	413,280			145,000				0
23	3129	4	140	9,000	ton	5,551,200	865,319		735,020				2
24	3129	18	243	5,000	ton	540,000			10,000				0
25	3130	10	140	550	ton	1,032,000	700,000		50,000				1
26	3130	18	288	20,160,000	liter	156,000,000			3,600,000				17
27	3130	4	300	28,800,000	liter	7,452,000			1,258,400			34,500	2
28	3130	9	2,100	170,000,000	liter	17,700,000	3,200,000		2,000,000				6
29	3140	11	3,581	4,650	ton	8,712,000		3,534,000	170,000		9,000		4
	(Total)		11,294		(10^10 kcal)	22	49	5	11	0	0	0	87
30	3211		96	280	ton	7,200,000	5,472,000						6
31	3211	18	379	2,000,000	m2	3,600,000	1,800,000	120,000	144,000			38,864	2
32	3211	9	591	2,000,000	m	3,768,000	72,000	840,000	1,200,000				2
33	3211	9	792			10,920,000	482,040		906,500				2
34	3211	20	2,300	21,600,000	m	22,787,000	6,693,500		2,160,000				11
35	3213		1	8	ton	33,333							0
36	3213		2	8	ton	9,000			3,000				0
37	3213		3	5	ton	7,500							0
38	3213		5	9	ton	250,000							0
39	3213		5	11	ton	28,333							0
40	3213		7	30	ton	48,000							0
41	3233		3	3,410	pair	1,764							0
42	3240		4	3,600	pair	12,492				240			0
43	3240		4	4,500	pair	9,240							0
44	3240		5	4,200	pair	1,048				240			0
45	3240		7	6,000	pair	3,192				240			0
46	3240	4	101	490,500	pair	518,400	33,600						0
47	3240	9	735	354	pair	9,600,000	4,380,000		182,500				5
	(Total)		5,040		(10^10 kcal)	5	19	1	4	0	0	0	28
48	3313		2	30		648							0
49	3313		2	252		1,944							0
50	3313		2	1,475		4,187							0
51	3313		3	192		188							0
52	3313		4	870		23,333							0
53	3313		19	1,200	m	68,000			120,000				0
54	3313		20	13,750		65,864			18,000				0
55	3313	18	202	151,757	m2	864,000			240,000				0
56	3313	2	264	110,000	m2	2,304,000			140,000				0
57	3319		40	2,400	m2	83,996							0
58	3319		42	1,000	m2				200,000				0
59	3319		61			249,600	69,648		12,000				0
60	3320		2	192		3,540							0
61	3320	9	450			134,400	270,000		28,800				0
	(Total)		1,113		(10^10 kcal)	0	0	0	1	0	0	0	1
62	3419	18	268	15	ton	529,830	253,545	4,380,000					5
63	3420		2	2,900,000	round	22,224							0
64	3420		5	18,600,000	round	15,000							0
65	3420		6	6,700,000	round	32,664							0
66	3420		10	4,640,000	round	86,672							0
67	3420		10	6,700,000	round	24,780				360			0
68	3420		18	8,000,000	round	74,400				360	360		0
	(Total)		317		(10^10 kcal)	0	0	4	0	0	0	0	5

Table 4.5.2.3-1(2)

No	Industrial Code	District	Personnel	Amount of Production	Unit of Production	Fuel Consumption/Factory							Total
						Electricity	Natural Gas	Heavy Oil	Gas Oil	Kerosene	Gasoline	LPG	
			(person)			(kwh/y)	(m3/y)	(liter/y)	(liter/y)	(liter/y)	(liter/y)	(liter/y)	($10^4$10kcal)
69	3511		10			30,000			9,300				0
70	3511		28	6,700	ton	960,000			36,000				0
71	3512		58	5,400	ton	948,480			58,000				0
72	3521		10	580	ton	18,000			100,000				0
73	3521		95	2,808,903	liter	273,600	206,200		30,000				0
74	3521	9	193	3,500	ton	1,200,000	1,400,000						1
75	3521	9	322	6,700	ton	979,200	166,092						0
76	3522	9	181			537,600	1,769,000		29,000				2
77	3522	18	240	1,320	ton	1,166,000	224,475		2,555				0
78	3522	18	260	1,000	ton	1,123,200	455,024						1
79	3522	9	308	7,125	ton	2,400,000	400,000		2,000				1
80	3522	4	432	7,325	ton	4,407,000	1,130,195						1
81	3522	9	1,250	9,280	ton	10,800,000	4,800,000		200,000				6
82	3523		2	285	ton	15,996			14,250				0
83	3523		5	185	ton	32,004			60,000				0
84	3523		42	301	ton	66,000	40,000		360				0
85	3523		60	3,000	ton	37,680			36,000				0
86	3523	18	220	24,000	ton	3,000,000	1,440,000						2
87	3523	9	600	38,000	ton	4,368,000	4,042,452		5,481,000				9
88	3523	18	1,359	150,000	ton	3,845,600							0
89	3529	18	150	7,000	ton	103,200	79,068		36,000				0
90	3530		35	12,000	ton	87,000			110,000				0
91	3530		55	23,750	ton	72,000			1,650,000				2
92	3530	20	720	100,000	ton	18,794,100		14,339,244	3,612,000			40,000	19
93	3530	18	1,068	100,000	ton	15,456,000	360,000	25,560,000	1,775,000				28
	(Deleted)												
94	3540		11	200	ton	60,000							0
95	3561	9	1,542	24,000	ton	25,920,000	7,500,000	600,000	54,000				10
96	3562	9	391	1,715,600	pair	144,000		725,000	25,000				1
97	3569		12			45,648			18,000				0
98	3559		50	100	ton	600,000			348,000				0
99	3559		95	500	ton	420,000			384,000				0
100	3559	9	223	1,968	ton	1,972,364	1,064,829						1
101	3561		2	86	ton	43,200							0
102	3561		16	101	ton	88,400			1,000				0
103	3561	18	255	1,362	ton	2,400,000	141,510		26,500				0
	(Total)		10,320		($10^4$10 kcal)	9	25	40	13	0	0	0	87

104	3610	9	153	300	ton	75,924	633,600		1,500				1
105	3620		10	700	ton	177,600	120,000	840,000					1
106	3620		20	88	ton	258,840		739,200					1
107	3620		20	650	ton	175,640	275,068	1,000,000	25,000				1
108	3620		22	1,000	ton	216,000		1,080,000	24,000				1
109	3620		30	600	ton	50,018	760,823	325,000	3,000				1
110	3620	9	1,000			12,692,000	23,065,656	163,000	153,000				24
111	3692	15	135	290,000	ton	22,700,000	18,504,000						20
112	3692	15	450	600,000	ton	45,400,000	31,868,000	5,000,000					40
113	3699		4	15,600	m2	15,600	132,684						0
114	3699		5	12,000	m2	140,400							0
115	3699		8	3,000	m2	66,816							0
116	3699		8	12,000	m2	211,032							0
117	3699	20	1,200	5,000,000	m2	18,360,000	28,256,040		1,843,200				31
	(Total)		3,065		($10^4$10 kcal)	9	102	9	2	0	0	0	121

118	3710		2	73	ton	2,166			60,000				0
119	3710		2	145	ton	5,000		87,000					0
120	3710		3	29	ton	5,000			34,800				0
121	3710		3	44	ton	3,333			29,000				0
122	3710		4	73	ton	3,333			29,000				0
123	3710		4	87	ton	20,000			58,000				0
124	3710		8	102	ton	118,666			312,000				0
125	3710		18	480	ton	60,000			48,000				0
126	3710		17	5,000	ton	171,600							0
127	3710		70	4,000	ton	300,000			100,000				0
128	3710	8	155	30,000	ton	1,255,000			200,000				0
129	3710	9	284	120,000	ton	5,856,000			720,000				1
130	3710	18	300	10,000	ton	14,328,000	750,000		5,000,000				7
131	3710	19	329	4,601	ton	15,500,000							1
132	3710	18	644	103,000	ton	2,374,800	252,897						0
133	3710	18	880	40,000	ton	31,200	3,675,000		100,000				4
134	3720		2	4	ton	1,000			28,800				0
135	3720		2	29	ton	4,166			43,500				0
136	3720		2	29	ton	2,500			12,000				0
137	3720		2	44	ton	66,666			33,000				0
138	3720		5	73	ton	21,000		52,200					0
139	3720		33	1,475	ton	540,000			360,000				0
	(Total)				($10^4$10 kcal)	3	5	0	7	0	0	0	15

Table 4 5 2 3-1(3)

No	Industrial Code	District	Personnel (person)	Amount of Production	Unit of Production	Fuel Consumption/Factory: Electricity (kwh/y)	Natural Gas (m3/y)	Heavy Oil (liter/y)	Gas Oil (liter/y)	Kerosene (liter/y)	Gasoline (liter/y)	LPG (liter/y)	Total (10^10kcal)
140	3811		3	11,400		3,780							0
141	3812		20	5,700		100,000			17,400				0
142	3813	18	100	979	ton	1,070,400	238,000		28,000				0
143	3813	4	175	1,100	ton	7,800	142,500						1
144	3819		95	5,500	ton	2,040,000	680,000		80,000				0
145	3819	4	190	55,200		715,000			352,000				1
146	3819	15	309	300,000,000		3,360,000			680,000				2
147	3819	18	533	12,400	ton	5,480,000	264,000	1,740,000					1
148	3819	5	560	13,000	ton	2,000,000	892,177		120,000				0
149	3822		25	6		150,000			50,000				0
150	3825		40	5,000		180,000			15,000				2
151	3826	9	1,115	174,000		6,920,000	1,613,000		120,000				0
152	3827		25	15,000		96,000							0
153	3827		30	2,280,000		240,000			10,000				1
154	3827	18	831	243,535		4,116,000	396,000		720				2
155	3827	4	900	113,000		5,400,000	1,200,000						17
156	3827	14	920	175,000		6,450,000	18,425,000						5
157	3827	9	2,200	322,000		9,600,000	3,600,000	18,000	240,000				0
158	3829		14	500	ton	24,000			6,000				0
159	3829		20	880		120,000			26,000				2
160	3829	18	161	1,200	ton	748,800			82,200			2,289,857	2
161	3839	18	152	1,050,000	ton	1,104,000	9,516		48,960				0
162	3839	15	211	306		252,000	72,000						0
163	3839	15	1,351	72,000		27,547,272	2,600,000		6,500,000				11
164	3839												0
165	3843		24	200		63,220			60,000				0
166	3843		30	250		168,000			30,000			21,429	0
167	3843	18	208	540		802,986	168,840						0
168	3843	9	312	2,500	ton	3,240,000	300,000		184,000				1
169	3843	9	542	1,350		2,556,000	2,454,750		500,000	4,000			3
170	3843	18	1,000	12,000		7,200,000	2,400,000		160,000				3
171	3843	18	1,373	1,750		3,600,000	2,171,110		917,664				3
172	3843	9	2,364	30,000		19,006	7,174,060		704,000		640,520		8
173	3843	9	8,750	80,000		90,036,063	6,048,000						14
174	3851		18			41,280			10,000				0
175	3851	9	330	600,000		524,000	158,400		54,000				0
	(Total)		24,731		(10^10 kcal)	18	48	2	10	0	1	2	78

176	3904		2	12		420							0
177			1	3		1,320							0
178			1	24		1,320						1,855	0
179			1	5,800	kg	2,904			12,000			236	0
180			2	3		1,500							0
181			2	24		2,280							0
182			2	24		1,020							0
183			2	870	kg	4,156	50,008						0
184			2	3,120	kg	5,424	1,200		7,200				0
185			2	23,200	kg	13,333	26,664						0
186			3	52		2,640						296	0
187			3	52		3,333							0
188			5		kg	13,333	60,000						0
189			7	17,400	kg	12,000	15,000						0
190			11	20,300	kg	13,080	53,096						0
	(Total)		46		(10^10 kcal)	0	0	0	0	0	0	0	0

Total Energy Consumption of Factories Questionnaired

No	Industrial Code	District	Personnel (person)	Amount of Production	Unit of Production	Fuel Consumption/Factory: Electricity (10^10 kcal)	Natural Gas (10^10 kcal)	Heavy Oil (10^10 kcal)	Gas Oil (10^10 kcal)	Kerosene (10^10 kcal)	Gasoline (10^10 kcal)	LPG (10^10 kcal)	Total (10^10kcal)
C	(Total)		55,926			64	247	61	48	0	1	2	421

Table 4.5.2.3-2(1) : List of Big Factories(>100 persons) Questionnaired

No.	Industrial Code	District	Personnel (person)	Amount of Production	Unit of Production	Energy Consumption by Factory: Electricity (mwh/y)	Natural Gas (m3/y)	Heavy Oil (ton/y)	Gas Oil (ton/y)	Kerosene (ton/y)	Gasoline (ton/y)	LPG (ton/y)	Total Fuel Consumption (10^10kcal)
1	3129	4	140	8,000	ton	5,981,200	936,319		735,920				2
2	3130	4	300	28,800,000	liter	7,452,000			1,258,400			34,500	1
3	3112	8	849	150	ton	6,102,000	7,200,000						7
4	3130	8	2,100	170,000,000	liter	17,706,000	3,200,000		2,800,000				5
5	3130	10	140	550	ton	1,032,000	700,000		50,000				1
6	3119	10	260	1,800	ton	854,000			150,000			31,824	0
7	3140	11	9,581	4,650	ton	8,712,000		5,554,000	170,000		9,000		4
8	3115	18	1,200	122,500	ton	34,560,000	24,000,000		1,500,000				25
9	3129	18	243	5,000	ton	540,000			10,000				0
10	3130	18	286	20,160,000	liter	158,000,000			3,800,000				3
11	3119	18	779	14,000	ton	1,584,000	150,000						0
12	3112	18	1,000	254,100	ton	12,960,000	12,600,000		1,440,000				14
(Total)	31		10,918		(10^10 kcal)	22	48	5	10	0	0	0	81
13	3240	4	101	490,500	pair	518,400	33,600						0
14	3219	8	561	2,000,000	m	5,788,000	72,000	840,000	1,200,000				2
15	3240	8	735	364	pair	3,600,000	4,560,000		182,500				4
16	3211	8	792			10,920,000	682,040		956,500				1
17	3211	18	979	2,000,000	m2	5,600,000	1,800,000	120,000	144,000			36,864	2
18	3211	20	2,300	21,600,000	m	22,787,000	6,693,500		2,180,000				9
(Total)	33		4,898		(10^10 kcal)	4	13	1	4	0	0	0	18
19	3313	2	264	110,000	m2	2,304,000			140,000				0
20	3320	8	450			134,400	270,000		28,800				0
21	3313	18	202	151,757	m2	864,000			240,000				0
(Total)	33		916		(10^10 kcal)	0	0	0	0	0	0	0	1
22	3419	18	268	15	ton	529,630	253,548	4,380,000					4
(Total)	34		268		(10^10 kcal)	0	0	4	0	0	0	0	4
23	3527	4	432	7,525	ton	4,407,000	1,130,195						1
24	3522	8	181			537,600	1,769,000		29,000				2
25	3521	8	193	3,500	ton	1,200,000	1,400,000						1
26	3556	8	223	1,958	ton	1,872,384	1,064,829						1
27	3522	8	308	7,125	ton	2,400,000	400,000		2,000				0
28	3521	8	322	8,700	ton	979,200	188,092						0
29	3552	8	361	1,715,800	pair	144,000		725,000	25,000				1
30	3523	8	800	38,000	ton	4,368,000	4,042,452		5,481,000				9
31	3522	8	1,250	9,250	ton	10,800,000	4,800,000		200,000				5
32	3551	8	1,542	24,000	ton	29,920,000	7,500,000	600,000	84,000				9
33	3529	18	150	7,000	ton	103,200	78,068		36,000				0
34	3523	18	220	24,000	ton	3,000,000	1,440,000						1
35	3522	18	240	1,320	ton	1,156,000	224,475		8,565				0
36	3561	18	255	1,362	ton	2,400,000	141,510		28,500				0
37	3522	18	280	1,000	ton	1,123,200	455,024						0
38	3530	18	1,088	100,000	ton	15,456,000	360,000		1,775,000				2
39	3523	18	1,358	150,000	ton	3,945,600							0
40	3530	20	720	100,000	ton	18,784,100		14,339,244	3,812,000			40,000	17
(Total)	Dolat-e Tehran Railway		9,734		(10^10 kcal)	8	24	15	10	0	0	0	50
41	3610	9	153	300	ton	75,924	833,800		1,500				1
42	3620	9	1,000			12,662,000	23,065,888	165,000	153,000				23
43	3692	15	136	290,000	ton	22,700,000	18,534,000						18
44	3692	15	450	800,000	ton	45,400,000	31,858,000	5,000,000					34
45	3699	20	1,200	5,000,000	m2	18,360,000	28,258,040		1,843,200				29
(Total)	36		2,938		(10^10 kcal)	9	100	5	2	0	0	0	107
46	3710	8	155	30,000	ton	1,255,000			200,000				0
47	3710	9	204	120,000	ton	5,856,000			720,000				1
48	3710	18	300	10,000	ton	14,328,000	750,000		5,000,000				5
49	3710	18	844	103,000	ton	2,374,800	252,687						0
50	3710	18	880	40,000	ton	31,200	3,675,000		100,000				4
51	3710	19	329	4,801	ton	13,500,000							0
(Total)	37		2,802		(10^10 kcal)	3	5	0	8	0	0	0	10
52	3813	4	175	1,100	ton	7,800	142,500						0
53	3819	4	190	55,200		715,000			352,000				0
54	3827	4	800	113,000		5,400,000	1,200,000						1
55	3819	5	560	13,000	ton	2,000,000	892,177		120,000				4
56	3843	8	312	2,500	ton	3,240,000	300,000		184,000				0
57	3851	8	330	800,000		524,000	158,400		54,000				0
58	3843	8	642	9,350		2,556,000	2,454,750		500,000	4,000			3
59	3826	8	1,115	174,000		8,820,000	1,813,000		120,000				3
60	3827	8	2,200	322,000		9,800,000	3,800,000	18,000	240,000				4
61	3843	9	2,364	30,000		19,008	7,174,080		704,000		643,920		8
62	3843	9	8,750	60,000		80,038,083	8,048,000						8
63	3827	14	920	175,000		8,450,000	18,425,000						19
64	3818	15	309	300,000,000		3,380,000			660,000				1
65	3839	15	1,351	72,000		27,547,272	2,600,000		8,500,000				8
66	3859	18	132	1,080,000	ton	1,104,800	8,518		48,960				0
67	3829	18	181	1,200	ton	748,800			82,200			2,269,857	3
68	3843	18	208	540		802,858	158,840						0
69	3839	18	211	306		252,000	72,000						0
70	3819	18	533	12,400	ton	5,480,000	264,000	1,740,000					2
71	3827	18	631	243,535		4,118,000	308,000		720				0
72	3843	18	1,000	13,000		7,200,000	2,600,000		180,000				3
73	3843	18	1,373	1,750		3,800,000	2,171,910		917,864				3
(Total)	38		24,287		(10^10 kcal)	18	47	2	10	0	1	2	81
(Grand Total)					(10^10 kcal)	62	236	31	42	0	1	2	313

(Note) (1) Electricity being not included

Table 4.5.2.3-2(2) : List of Big Factories(100 persons) Questionnaired

No.	Industrial Code	Orchid	Personnel (person)	Amount of Production	Unit of Production	Energy Consumption by Factory: Electricity (10³Mcal)	Natural Gas (10³Mcal)	Heavy Oil (10³Mcal)	Gas Oil (10³Mcal)	Kerosene (10³Mcal)	Gasoline (10³Mcal)	LPG (10³Mcal)	(1)Total Fuel Consumption (10³Mcal)
1	3129	4	140	8,000	ton	0	1	0	1	0	0	0	2
2	3130	4	300	28,800,000	liter	1	0	0	1	0	0	0	1
3	3112	9	869	130	ton	0	7	0	0	0	0	0	7
4	3130	9	2,100	170,000,000	liter	2	3	0	2	0	0	0	5
5	3130	10	140	850	ton	0	1	0	0	0	0	0	1
6	3119	10	260	1,800	ton	0	0	0	0	0	0	0	0
7	3140	11	3,581	4,850	ton	1	0	3	0	0	0	0	4
8	3115	18	1,200	122,500	ton	3	24	0	1	0	0	0	28
9	3129	18	243	5,000	ton	0	0	0	0	0	0	0	0
10	3130	18	288	20,160,000	liter	13	0	0	3	0	0	0	3
11	3119	18	779	14,000	ton	0	0	0	0	0	0	0	0
12	3112	18	1,000	254,100	ton	1	12	0	1	0	0	0	14
(Total)	31		10,918		(10³10 kcal)	22	48	3	10	0	0	0	83
13	3240	4	101	480,500	pair	0	0	0	0	0	0	0	0
14	3211	9	561	2,000,000	m	0	0	1	1	0	0	0	2
15	3240	9	735	354	pair	0	4	0	0	0	0	0	4
16	3211	9	792			1	0	0	1	0	0	0	2
17	3211	18	379	2,000,000	m2	0	2	0	0	0	0	0	2
18	3211	20	2,300	21,800,000	m	2	7	0	2	0	0	0	9
(Total)	32		4,836		(10³10 kcal)	4	13	1	4	0	0	0	18
19	3513	2	264	110,000	m2	0	0	0	0	0	0	0	0
20	3320	9	450			0	0	0	0	0	0	0	0
21	3313	18	202	151,757	m2	0	0	0	0	0	0	0	0
(Total)	33		916		(10³10 kcal)	0	0	0	0	0	0	0	1
22	3418	18	264	15	ton	0	0	4	0	0	0	0	4
(Total)	34		264		(10³10 kcal)	0	0	4	0	0	0	0	4
23	3522	4	432	7,325	ton	0	1	0	0	0	0	0	1
24	3522	9	181			0	2	0	0	0	0	0	2
25	3521	9	193	3,500	ton	0	1	0	0	0	0	0	1
26	3599	9	229	1,908	ton	0	1	0	0	0	0	0	1
27	3522	9	306	7,125	ton	0	0	0	0	0	0	0	0
28	3523	9	322	8,700	ton	0	0	0	0	0	0	0	0
29	3552	9	261	1,115,800	pair	0	0	1	0	0	0	0	1
30	3523	9	800	38,000	ton	0	4	0	5	0	0	0	9
31	3522	9	1,250	8,250	ton	1	5	0	0	0	0	0	5
32	3551	9	1,542	24,000	ton	2	7	1	0	0	0	0	9
33	3529	18	150	7,000	ton	0	0	0	0	0	0	0	0
34	3523	18	229	24,000	ton	0	1	0	0	0	0	0	1
35	3522	18	240	1,320	ton	0	0	0	0	0	0	0	0
36	3561	18	255	1,382	ton	0	0	0	0	0	0	0	0
37	3522	18	260	1,000	ton	0	0	0	0	0	0	0	0
38	3530	18	1,068	100,000	ton	1	0	0	2	0	0	0	2
39	3523	18	1,350	150,000	ton	0	0	0	0	0	0	0	0
40	3530	20	720	100,000	ton	2	0	14	3	0	0	0	17
	Delota Tehran Refinery					0	0	0	0	0	0	0	0
(Total)	35		9,734		(10³10 kcal)	8	24	15	10	0	0	0	56
41	3610	9	153	300	ton	0	1	0	0	0	0	0	1
42	3620	9	1,000			1	20	0	0	0	0	0	21
43	3692	15	138	290,000	ton	2	16	0	0	0	0	0	18
44	3692	15	450	800,000	ton	4	31	0	1	0	0	0	36
45	3699	20	1,200	5,000,000	m2	2	23	0	1	0	0	0	26
(Total)	36		2,058		(10³10 kcal)	9	100	0	2	0	0	0	107
46	3710	4	156	30,000	ton	0	0	0	0	0	0	0	0
47	3710	9	264	120,000	ton	1	0	0	1	0	0	0	1
48	3710	18	300	10,000	ton	1	1	0	3	0	0	0	5
49	3710	18	618	103,000	ton	0	0	0	0	0	0	0	0
50	3710	18	880	40,000	ton	0	4	0	0	0	0	0	4
51	3710	18	329	4,801	ton	1	0	0	0	0	0	0	0
(Total)	37		2,802		(10³10 kcal)	3	5	0	5	0	0	0	10
52	3813	4	175	1,100	ton	0	0	0	0	0	0	0	0
53	3819	4	190	55,200		0	0	0	0	0	0	0	0
54	3827	4	900	113,000		0	1	0	0	0	0	0	1
55	3819	9	560	13,000	ton	0	1	0	0	0	0	0	1
56	3843	9	312	2,500	ton	0	0	0	0	0	0	0	0
57	3851	9	330	800,000		0	0	0	0	0	0	0	0
58	3843	9	542	1,950		0	3	0	0	0	0	0	3
59	3829	9	1,115	174,000		1	2	0	0	0	0	0	2
60	3827	9	2,200	322,000		1	4	0	0	0	0	0	4
61	3843	9	2,356	30,000		0	7	0	1	0	0	0	8
62	3843	9	8,750	60,000		0	8	0	0	0	0	0	8
63	3827	14	920	175,000		1	16	0	0	0	0	0	18
64	3819	15	309	300,000,000		0	0	0	1	0	0	0	1
65	3836	15	1,351	72,000		2	3	0	8	0	0	0	8
66	3850	18	152	1,050,000	ton	0	0	0	0	0	0	0	0
67	3829	18	181	1,200	ton	0	0	0	0	0	0	2	2
68	3843	18	208	540		0	0	0	0	0	0	0	0
69	3839	18	211	305		0	0	0	0	0	0	0	0
70	3819	18	553	12,400	ton	0	0	2	0	0	0	0	2
71	3827	18	831	243,535		0	0	0	0	0	0	0	0
72	3843	18	1,000	12,000		1	2	0	0	0	1	0	3
73	3843	18	1,373	1,750		0	2	0	1	0	0	0	3
(Total)	38		24,287		(10³10 kcal)	16	47	2	15	0	1	3	81
(Grand Total)					(10³10 kcal)	82	238	31	42	0	1	2	313

(Note) (1) Electricity being not included

Table 4.5.2.3-3(1) : Sizewise Energy Balance of Total Manufacturing in GTA (1994)

(10^10 kcal)

Code	Item	Gasoline			Kerosene			Gas Oil			Heavy Oil			LPG			Natural Gas			Solid Fuel			Total		
		Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big	Total Energy	Big Factory	Non Big
31	Food Products	9		9	169		169	735	10	725	193	3	190	17		17	161	48	133	0		0	1,304	61	1,243
32	Textile	13		13	36		36	133	4	129	109	1	108	7		7	237	13	224	11		11	546	18	530
33	Wood Products	3		3	4		4	23		23	12		12	0			2		2	0		0	44	0	44
34	Paper & Products	4		4	3		3	40		40	27	4	23	1		1	86		86	65		65	226	4	224
35	Industrial Chemicals	16		16	7		7	211	10	201	59	15	44	5		5	482	24	458	251		251	1,031	49	982
36	Nonmetal Products	12		12	30		30	204	2	202	1,396	5	1,393	4		4	230	101	129	267		267	2,145	108	2,037
37	Iron & Steel	10		10	3		3	176	6	170	110		110	19		19	2,191	5	2,186	437		437	2,946	11	2,935
38	Machinery	33	1	32	36		36	199	10	189	58	2	57	31	2	29	268	47	221	6		6	632	62	570
39	Other Industries	3		3	6		6	6		6	1		1	1			2		2	502		502	521	0	520
																							0	0	0
	(Total)	103	1	102	293	0	293	1,727	42	1,685	1,967	30	1,936	86	2	84	3,660	236	3,443	1,539	0	1,539	9,399	313	9,086

(Note) Non Big : Other than big factories

Big Factory : Personnel>100 in questionnaire

Table4.5.2.3-3(2) : Energy Balance of General Services and Household in GTA (1994)

(10^10 kcal)

Item	Gasoline	Kerosene	Gas Oil	Heavy Oil	LPG	Natural Gas	Solid Fuel	Total
Household	0	1,109	715		331	3,340	0	5,495
Commercial & General	0	76	124	350	37	439	0	1,026
(Total)	0	1,185	839	350	368	3,779	0	6,521

Table 4.6.2.3-4 : Sectorwise Number of Work Units in GTA Districts (1994)

(Industrial Units>10 persons)

ISIC / District	31		32		33		34		35		36		37		38		39		Subtotal		General Service & Household		
	Non	Big	Non	Big	Non	Big	Non	Big	Non	Big	Non	Big	Non	Big	Non	Big	Non	Big	Non	Big	Household	Commercial	Subtotal
1	9		2		1		3		3		1		0		4		0		23	0	65,789	5,246	71,035
2	2		0		0	1	0		5		2		0		7		2		18	1	92,703	6,942	99,645
3	13		4		0		5		5		1		2		15		0		45	0	60,952	6,752	67,704
4	14	2	19	1	11		12		46	1	3		7		143	3	42		299	7	129,771	17,337	147,108
5	20		44		1		12		58		15		6		62	1	7		245	1	89,503	6,817	96,320
6	16		41		0		34		10		4		3		35		5		148	0	67,479	16,667	84,146
7	1		18		1		19		6		2		0		20		2		69	0	78,955	13,043	91,998
8	6		3		2		0		6		3		0	1	28		10		56	1	92,189	10,781	102,970
9	21	2	43	3	2	1	6		53	9	6	2	9	1	135	7	9		268	25	55,835	7,675	63,510
10	2	2	9		0		0		2		1		0		5		3		22	2	77,636	11,886	89,522
11	6	1	65		0		15		2		0		0		10		11		129	1	63,617	20,061	83,678
12	2		144		1		69		3		1		0		21		11		252	0	65,970	60,314	126,284
13	9		9		9		3		14		2		5		45		3		99	0	48,468	7,450	55,918
14	3		13		1		3		1		1		0		5	1	2		29	1	96,621	13,349	109,970
15	7		26		1		4		4		16	2	3		33	2	2		96	4	124,567	21,898	146,465
16	10	1	17		1		1		4		16		1		17		3		70	1	73,565	12,242	85,827
17	3		6		2		0		6		2		2		21		6		50	0	79,224	12,216	88,440
18	35	4	20	1	9	1	10	1	40	7	52		15	3	119	8	13		313	25	67,696	13,687	81,385
19	5		13		3		2		5		27		4	1	23		1		83	1	48,802	9,022	57,824
20	27		60	1	3		6		35	1	104	1	13		70		7		325	3	73,022	11,224	84,246
Total GTA	211	12	576	6	48	3	206	1	310	18	261	5	70	6	838	27	139	0	2,661	73	1,547,018	288,606	1,833,626
	223		584		51		207		328		266		76		865		139		2,734				
Total Iran	920		920		107		265		561		2,051		107		1,010		200		6,161		9,626,945		

(Note) Non : Others than Big Big : Personnel>100 in questionnaire

(Source) AQCC : Stationary Sources Survey (NO.2)

Table 4.5.2.3-5(1) : Gasoline Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	0.4	0.0	0.1	0.1	0.2	0.0	0.0	0.2	0.0	0.9	0.0	0.0	0.0
2	0.1	0.0	0.0	0.0	0.3	0.1	0.0	0.3	0.0	0.7	0.0	0.0	0.0
3	0.6	0.1	0.0	0.1	0.3	0.0	0.3	0.6	0.0	1.9	0.0	0.0	0.0
4	0.6	0.4	0.7	0.2	2.5	0.1	1.0	5.5	0.9	11.9	0.0	0.0	0.0
5	0.9	1.0	0.1	0.2	3.0	0.7	0.9	3.1	0.2	10.0	0.0	0.0	0.0
6	0.7	0.9	0.0	0.7	0.5	0.2	0.4	1.3	0.1	4.8	0.0	0.0	0.0
7	0.0	0.4	0.1	0.4	0.3	0.1	0.0	0.8	0.0	2.1	0.0	0.0	0.0
8	0.3	0.1	0.1	0.0	0.3	0.1	0.0	1.1	0.2	2.2	0.0	0.0	0.0
9	0.9	1.0	0.1	0.2	2.7	0.4	1.3	5.2	0.2	11.9	0.0	0.0	0.0
10	0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.7	0.0	0.0	0.0
11	0.3	1.9	0.0	0.3	0.1	0.0	0.0	0.4	0.2	3.2	0.0	0.0	0.0
12	0.1	3.2	0.1	1.3	0.2	0.0	0.0	0.8	0.2	6.0	0.0	0.0	0.0
13	0.4	0.2	0.6	0.1	0.7	0.1	0.7	1.7	0.1	4.5	0.0	0.0	0.0
14	0.1	0.3	0.1	0.1	0.1	0.0	0.0	0.2	0.0	0.9	0.0	0.0	0.0
15	0.3	0.6	0.1	0.1	0.2	0.7	0.4	1.3	0.0	3.7	0.0	0.0	0.0
16	0.4	0.4	0.1	0.0	0.2	0.7	0.1	0.6	0.1	2.7	0.0	0.0	0.0
17	0.1	0.2	0.1	0.0	0.3	0.1	0.3	0.8	0.1	2.1	0.0	0.0	0.0
18	1.5	0.4	0.6	0.2	2.1	2.4	2.1	4.5	0.3	14.1	0.0	0.0	0.0
19	0.2	0.3	0.2	0.0	0.3	1.2	0.6	0.9	0.0	3.7	0.0	0.0	0.0
20	1.2	1.3	0.2	0.1	1.8	4.8	1.9	2.7	0.2	14.1	0.0	0.0	0.0
Total	9	13	3	4	16	12	10	32	3	102	0	0	0

Table 4.5.2.3-5(2) : Kerosene Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	7.2	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.0	7.8	47.2	1.4	48.6
2	1.6	0.0	0.0	0.0	0.1	0.2	0.0	0.3	0.1	2.3	66.5	1.8	68.3
3	10.4	0.3	0.0	0.1	0.1	0.1	0.1	0.6	0.0	11.7	43.7	1.8	45.5
4	11.2	1.2	0.9	0.2	1.1	0.3	0.3	6.1	1.8	23.2	93.0	4.6	97.6
5	16.0	2.9	0.1	0.2	1.3	1.7	0.3	3.5	0.3	26.3	64.2	1.8	66.0
6	12.8	2.7	0.0	0.5	0.2	0.5	0.1	1.5	0.2	18.5	48.4	4.4	52.8
7	0.8	1.2	0.1	0.3	0.1	0.2	0.0	0.9	0.1	3.7	55.2	4.0	59.2
8	4.8	0.2	0.2	0.0	0.1	0.3	0.0	1.2	0.4	7.3	66.1	2.9	68.9
9	16.8	2.8	0.2	0.1	1.2	0.9	0.4	5.8	0.4	28.6	39.9	2.0	41.9
10	1.6	0.6	0.0	0.0	0.0	0.1	0.0	0.2	0.1	2.7	55.7	3.2	58.8
11	4.8	5.6	0.0	0.2	0.0	0.0	0.0	0.4	0.5	11.6	45.5	5.3	50.8
12	1.6	9.5	0.1	1.0	0.1	0.1	0.0	0.9	0.5	13.7	47.3	16.0	63.3
13	7.2	0.6	0.8	0.0	0.3	0.2	0.2	1.9	0.1	11.4	34.7	2.0	36.7
14	2.4	0.9	0.1	0.0	0.0	0.1	0.0	0.2	0.1	3.8	69.3	3.5	72.8
15	5.6	1.7	0.1	0.1	0.1	1.8	0.1	1.4	0.1	11.0	89.3	5.8	95.1
16	8.0	1.1	0.1	0.0	0.1	1.8	0.0	0.7	0.1	12.1	52.8	3.2	56.0
17	2.4	0.5	0.2	0.0	0.1	0.2	0.1	0.9	0.3	4.7	54.6	3.2	57.9
18	28.0	1.3	0.8	0.1	0.9	6.0	0.6	5.1	0.6	43.4	48.5	3.6	52.2
19	4.0	0.9	0.3	0.0	0.1	3.1	0.2	1.0	0.0	9.6	35.0	2.4	37.4
20	21.6	3.9	0.3	0.1	0.8	12.0	0.6	3.0	0.3	42.5	52.3	3.0	55.3
Total	169	38	4	3	7	30	3	36	6	296	1,109	76	1,185

Table 4.5.2.3-5(3) : Gas Oil Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	30.9	0.4	0.5	0.6	1.9	0.8	0.0	0.9	0.0	36.1	30.4	2.3	32.7
2	6.9	0.0	0.0	0.0	3.2	1.5	0.0	1.6	0.1	13.3	42.8	3.0	45.8
3	44.7	0.9	0.0	1.0	3.2	0.8	4.9	3.4	0.0	58.8	28.2	2.9	31.1
4	48.1	4.2	5.3	2.3	31.1	2.3	17.0	32.3	1.8	144.5	60.0	7.5	67.5
5	68.7	9.8	0.5	2.3	37.6	11.6	14.6	18.5	0.3	163.9	41.4	2.9	44.3
6	55.0	9.2	0.0	6.6	6.5	3.1	7.3	7.9	0.2	95.7	31.2	7.2	38.4
7	3.4	4.0	0.5	3.7	3.9	1.5	0.0	4.5	0.1	21.7	35.6	6.5	42.1
8	20.6	0.7	1.0	0.0	3.9	2.3	0.0	6.3	0.4	35.2	42.6	4.7	47.3
9	72.2	9.6	1.0	1.6	34.4	6.2	21.9	30.4	0.4	177.5	25.7	3.3	29.0
10	6.9	2.0	0.0	0.0	1.3	0.8	0.0	1.1	0.1	12.2	35.9	5.1	41.0
11	20.6	19.0	0.0	2.9	1.3	0.0	0.0	2.3	0.5	46.5	29.3	8.7	38.0
12	6.9	32.1	0.5	13.4	1.9	0.8	0.0	4.7	0.5	60.8	30.5	26.1	56.6
13	30.9	2.0	4.3	0.6	9.1	1.5	12.1	10.1	0.1	70.9	22.4	3.2	25.6
14	10.3	2.9	0.5	0.6	0.6	0.8	0.0	1.1	0.1	16.9	44.7	5.8	50.4
15	24.1	5.8	0.5	0.8	2.6	12.4	7.3	7.4	0.1	60.9	57.6	9.5	67.1
16	34.4	3.8	0.5	0.2	2.6	12.4	2.4	3.8	0.1	60.2	34.0	5.3	39.3
17	10.3	1.8	1.0	0.0	3.9	1.5	4.9	4.7	0.3	28.3	35.2	5.3	40.5
18	120.3	4.5	4.3	1.9	25.9	40.2	36.4	26.8	0.6	261.0	31.3	5.9	37.2
19	17.2	2.9	1.4	0.4	3.2	20.9	9.7	5.2	0.0	61.0	22.6	3.9	26.5
20	92.8	13.4	1.4	1.2	22.7	80.5	31.6	15.8	0.3	259.6	33.7	4.9	38.6
Total	725	129	23	40	201	202	170	189	6	1685	715.0	124.0	839

Table 4.5.2.3-5(4) : Heavy Oil Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	8.1	0.4	0.3	0.3	0.4	5.3	0.0	0.3	0.0	15.1	0.0	6.4	6.4
2	1.8	0.0	0.0	0.0	0.7	10.7	0.0	0.5	0.0	13.7	0.0	8.5	8.5
3	11.7	0.7	0.0	0.6	0.7	5.3	3.1	1.0	0.0	23.2	0.0	8.2	8.2
4	12.6	3.6	2.8	1.3	6.8	16.0	11.0	9.7	0.3	64.1	0.0	21.2	21.2
5	18.0	8.2	0.3	1.3	8.2	80.1	9.4	5.6	0.1	131.2	0.0	8.3	8.3
6	14.4	7.7	0.0	3.8	1.4	21.3	4.7	2.4	0.0	55.8	0.0	20.4	20.4
7	0.9	3.4	0.3	2.1	0.9	10.7	0.0	1.4	0.0	19.5	0.0	18.4	18.4
8	5.4	0.6	0.5	0.0	0.9	16.0	0.0	1.9	0.1	25.3	0.0	13.2	13.2
9	18.9	8.0	0.5	0.9	7.5	42.7	14.1	9.2	0.1	101.9	0.0	9.4	9.4
10	1.8	1.7	0.0	0.0	0.3	5.3	0.0	0.3	0.0	9.5	0.0	14.5	14.5
11	5.4	15.9	0.0	1.7	0.3	0.0	0.0	0.7	0.1	24.0	0.0	24.5	24.5
12	1.8	26.9	0.3	7.7	0.4	5.3	0.0	1.4	0.1	43.9	0.0	73.7	73.7
13	8.1	1.7	2.3	0.3	2.0	10.7	7.9	3.1	0.0	36.0	0.0	9.1	9.1
14	2.7	2.4	0.3	0.3	0.1	5.3	0.0	0.3	0.0	11.5	0.0	16.3	16.3
15	6.3	4.9	0.3	0.4	0.6	85.4	4.7	2.2	0.0	104.8	0.0	26.7	26.7
16	9.0	3.2	0.3	0.1	0.6	85.4	1.6	1.2	0.0	101.3	0.0	14.9	14.9
17	2.7	1.5	0.5	0.0	0.9	10.7	3.1	1.4	0.0	20.8	0.0	14.9	14.9
18	31.5	3.7	2.3	1.1	5.7	277.5	23.6	8.1	0.1	353.6	0.0	16.7	16.7
19	4.5	2.4	0.8	0.2	0.7	144.1	6.3	1.6	0.0	160.6	0.0	11.0	11.0
20	24.3	11.2	0.8	0.7	5.0	555.1	20.4	4.8	0.1	622.2	0.0	13.7	13.7
Total	190	108	12	23	44	1393	110	57	1	1938	0.0	350	350

Table 4.5.2.3-5(5) : LPG Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1.0	14.1	0.7	14.8
2	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.5	19.8	0.9	20.7
3	1.0	0.0	0.0	0.0	0.1	0.0	0.5	0.5	0.0	2.3	13.0	0.9	13.9
4	1.1	0.2	0.0	0.1	0.8	0.0	1.9	4.9	0.0	9.1	27.8	2.2	30.0
5	1.6	0.5	0.0	0.1	0.9	0.2	1.6	2.8	0.0	7.8	19.2	0.9	20.0
6	1.3	0.5	0.0	0.2	0.2	0.1	0.8	1.2	0.0	4.2	14.4	2.2	16.6
7	0.1	0.2	0.0	0.1	0.1	0.0	0.0	0.7	0.0	1.2	16.5	1.9	18.4
8	0.5	0.0	0.0	0.0	0.1	0.0	0.0	1.0	0.0	1.6	19.7	1.4	21.1
9	1.7	0.5	0.0	0.0	0.9	0.1	2.4	4.7	0.0	10.3	11.9	1.0	12.9
10	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.5	16.6	1.5	18.1
11	0.5	1.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	2.0	13.6	2.6	16.2
12	0.2	1.7	0.0	0.3	0.0	0.0	0.0	0.7	0.0	3.0	14.1	7.8	21.9
13	0.7	0.1	0.0	0.0	0.2	0.0	1.4	1.6	0.0	4.0	10.4	1.0	11.3
14	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.6	20.7	1.7	22.4
15	0.6	0.3	0.0	0.0	0.1	0.2	0.8	1.1	0.0	3.2	26.7	2.8	29.5
16	0.8	0.2	0.0	0.0	0.1	0.2	0.3	0.6	0.0	2.2	15.7	1.6	17.3
17	0.2	0.1	0.0	0.0	0.1	0.0	0.5	0.7	0.0	1.7	16.3	1.6	17.9
18	2.8	0.2	0.0	0.0	0.6	0.8	4.1	4.1	0.0	12.7	14.5	1.8	16.3
19	0.4	0.2	0.0	0.0	0.1	0.4	1.1	0.8	0.0	2.9	10.4	1.2	11.6
20	2.2	0.7	0.0	0.0	0.6	1.6	3.5	2.4	0.0	11.0	15.6	1.4	17.1
Total	17	7	0	1	5	4	19	29	0	82	331.0	37.0	368.0

Table 4.5.2.3-5(6) :Natural Gas Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	6	1	0	1	4	0	0	1	0	14	142	8	150
2	1	0	0	0	7	1	0	2	0	12	200	11	211
3	8	2	0	2	7	0	62	4	0	86	132	10	142
4	9	7	0	5	71	1	219	38	1	351	280	27	307
5	13	17	0	5	86	7	187	22	0	337	193	10	204
6	10	16	0	15	15	2	94	9	0	160	146	26	171
7	1	7	0	8	9	1	0	5	0	31	166	23	189
8	4	1	0	0	9	1	0	7	0	23	199	17	216
9	13	17	0	3	78	4	281	36	0	432	120	12	132
10	1	3	0	0	3	0	0	1	0	10	168	18	186
11	4	33	0	6	3	0	0	3	0	49	137	31	168
12	1	56	0	29	4	0	0	6	0	97	142	92	235
13	6	3	0	1	21	1	156	12	0	201	105	11	116
14	2	5	0	1	1	0	0	1	0	12	209	20	229
15	4	10	0	2	6	8	94	9	0	132	269	34	303
16	6	7	0	0	6	8	31	4	0	63	159	19	178
17	2	3	0	0	9	1	62	6	0	83	165	19	183
18	22	8	0	4	59	26	468	31	0	619	146	21	167
19	3	5	0	1	7	13	125	6	0	161	105	14	119
20	17	23	0	3	52	51	406	18	0	571	158	17	175
Total	133	224	2	88	458	129	2,186	221	2	3,443	3,340	439	3,779

Table 4.5.2.3-5(7) :Solid Fuel Consumption of Districtwise Non-Big Units in GTA Districts (1994)

(10^10 kcal)

ISIC / District	Industrial Units)										General Service & Household		
	31	32	33	34	35	36	37	38	39	Subtotal	Household	Commercial	Subtotal
1	0	0	0	1	2	1	0	0	0	4	0	0	0
2	0	0	0	0	4	2	0	0	7	13	0	0	0
3	0	0	0	2	4	1	12	0	0	19	0	0	0
4	0	0	0	4	39	3	44	1	152	242	0	0	0
5	0	1	0	4	47	15	37	1	25	130	0	0	0
6	0	1	0	11	8	4	19	0	18	61	0	0	0
7	0	0	0	6	5	2	0	0	7	21	0	0	0
8	0	0	0	0	5	3	0	0	36	44	0	0	0
9	0	1	0	3	43	8	56	1	32	144	0	0	0
10	0	0	0	0	2	1	0	0	11	14	0	0	0
11	0	2	0	5	2	0	0	0	40	48	0	0	0
12	0	3	0	22	2	1	0	0	40	68	0	0	0
13	0	0	0	1	11	2	31	0	11	57	0	0	0
14	0	0	0	1	1	1	0	0	7	10	0	0	0
15	0	1	0	1	3	16	19	0	7	48	0	0	0
16	0	0	0	0	3	16	6	0	11	37	0	0	0
17	0	0	0	0	5	2	12	0	22	41	0	0	0
18	0	0	0	3	32	53	94	1	47	231	0	0	0
19	0	0	0	1	4	28	25	0	4	61	0	0	0
20	0	1	0	2	28	106	81	1	25	245	0	0	0
Total	0	11	0	65	251	267	437	6	502	1,539	0	0	0

Table 4.5.2.3-6 : Districtwise Fuel Consumption for Stationary Emission Source in GTA (1994)

(10**10 kcal)

Fuel \ District	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1 Gasoline																					
Industrial Non-big Unit	0.9	0.7	1.9	11.9	10.0	4.8	2.1	2.2	11.9	0.7	3.2	6.0	4.5	0.9	3.7	2.7	2.1	14.1	3.7	14.1	102
Industrial big Unit																		1.0			1.0
Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Energy Conversion																					
(Sub-total)	0.9	0.7	1.9	11.9	10.0	4.8	2.1	2.2	11.9	0.7	3.2	6.0	4.5	0.9	3.7	2.7	2.1	15.1	3.7	14.1	103.0
2 Kerosene																					
Industrial Non-big Unit	7.6	2.3	11.7	23.2	26.3	15.5	3.7	7.3	28.9	2.7	11.6	13.7	11.4	3.6	11.0	12.1	4.7	43.4	9.6	42.5	296
Industrial big Unit																					
Commercial/Household	48.6	68.3	45.5	97.6	66.0	52.6	59.2	68.9	41.9	58.8	60.8	63.3	36.7	72.6	66.1	56.0	57.9	62.2	37.4	66.3	1,185
Energy Conversion																					
(Sub-total)	56.4	70.6	57.2	120.9	92.3	71.3	62.8	76.2	70.5	61.6	72.3	77.0	48.1	76.6	106.1	68.1	62.6	95.6	46.9	97.8	1,481.0
3 Gas Oil																					
Industrial Non-big Unit	39.1	13.3	56.8	144.5	163.9	95.7	21.7	39.2	177.6	12.2	46.6	80.8	70.9	16.9	60.9	60.2	28.3	261.0	61.0	299.6	1,585
Industrial big Unit		1.0		5.0				3.0	11.0		2.0				3.0			16.0		1.0	42
Commercial/Household	32.7	45.6	31.1	67.5	44.3	36.4	42.1	47.3	29.0	41.0	38.0	56.6	25.6	50.4	67.1	39.3	40.6	37.2	20.5	38.6	609
Energy Conversion																11.0				157.0	168.0
(Sub-total)	66.7	60.7	88.9	216.9	208.2	134.1	63.7	89.5	217.6	53.2	86.5	117.4	96.5	67.3	131.0	110.8	68.9	314.2	87.4	466.2	2,734.0
4 Heavy Oil																					
Industrial Non-big Unit	15.1	13.7	23.2	64.1	131.2	66.8	19.5	26.3	101.9	9.5	24.0	43.9	36.0	11.5	104.8	101.3	20.8	363.6	166.8	622.2	1,938
Industrial big Unit				3.0					7.0						14.0	6.0			2.0		31
Commercial/Household	6.4	8.5	8.2	21.2	8.3	20.4	18.4	13.2	9.4	14.5	24.5	73.7	9.1	16.3	26.7	14.9	14.9	16.7	11.0	13.7	350
Energy Conversion																204.0				495.0	699.0
(Sub-total)	21.5	22.2	31.5	88.3	139.5	78.1	37.9	39.5	118.3	24.0	48.5	117.6	45.1	27.8	145.5	325.2	35.8	370.3	173.8	1,130.9	3,018.0
6 LPG																					
Industrial Non-big Unit	1.0	0.5	2.3	9.1	7.3	4.2	1.7	1.8	10.3	0.5	2.0	3.0	4.0	0.8	3.2	2.2	1.7	12.7	2.9	11.0	82
Industrial big Unit																		2.0			2
Commercial/Household	14.6	20.7	13.9	30.0	20.0	16.6	18.4	21.1	12.9	18.1	18.2	21.9	11.3	22.4	29.5	17.3	17.9	16.3	11.6	17.1	368
Energy Conversion																					
(Sub-total)	15.7	21.2	16.2	39.1	27.9	20.8	19.6	22.7	23.2	18.6	18.1	24.9	15.4	23.0	32.7	19.6	19.6	31.0	14.6	28.1	452.0
8 Natural Gas																					
Industrial Non-big Unit	13.8	11.0	66.2	361.1	337.0	169.2	30.9	22.9	433.4	9.6	46.9	97.2	200.5	11.0	132.9	62.9	63.0	619.3	160.9	970.9	3,443
Industrial big Unit		1.0		3.0				1.0	79.0	1.0	1.0				16.0	52.0	24.0			36.0	237
Commercial/Household	150.1	210.8	141.9	309.7	209.7	171.2	188.2	215.6	131.9	186.8	167.6	294.8	116.1	229.1	302.5	177.6	183.3	197.1	119.2	174.8	3,779
Energy Conversion		73.0														215.0				992.0	1,284
(Sub-total)	163.8	296.3	228.1	680.8	546.7	331.5	220.1	239.5	643.3	198.4	217.5	392.0	316.6	256.6	447.0	479.6	268.3	810.4	280.1	1,746.5	8,743.0
7 Solid Fuel																					
Industrial Non-big Unit	4.5	13.4	19.3	242.4	130.3	60.6	20.6	44.3	144.1	13.7	47.6	66.0	56.9	10.3	47.6	37.6	41.4	230.6	61.3	244.7	1,038
Industrial big Unit																					
Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Energy Conversion																					
(Sub-total)	4.5	13.4	19.3	242.4	130.3	60.6	20.6	44.3	144.1	13.7	47.6	66.0	56.9	10.3	47.6	37.6	41.4	230.6	61.3	244.7	1,038.4
9 Total																					
Industrial Non-big Unit	79.1	55.5	202.4	846.3	805.5	400.1	99.7	138.8	909.9	48.6	183.9	292.7	384.2	55.9	363.9	278.8	182.9	1,634.7	460.0	1,794.6	9,099
Industrial big Unit	0.0	2.0	0.0	11.0	0.0	0.0	0.0	4.0	97.9	1.0	3.0	0.0	0.0	16.0	33.0	29.0	0.0	43.0	2.0	39.0	313
Commercial/Household	252.5	364.1	240.7	523.0	342.3	289.3	327.2	366.0	225.1	318.3	297.1	450.2	196.8	391.0	521.0	309.2	314.5	288.9	200.0	299.9	6,921
Energy Conversion	0.0	73.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	430.0	0.0	0.0	0.0	1,818.0	2,321
(Sub-total)	331.5	494.6	444.1	1,380.4	1,148.8	689.4	426.9	508.8	1,229.0	368.1	484.0	742.9	583.0	462.6	918.6	1,043.0	496.5	1,967.1	662.6	3,718.4	18,040

Table 4.5.2.3-7

AIR QUALITY CONTROL COMPANY

An Integrated Master Plan for Air Pollution Control in Greater Tehran Area

Questionnaire for Emission Inventory of Stationary Sources (Industrial Units)

General Data

1. Date:
2. File No.
3. Filing person:
4. Name and responsibility of responding person:
5. Name of workshop:
6. Name of owner:
7. Address:
8. Tel.: Fax:
9. UTM coordinates
10. Municipality district (Boundary):
11. Total surface area ____ m^2 Covered workshops ____ m^2 Covered warehouses ____ m^2
Open workshops ____ m^2 Open warehouses ____ m^2 Administrative buildings ____ m^2
Green area ____ m^2

Technical Data

12. Industrial code:
13. Date of start
14. Type of product(service):
15. Amount of production (Service)
16. Type and amount of raw material:

Solvent:		lit	Per:	day		Month		Year		used for ...
Powder:		kg	Per:	day		Month		Year		used for ...
Gas:		m^3	Per:	day		Month		Year		used for ...
Other:			Per:	day		Month		Year		used for ...

17. Working Schedule:

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
00-01	00-01	00-01	00-01	00-01	00-01	00-01
01-02	01-02	01-02	01-02	01-02	01-02	01-02
02-03	02-03	02-03	02-03	02-03	02-03	02-03
03-04	03-04	03-04	03-04	03-04	03-04	03-04
04-05	04-05	04-05	04-05	04-05	04-05	04-05
05-06	05-06	05-06	05-06	05-06	05-06	05-06
06-07	06-07	06-07	06-07	06-07	06-07	06-07
07-08	07-08	07-08	07-08	07-08	07-08	07-08
08-09	08-09	08-09	08-09	08-09	08-09	08-09
09-10	09-10	09-10	09-10	09-10	09-10	09-10
10-11	10-11	10-11	10-11	10-11	10-11	10-11
11-12	11-12	11-12	11-12	11-12	11-12	11-12
12-13	12-13	12-13	12-13	12-13	12-13	12-13
13-14	13-14	13-14	13-14	13-14	13-14	13-14
14-15	14-15	14-15	14-15	14-15	14-15	14-15
15-16	15-16	15-16	15-16	15-16	15-16	15-16
16-17	16-17	16-17	16-17	16-17	16-17	16-17
17-18	17-18	17-18	17-18	17-18	17-18	17-18
18-19	18-19	18-19	18-19	18-19	18-19	18-19
19-20	19-20	19-20	19-20	19-20	19-20	19-20
20-21	20-21	20-21	20-21	20-21	20-21	20-21
21-22	21-22	21-22	21-22	21-22	21-22	21-22
22-23	22-23	22-23	22-23	22-23	22-23	22-23
23-24	23-24	23-24	23-24	23-24	23-24	23-24

18. Operation Schedule: %Full load ____
Vacations ____ days Summer From ____ To ____
Other From ____ To ____

19. No. of employees: Total: ____ Permanent ____ Temporary ____

20. Type and Amount of fuel consumption:

Amount / Type	Per day	Per week	Per month	Per year
Gas(m^3)				
Diesel(lit)				
Heavy oil (lit)				
Other (lit)				

21. Electricity consumption(KW/hr):
Per month ☐ Per year ☐ Other ☐

22. Any fuel consuming utility :

Utility / Fuel	Furnace	Boiler	Other
Fuel type			
Fuel consumption			
% exess air			
Working time per day(hr)			

Chimney Characteristics:

23. No. of chimneys ☐ If more than 1, record the data (23-28) for each.
24. Shape: Cylindrical ☐ Rectangular ☐ Other ☐
25. Height: ☐ meter
26. Diameter/dimensions : Inner diameter ☐ meter Outer diameter ☐ meter
27. Construction material: Brick ☐ Cement ☐ Metal ☐ Other
28. Charecteristics of the nearby Buildings

A. Are there any buildings in an area with a radius of 2× chimney height around chimney?

B. Is $\frac{\text{Chimney Height}}{\text{Building Height}} < 2.5$?

If the answers to questions A an B are positive, complete the following table:

No. of Building	Length(m)	Width(m)	Height(m)

29. Exit gas characteristics during full load/production.

Gas Temp.(c)	
Gas Flow.(m^3/s or kg/s)	
Gas Speed (m/s)	

Air Pollution Control

30. Is there any stack control measures
Available ☐ Yes ☐ No
Used ☐ Yes ☐ No
Type:
31. Any stack gas sampling (measurement): ☐ Yes ☐ No
If yes, please enclose the data sheets.

A B C D E F G H I J

Table 4.5.2.4-1(1) : Emission Factors by Combustion

(A7.J36) (Ratio 100)

	Sector	Fuel	Unit	SOx	NOx	CO	HC	SPM
1	Industry	Gasoline	g/Gj	37	165	7,744	298	41
		Kerosene	g/Gj	86	165	15	9	64
		Gas Oil	g/Gj	336	164	13	9	65
		Heavy Oil	g/Gj	1,268	175	12	9	67
		LPG	g/Gj	61	52	7	2	8
		Natural Gas	g/Gj	1	73	7	1	6
		Solid Fuel	g/Gj	590	250	170	0	74
2	Household & Commercial	Kerosene	g/Gj	86	62	15	11	22
		Gas Oil	g/Gj	336	71	15	4	55
		Heavy Oil	g/Gj	1,268	70	15	4	71
		LPG	g/Gj	61	36	9	3	8
		Natural Gas	g/Gj	1	50	8	3	7
		Solid Fuel	g/Gj	590	215	800	1	74
3	Transport	Gasoline	g/Gj	37	301	8,845	800	575
		Jet Fuel	g/Gj	129	224	120	63	23
		Gas Oil	g/Gj	345	831	765	559	9,190
		LPG	g/Gj	61	132	15	3	112
4	Power Plant & Refinery	Gas Oil	g/Gj	336	284	15	15	66
		Heavy Oil	g/Gj	1,637	325	16	16	70
		Natural Gas	g/Gj	1	234	7	16	6

(Note) Solid Fuel : Coal, Cokes, Oil Cokes

Table 4.5.2.4-1(2) : Data Base for Hydrocarbon Emission

The following figures show the average statistical figures compiled by National and Local Governmental Organizations in Japan.

(1) Evaporating loss in refinery in Japan (1994)

		(kl-crude/year)
- Crude oil input (100%)		270,857,000
- Refining loss (1.3%)		▲ 3,521,000
- Oil cokes	0.86%	
- Flare	0.34%	
- Evaporation	0.10%	
- Fuel consumption for refining (4.2%)		
Heavy oil		2,675,386
Other petroleum fuel		123,326
LPG		14,050
Refinery gas		8,569,924

(Source) G/p59

(2) Yield of petroleum products (1994)

	(w%)		(w%)
- Gasoline	20.36	- Lube oil	1.09
- Naphtha	7.04	- Paraffine	0.07
- Jet oil	2.64	- Asphalt	2.64
- Kerosene	11.44	- LPG	3.81
- Gas oil	17.54		
- Heavy oil	32.27		
A type	12.09		
B type	0.07		
C type	20.11		

(Source) G/p65

(3) Emission of petroleum products in Tokyo (1994)

(Source) H/p6

(ton/year)

Emission Sources			Gasoline	Kero/Gasoil/Heavyoil
Storage Failities	Storage Tank	Breathing Loss	730	18.2
		Receiving Loss	1,353	42.4
Delivering Fcilities	Tank Lorry	Delivering Loss	1,276	5.2
Petrol Station	Receiving	Receiving Loss	2,166	13.1
	Delivering	Delivering Loss	5,250	17.5
		(Total)	10,775	96.4

(4) Emission factors for fuel oil handling facilities

Emission Sources			Petroleum Products	Emission Factors
Storage Failities	Cone Roof (5,000kl)	Breathing Loss per tank	Gasoline	210kg/day
			Crude Oil	90kg/day
			Kerosene	0.83kg/day
			Gas Oil	0.70kg/day
			Heavy Oil	0.15kg/day
		Receiving Loss	Gasoline	1.00kg/kl
			Crude Oil	0.52kg/kl
			Kerosene	0.0024kg/kl
			Gas Oil	0.0021kg/kl
			Heavy Oil	0.00045kg/kl
	Floating Roof (10,000kl)	Delivering Loss (wet wall) per lot	Gasoline	0.0016kg/kl
			Crude Oil	0.00048kg/kl
Loading Facilities	Ship	Receiving Loss	Gasoline	0.19kg/kl
			Crude Oil	0.12kg/kl
	Tank Lorry	Receiving Loss	Gasoline	0.89kg/kl
Filling Station	Unloading	Receiving Loss	Gasoline	1.08kg/kl
	Filling	Delivering Loss		1.44kg/kl

(Source) H/p62

(5) Other hydrocarbon emission sources

Workshop	No. of workshop	Emission Volume(t/y)	Emission per Shop(t/y)	Share ratio (%)
Printing	12,000	33,000	2.75	41
Metal surface treatment	5,300	12,000	2.26	15
Painting	20,000	10,000	0.50	13
Petrol Station	2,660	10,775	2.52kg/kl	13
Cleaning	7,100	6,700	0.94	8
Others	12,600	8,000	0.63	10
(Total)	59,660	80,475		100

(Source) K/p6

(6) Storage tank capacity of depots

(1,000 kl)

	Ray	Kan	Ghoochak	Nazi	(Total)
Gasoline	79	40	39	0	158
Kerosene	122	58	35	15	230
Gas Oil	151	76	41	30	298
Heavy Oil	240	0	0	0	240
(Total)	592	174	115	45	926

(7) Fuel handling amount of depots

(1,000 kl)

	Ray	Kan	Ghoochak	Nazi	(Total)
Gasoline	1,662	578	534	0	2,774
Kerosene	1,092	170	268	134	1,663
Gas Oil	1,581	766	634	315	3,296
Heavy Oil	2,372	0	0	0	2,372
(Total)	6,707	1,514	1,436	449	10,105

(Note) Handling amount are projected based on the data supplied by Depots as well as Table 4.5.2.2-1.

A B C D E F G H I J K L M N O

Table 4.5.2.4-2(1) : SOx Emission Factors Collected

		Sector	Fuel	S content (w%)		Unit	Data Source						Adopted
				Iran	Japan		AQCC	IRBD	IEA	Poland	NSESD	Calcu-	
							AX	AB	BA	BB	AR	lation	
11	1	Industry	Gasoline	0.086	0.025	g/Gj	11	33		133		37	37
12			Kerosene	0.200	0.050	g/Gj	56	43		133		86	86
13			Gas Oil	0.800	0.200	g/Gj	382	197		133	442	336	336
14			Heavy Oil(C)	2.710	1.500	g/Gj	1,086	700		1,395	1,354	1,268	1,268
15			LPG	10g/100ft3		g/Gj				133		61	61
16			Natural Gas		0.001	g/Gj	0	1		1	0	1	1
17			Solid Fuel	1.000	0.800	g/Gj				640		590	590
18													
19													
20	2	Household &	Kerosene	0.200	0.015	g/Gj		43		133		86	86
21		Commercial	Gas Oil	0.800	0.200	g/Gj		197		133		336	336
22			Heavy Oil(C)	2.710	1.500	g/Gj		700		1,395		1,268	1,268
23			LPG	10g/100ft3		g/Gj		1		133		61	61
24			Natural Gas		0.001	g/Gj		1		1		1	1
25			Solid Fuel	1.000	0.800	g/Gj				640		590	590
26													
27													
28	3	Transport	Gasoline	0.086	0.025	g/Gj		33		133		37	37
29			Jet Fuel	0.300	0.300	g/Gj				133		129	129
30			Gas Oil	0.800	0.200	g/Gj		197		133	5,919	336	345
31			LPG	10g/100ft3		g/Gj				133		61	61
32													
33	4	Power Plant	Gas Oil	0.800	0.200	g/Gj		197		133		336	336
34		& Refinery	Heavy Oil(C)	3.500	3.500	g/Gj		1,259		1,395		1,637	1,637
35			Natural Gas		0.001	g/Gj		1		1		1	1

Table 4.5.2.4-2(1A) : SOx Emission Factor Calculation Sheet

(Emission factor : g/GJ)

	Fuel	Specific Gravity	Heat Value	Sulfur Content	Emission Factor	Calculation Formula	Remark
1	Gasoline	0.75	8,400kcal/liter	0.086w%	37	0.75*0.86/(8400*4.187*10^-6)*2=37	
2	Jet Fuel	0.78	8,700kcal/liter	0.30w%	129	0.78*3/(8700*4.187*10^-6)*2=128.5	
3	Kerosene	0.80	8,900kcal/liter	0.20w%	86	0.8*2.0/(8900*4.187*10^-6)*2=86	
4	Gas Oil	0.86	9,200kcal/liter	0.80w%	336~345	8.6*0.8/(9200*4.187*10^-6)*2=336~345	
5	Heavy Oil	0.95	9,700kcal/liter	2.71w%	1,268	9.5*2.71/(9700*4.187*10^-6)*2=1268	For general use
				3.50w%	1,637	9.5*3.5/(9700*4.187*10^-6)*2=1637	For power plant and refinery use
6	LPG	0.55	12,000kcal/kg	10g/100ft3	61	1.52/(12000*4.187*10^-6)*2=60.5[1]	0.43Nm3/kg, C3=0.49Nm3/kg, C4=0.37Nm3/kg
7	Natural Gas		9,800kcal/m3	0.001w%	1	0.00783/(9800*4.187*10^-6)*2=0.38	NG=0.783kg/m3
8	Solid Fuel		8,090kcal/kg	1.00w%	590	10/(8090*4.187*10^-6)*2=590.4	

(Note) (1) 10g/100ft3=10g/2.8317m3=1.52g/kg

Table 4.5.2.4-2(2) : NOx Emission Factors Collected

	Sector	Fuel	Unit	Data Source						Adopted
				AQCC	IBRD	IEA	Poland	NSESD		
				AX	AB	BA	BB	AR		
1	Industry	Gasoline	g/Gj	210.4		100	165	210		165
		Kerosene	g/Gj	48.3		100	60	315		165
		Gas Oil	g/Gj	163.5	187.8	170	60	207.7		164
		Heavy Oil	g/Gj	174.8	200.5	180	165	149.8		175
		LPG	g/Gj	51.7		100	165			52
		Natural Gas	g/Gj	73	73	98	98	137.7		73
		Solid Fuel	g/Gj				250			250
2	Household & Commercial	Kerosene	g/Gj	62	42.9	50				62
		Gas Oil	g/Gj	71	50.2	50				71
		Heavy Oil	g/Gj		69.9	170				70
		LPG	g/Gj	36	19.9	50	165			36
		Natural Gas	g/Gj		48.7	50	50			50
		Solid Fuel	g/Gj				215			215
3	Transport	Gasoline	g/Gj		308.3	376	210	32.7		301.2
		Jet Fuel	g/Gj				280			224.3
		Gas Oil	g/Gj		764.1	1037	315	9189.8		830.8
		LPG	g/Gj				165			132.2
4	Power Plant & Refinery	Gas Oil	g/Gj		283.8		60			284
		Heavy Oil	g/Gj	325	373	200	165			325
		Natural Gas	g/Gj	234	263.6	190	98			234

Table 4.5.2.4-2(3) : CO Emission Factors Collected

(A5.L35) (Ratio 100)

	Sector	Fuel	Unit	Data Source						Adopted
				AQCC	IBRD	IEA	Poland	NSESD		
				AX	AB	BA	BB	AR		
1	Industry	Gasoline	g/Gj	7,744			15			7,744
		Kerosene	g/Gj	5			15			15
		Gas Oil	g/Gj	13	15	15	15	13		13
		Heavy Oil	g/Gj	12	16	15	15	12		12
		LPG	g/Gj	7			15			7
		Natural Gas	g/Gj	7	18	15	15			7
		Solid Fuel	g/Gj				170			170
2	Household & Commercial	Kerosene	g/Gj	7	13	85	15			15
		Gas Oil	g/Gj	20	13	15	15			15
		Heavy Oil	g/Gj		14	15	15			15
		LPG	g/Gj	9	12	15	15			9
		Natural Gas	g/Gj	8	10	10	10			8
		Solid Fuel	g/Gj				800			800
3	Transport	Gasoline	g/Gj		11,305	12,729	10,625	2,132		8,845
		Jet Fuel	g/Gj			120	115			120
		Gas Oil	g/Gj		655	714	714	1,038		765
		LPG	g/Gj				15			15
4	Power Plant & Refinery	Gas Oil	g/Gj		44		15			15
		Heavy Oil	g/Gj	16	47	15	15			16
		Natural Gas	g/Gj	7	45	25	15			7

Table 4.5.2.4-2(4) : HC Emission Factors Collected

(A5.L35) (Ratio 100)

	Sector	Fuel	Unit	Data Source						Adopted
				AQCC	IBRD	IEA	Poland	NSESD		
				AX	AB	BA	BB	AR		
1	Industry	Gasoline	g/Gj	298			3			298
		Kerosene	g/Gj	9			8			9
		Gas Oil	g/Gj	9	7		8	7		9
		Heavy Oil	g/Gj	9	9		8	9		9
		LPG	g/Gj	1			3			2
		Natural Gas	g/Gj	1	16		1			1
		Solid Fuel	g/Gj				0			0
2	Household & Commercial	Kerosene	g/Gj	11	6		5			11
		Gas Oil	g/Gj	4	7		5			4
		Heavy Oil	g/Gj		9		2			4
		LPG	g/Gj	3	2		3			3
		Natural Gas	g/Gj	3	4		1			3
		Solid Fuel	g/Gj				1			1
3	Transport	Gasoline	g/Gj		1,850		37	264		800
		Jet Fuel	g/Gj				63			63
		Gas Oil	g/Gj		437		14	1,298		559
		LPG	g/Gj				3			3
4	Power Plant & Refinery	Gas Oil	g/Gj		15					15
		Heavy Oil	g/Gj	3	19					16
		Natural Gas	g/Gj	0	16					16

Table 4.5.2.4-2(5) : SPM Emission Factors Collected

	Sector	Fuel	Unit	Data Source						Adopted
				AQCC	IBRD	IEA	Poland	NSESD		
				AX	AB	BA	BB	AR		
1	Industry	Gasoline	g/Gj	41.2						41
		Kerosene	g/Gj	64.4						64
		Gas Oil	g/Gj	46.7	65.5			46.7		65
		Heavy Oil	g/Gj	67	116.6			67.7		67
		LPG	g/Gj	7.6						8
		Natural Gas	g/Gj		3			5.8		6
		Solid Fuel	g/Gj							74
2	Household & Commercial	Kerosene	g/Gj		21.5					22
		Gas Oil	g/Gj	55.3	65.5					55
		Heavy Oil	g/Gj	70.7	116.6					71
		LPG	g/Gj	7.6	4					8
		Natural Gas	g/Gj	7.1	10.1					7
		Solid Fuel	g/Gj							74
3	Transport	Gasoline	g/Gj		8.2					575
		Jet Fuel	g/Gj							23
		Gas Oil	g/Gj		131			9,190		9,190
		LPG	g/Gj							112
4	Power Plant & Refinery	Gas Oil	g/Gj		65.5					66
		Heavy Oil	g/Gj	25.6	186.5					70
		Natural Gas	g/Gj	5.8	3					6

Table 4.5.2.4-2A(1) : Emission Factors Published by IEA : NOx

(g/GJ)

	NOx	North America (1995)	Euprope (1995)	Pacific (1995)	CPE/DC (1980-2005)	Adopted
EGBC	Electricity Generation, Brown Coal	156	192	156	240	
EGHC	Electricity Generation, Hard Coal	327	232	247	558	
IBC	Industry, Brown Coal	156	216	156	240	250
ICK	Industry, Coke	351	405	293	540	
IHC	Industry, Hard Coal	141	117	247	251	250
OBC	Other Brown Coal, Residential/Commercial	156	240	228	240	215
OCK	Other Coke, Residential/Commercial	100	100	95	100	
OHC	Other Hard Coal, Refinery/Transformation	189	261	49	290	
RCHC	Residential/Commercial, hard Coal	140	90	71	183	215
TTCOAL	Total Coal, Total of all Above					
EGHFO	Electricity Generation, Heavy Fuel Oil	200	128	73	200	325
IHFO	Industry, Heavy Fuel Oil	180	135	73	180	175
IODO	Industrial, Diesel Oil				170	164
IOOP	Industrial, Other Oil Products	100	90	65	100	
NEOOP	Non-Energy Use of Other Oil Products	0	0	0	0	
ODO	Other, Diesel Oil ,Industry	170	77	75	60	164
OHFO	Other, Heavy Fuel Oil, Residential/Commercial	170	120	106	170	70
OKER	Other Kerosene, Residential/Commercial	50	50	48	50	62
OOOP	Other, Other Oil Products, Refinery Gas	100	90	44	100	
RCDO	Residential/Commercial, Diesel Oil	62	50	48		71
RCHFO	Residential/Commercial, Heavy fuel Oil	170	120	114	170	70
RCOOP	Residential/Commercial, Othr Oil Products	50	50	48	50	
RHFO	Refinery, Heavy Fuel Oil	200	162	0	200	325
TRAKER	Air Transport, Kerosene	80	270	72	80	
TRDO	Transport, Diesel Oil	548	988	1486	1037	1037
TRGAS	Transport, Gasoline	220	695	303	376	376
TRSHFO	Transport, Heavy Fuel Oil	890	800	800	890	
TTOIL	Total Oil, Total of all above					
EGNG	Electricity Generation, Natural Gas	190	136	33	190	234
ING	Industry, Natural Gas	95	54	33	98	73
ONG	Other, Natural Gas, Energy/Transformation					
RCNG	Residential/Commercial, Natural Gas	50	40	38	50	50
RFNG	Refinery, Natural Gas	140	126	44	140	234
NCF	Non-Commercial Fossil Fuel	110	110	110	100	

(Note) CPE : Central Planning Economies, DC : Developing Countries

Table 4.5.2.4-2A(2) : Emission Factors Published by IEA : CO

(g/GJ)

	CO	OECD N.America (1995)	OECD Europe (1995)	OECD Pacific (1995)	CPE/DC (1995)	Adopted
EGBC	Electricity Generation, Brown Coal	50	50	50	50	
EGHC	Electricity Generation, Hard Coal	50	50	50	50	
IBC	Industry, Brown Coal	80	110	110	80	170
ICK	Industry, Coke	210	110	110	210	
IHC	Industry, Hard Coal	80	110	110	80	170
RCOBC	Other Brown Coal, Residential/Commercial	1000	5000	5000	1000	800
RCOCK	Other Coke, Residential/Commercial	100	5000	5000	1000	
RFOHC	Other Hard Coal, Refinery/Transformation	80	110	110	80	
RCHC	Residential/Commercial, hard Coal	1000	5000	5000	1000	800
TTCOAL	Total Coal, Total of all Above					
EGHFO	Electricity Generation, Heavy Fuel Oil	15	6	6	15	16
IHFO	Industry, Heavy Fuel Oil	15	6	6	15	12
IOOP	Industrial, Other Oil Products	15	6	6	15	
NEOOP	Non-Energy Use of Other Oil Products	0	0	0	0	
IODO	Other, Diesel Oil ,Industry	15	15	15	15	13
RCOHFO	Other, Heavy Fuel Oil, Residential/Commercial	15	15	15	15	15
RCOKER	Other Kerosene, Residential/Commercial	85	85	85	85	15
RFOOOP	Other, Other Oil Products, Refinery Gas	15	6	6	15	
RCDO	Residential/Commercial, Diesel Oil	15	50	50	15	15
RCHFO	Residential/Commercial, Heavy fuel Oil	15	50	50	15	15
RCOOP	Residential/Commercial, Othr Oil Products	15	50	50	15	
RFHFO	Refinery, Heavy Fuel Oil	15	6	6	15	16
TRAKER	Air Transport, Kerosene	120	120	120	120	
TRDO	Transport, Diesel Oil	543	539	525	714	1040
TRGAS	Transport, Gasoline	1962	9215	2787	12729	12730
TRSHFO	Transport, Heavy Fuel Oil	320	320	320	320	
TTOIL	Total Oil, Total of all above					
EGNG	Electricity Generation, Natural Gas	25	25	25	25	7
ING	Industry, Natural Gas	15	15	15	15	7
ONG	Other, Natural Gas, Energy/Transformation	15	15	15	15	
RCNG	Residential/Commercial, Natural Gas	10	50	50	10	8
RFNG	Refinery, Natural Gas	15	67	67	15	7
NCF	Non-Commercial Fossil Fuel	6000	6500	6500	6000	

(Note) CPE : Central Planning Economies, DC : Developing Countries

Table 4.5.2.4-3(1) : Sectorwise SOx Emission Factors

(Tehran) (g/GJ)

	Sector	Total Energy Consumption incl. Electricity	Total Fuel Consumption	Coal	Cokes, etc	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
6	Industry			590	590				37			86	336	1,266				590	61	1						
1	Agri.Forestry																									
2	Mining																									
3	Construction																									
4	Total Manufacturing			590	590				37			86	336	1,266				590	61	1						
4.1	31_Food Products			590	590				37			86	336	1,266				590	61	1						
4.2	32_Textile			590	590				37			86	336	1,266				590	61	1						
4.3	33_Wood Products			590	590				37			86	336	1,266				590	61	1						
4.4	34_Paper & Products			590	590				37			86	336	1,266				590	61	1						
4.5	35_Industrial Chemicals			590	590				37			86	336	1,266				590	61	1						
4.6	36_Ceramics Products			590	590				37			86	336	1,266				590	61	1						
4.7	37_Iron & Steel			590	590				37			86	336	1,266				590	61	1						
4.8	38_Mchinery			590	590				37			86	336	1,266				590	61	1						
4.9	39_Other Industries			590	590				37			86	336	1,266				590	61	1						
													336													
7	General Service and Household											86	336	1,266					61	1						
1	Household											86	336	1,266					61	1						
2	Commercial & General											86	336	1,266					61	1						
8	Transport								37		129		345						61							
1	Passenger								37		129		345						61							
2	Cargo								37		129		345						61							
9	Energy Conversion												336	1,637						1						
1	Electric Generation												336	1,637						1						
2	Refined Petroleum												336	1,637						1						
3																										

Table 4.5.2.4-3(2) : Sectorwise NOx Emission Factors

(g/GJ)

	Sector	Total Energy Consumption Indig. Electricity	Total Fuel Consumption	Coal	Cokes, etc.	Crude Oil	Petroleum Products	Fuel Oil							Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Coke	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
									Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil												
6	Industry			250	250				165			166	164	175				250	62	73						
1	Agri,Forestry																									
2	Mining																									
3	Construction																									
4	Total Manufacturing			250	250				165			166	164	175				250	62	73						
4.1	31 Food Products			250	250				165			166	164	175				250	62	73						
4.2	32 Textile			250	250				165			166	164	175				250	62	73						
4.3	33 Wood Products			250	250				165			166	164	175				250	62	73						
4.4	34 Paper & Products			250	250				165			166	164	175				250	62	73						
4.5	35 Industrial Chemicals			250	250				165			166	164	175				250	62	73						
4.6	36 Non-metal products			250	250				165			166	164	175				250	62	73						
4.7	37 Iron & Steel			250	250				165			166	164	175				250	62	73						
4.8	38 Machinery			250	250				165			166	164	175				250	62	73						
4.9	39 Other Industries			250	250				165			166	164	175				250	62	73						
7	General Service and Household											62	71	70					36	60						
1	Household											62	71	70					36	60						
2	Commercial & General											62	71	70					36	60						
8	Transport								301		224		831						132							
1	Passenger								301		224		831						132							
2	Cargo								301		224		831						132							
9	Energy Conversion												284	325						234						
1	Power plants												284	325						234						
2	Refinery												284	325						234						
													284	325						234						

Table 4.5.2.4-3(3) : Sectorwise CO Emission Factors

(kg/GJ)

	Sector	Total Energy Consumption incld. Electricity	Total Fuel Consumption	Coal	Coke, etc.	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Coke	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
6	Industry			170	170				7,744			15	13	12				170	7	7						
6.1	Agri,Forestry																									
6.2	Mining																									
6.3	Construction																									
6.4	Total Manufacturing			170	170				7,744			15	13	12				170	7	7						
6.4.1	31_Food Products			170	170				7,744			15	13	12				170	7	7						
6.4.2	32_Textile			170	170				7,744			15	13	12				170	7	7						
6.4.3	33_Wood Products			170	170				7,744			15	13	12				170	7	7						
6.4.4	34_Paper & Products			170	170				7,744			15	13	12				170	7	7						
6.4.5	35_Industrial Chemicals			170	170				7,744			15	13	12				170	7	7						
6.4.6	36_Ceramics Products			170	170				7,744			15	13	12				170	7	7						
6.4.7	37_Iron & Steel			170	170				7,744			15	13	12				170	7	7						
6.4.8	38_Machinery			170	170				7,744			15	13	12				170	7	7						
6.4.9	39_Other Industries			170	170				7,744			15	13	12				170	7	7						
7	General Service and Household											15	15	15					9	6						
7.1	Household											15	15	15					9	6						
7.2	Commercial & General											15	15	15					9	6						
8	Transport								8,645		120		700						15							
8.1	Passenger								8,645		120		700						15							
8.2	Cargo								8,645		120		700						15							
9	Energy Conversion												15	16						7						
9.1	Electric Generation												15	16						7						
9.2	Refined Petroleum												15	16						7						
9.3	Petrochemicals												15	16						7						

Table 4.5.2.4-3(4) : Sectorwise HC Emission Factors

(g/GJ)

	Sector	Total Energy Consumption incl. Electricity	Total Fuel Consumption	Coal	Coke, etc	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Coke	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
6	Industry			0	0				296			9	9	9				0	2	1						
1	Agri,Forestry																									
2	Mining																									
3	Construction																									
4	Total Manufacturing			0	0				296			9	9	9				0	2	1						
4.1	31 Food Products			0	0				296			9	9	9				0	2	1						
4.2	32 Textile			0	0				296			9	9	9				0	2	1						
4.3	33 Wood Products			0	0				296			9	9	9				0	2	1						
4.4	34 Paper & Products			0	0				296			9	9	9				0	2	1						
4.5	35 Industrial Chemicals			0	0				296			9	9	9				0	2	1						
4.6	36 Ceramics Products			0	0				296			9	9	9				0	2	1						
4.7	37 Iron & Steel			0	0				296			9	9	9				0	2	1						
4.8	38 Machinery			0	0				296			9	9	9				0	2	1						
4.9	39 Other Industries			0	0				296			9	9	9				0	2	1						
7	General Service and Household											11	4	4					3	3						
1	Household											11	4	4					3	3						
2	Commercial & General											11	4	4					3	3						
8	Transport								800		63		559						3							
1	Passenger								800		63		559						3							
2	Cargo								800		63		559						3							
9	Energy Conversion												15	16						16						
1	Electric Generation												15	16						16						
2	Refined Petroleum												15	16						16						
3	Petrochemicals												15	16						16						

Table 4.5.2.4-3(5) : Sectorwise SPM Emission Factors

	Sector	Total Energy Consumption incld. Electricity	Total Fuel Consumption	Coal	Coke & etc.	Crude	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Coke	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
6	Industry			74	74				41			64	65	67				74	8	6						
6.1	Agri,Forestry																									
6.2	Mining																									
6.3	Construction																									
6.4	Total Manufacturing			74	74				41			64	65	67				74	8	6						
6.4.1	31 Food Products			74	74				41			64	65	67				74	8	6						
6.4.2	32 Textile			74	74				41			64	65	67				74	8	6						
6.4.3	33 Wood Products			74	74				41			64	65	67				74	8	6						
6.4.4	34 Paper & Products			74	74				41			64	65	67				74	8	6						
6.4.5	35 Industrial Chemicals			74	74				41			64	65	67				74	8	6						
6.4.6	36 Ceramics Products			74	74				41			64	65	67				74	8	6						
6.4.7	37 Iron & Steel			74	74				41			64	65	67				74	8	6						
6.4.8	38 Machinery			74	74				41			64	65	67				74	8	6						
6.4.9	39 Other Industries			74	74				41			64	65	67				74	8	6						
7	General Service and Household											22	66	71					8	7						
7.1	Household											22	66	71					8	7						
7.2	Commercial & General											22	66	71					8	7						
8	Transport								575		23		9,190						112							
8.1	Passenger								575		23		9,190						112							
8.2	Cargo								575		23		9,190						112							
9	Energy Conversion												66	70						6						
9.1	Electric Generation												66	70						6						
9.2	Refined Petroleum												66	70						6						
9.3	Petrochemicals												66	70						6						

Table 4.5.2.5-1(1) : Sectorwise SOx Emission Quantity in GTA (1994)

(Unit: ton/year)

	Sector	Total Emission Volume	Coal	Coke, etc	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Coke	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Others: Commerc Power	Others: Domestic Power	
	Emission Volume (Iran)																								
6	Emission Volume (Tehran)	262,624	3,120	8,196	0	260,944	223,064	3,686	0	0	5,328	43,288	170,863	0	0	0	28,685	1,206	365	0	0	0			
6	Industry	166,274	3,120	8,196	0	156,805	129,903	158	0	0	1,065	24,271	104,409	0	0	0	26,685	217	154	0	0	0			
1	Agri,Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4	Total Manufacturing	166,274	3,120	8,196	0	156,805	129,903	158	0	0	1,065	24,271	104,409	0	0	0	26,685	217	154	0	0	0			
4,1	31_Food Products	21,242	0	0	0	21,234	21,191	14	0	0	606	10,330	10,239	0	0	0	0	43	8	0	0	0			
4,2	32_Textile	6,116	7	0	0	6,101	7,609	20	0	0	137	1,869	5,783	0	0	0	275	16	10	0	0	0			
4,3	33_Wood Products	979	0	0	0	979	979	5	0	0	14	323	637	0	0	0	0	0	0	0	0	0			
4,4	34_Paper & Products	3,627	201	0	0	3,422	2,012	8	0	0	11	592	1,432	0	0	0	1,406	3	4	0	0	0			
4,5	35_Industrial Chemicals	12,379	176	83	0	12,096	6,145	25	0	0	25	2,995	3,130	0	0	0	5,940	13	20	0	0	0			
4,6	36_Ceramics Products	83,776	1,337	143	0	82,297	77,162	18	0	0	106	2,807	74,166	0	0	0	5,115	10	10	0	0	0			
4,7	37_Iron & Steel	19,252	1,369	7,735	0	10,056	8,335	15	0	0	11	2,474	5,836	0	0	0	1,672	48	92	0	0	0			
4,8	38_Machinery	6,348	26	125	0	6,186	6,107	51	0	0	130	2,797	3,130	0	0	0	0	79	11	0	0	0			
4,9	39_Other Industries	12,553	2	109	0	12,442	164	5	0	0	22	84	53	0	0	0	12,276	3	0	0	0	0			
7	General Service and Household	35,720	0	0	0	35,562	34,623	0	0	0	4,263	11,791	18,569	0	0	0	0	939	158	0	0	0			
1	Household	15,029	0	0	0	14,889	14,044	0	0	0	3,999	10,055	0	0	0	0	0	845	140	0	0	0			
2	Commercial & General	20,691	0	0	0	20,673	20,578	0	0	0	273	1,736	18,569	0	0	0	0	94	18	0	0	0			
8	Transport	8,340	0	0	0	8,340	8,292	3,427	0	0	0	4,865	0	0	0	0	0	48	0	0	0	0			
1	Passenger	4,202	0	0	0	4,202	4,153	3,056	0	0	0	1,097	0	0	0	0	0	48	0	0	0	0			
2	Cargo	4,139	0	0	0	4,139	4,139	371	0	0	0	3,767	0	0	0	0	0	0	0	0	0	0			
9	Energy Conversion	50,290	0	0	0	50,237	50,237	0	0	0	0	2,361	47,876	0	0	0	0	0	52	0	0	0			
1	Electric Generation	16,099	0	0	0	16,038	16,038	0	0	0	0	2,066	13,972	0	0	0	0	0	31	0	0	0			
2	Refinery	34,220	0	0	0	34,199	34,199	0	0	0	0	295	33,904	0	0	0	0	0	22	0	0	0			
3	Petrochemicals																								

Table 4.5.2.5-1(2) : Sectorwise NOx Emission Quantity in GTA (1994)

(Tonne/year)

	Sector	Total Emission Volume	Coal	Cokes, etc	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Others: Commercial Power	Others: Domestic Power	
5	Emission Volume (Tehran)	134,860	1,322	3,473	0	98,783	98,611	28,602	0	0	6,117	25,983	24,940	0	0	0	11,307	644	31,422	0	0	0			
6	Industry	56,541	1,322	3,473	0	40,507	29,014	711	0	0	2,043	11,650	14,410	0	0	0	11,307	185	11,239	0	0	0			
61	Agri,Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
62	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
63	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
64	Total Manufacturing	56,541	1,322	3,473	0	40,507	29,014	711	0	0	2,043	11,650	14,410	0	0	0	11,307	185	11,239	0	0	0			
641	31 Food Products	8,275	0	0	0	7,722	7,685	62	0	0	1,167	5,043	1,413	0	0	0	0	37	553	0	0	0			
642	32 Textile	2,921	3	0	0	2,195	2,083	90	0	0	262	913	798	0	0	0	117	15	723	0	0	0			
643	33 Wood Products	301	0	0	0	294	294	21	0	0	26	156	66	0	0	0	0	0	7	0	0	0			
644	34 Paper & Products	1,473	65	0	0	1,119	520	26	0	0	21	274	196	0	0	0	597	2	289	0	0	0			
645	35 Industrial Chemicals	8,148	76	35	0	4,566	2,039	110	0	0	46	1,446	432	0	0	0	2,517	11	1,471	0	0	0			
646	36 Non-metal products	15,430	566	61	0	14,102	11,926	83	0	0	207	3,400	10,236	5	0	0	2,167	9	701	0	0	0			
647	37 Iron & Steel	13,402	560	3,276	0	2,853	2,103	69	0	0	21	1,208	805	0	0	0	708	41	8,692	0	0	0			
648	38 Machinery	3,223	11	53	0	2,341	2,274	226	0	0	249	1,365	432	0	0	0	0	67	916	0	0	0			
649	39 Other Industries	5,367	1	46	0	5,314	111	21	0	0	41	41	7	0	0	0	5,202	2	6	0	0	0			
7	General Service and Household	15,051	0	0	0	7,145	6,591	0	0	0	3,073	2,492	1,025	0	0	0	0	554	7,906	0	0	0			
71	Household	12,487	0	0	0	5,500	5,001	0	0	0	2,879	2,125	0	0	0	0	0	499	6,987	0	0	0			
72	Commercial & General	2,563	0	0	0	1,645	1,589	0	0	0	197	367	1,025	0	0	0	0	56	918	0	0	0			
8	Transport	39,610	0	0	0	39,610	39,505	27,791	0	0	0	11,714	0	0	0	0	0	105	0	0	0	0			
81	Passenger	27,528	0	0	0	27,528	27,423	24,782	0	0	0	2,642	0	0	0	0	0	105	0	0	0	0			
82	Cargo	12,081	0	0	0	12,081	12,081	3,009	0	0	0	9,073	0	0	0	0	0	0	0	0	0	0			
9	Energy Conversion	23,779	0	0	0	11,501	11,501	0	0	0	0	1,996	9,505	0	0	0	0	0	12,277	0	0	0			
91	Power plants	11,736	0	0	0	4,521	4,521	0	0	0	0	1,747	2,774	0	0	0	0	0	7,216	0	0	0			
92	Refinery	12,042	0	0	0	6,981	6,981	0	0	0	0	250	6,731	0	0	0	0	0	5,062	0	0	0			

Table 4.5.2.5-1(3) : Sectorwise CO Emission Quantity in GTA (1994)

(Ton/Year)

	Sector	Total Emission Volume	Coal	Coke, etc.	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commerc Power	Domestic Power	Others
	Emission Volume (Iran)																								
6	Emission Volume (Tehran)	978,178	899	2,361	0	972,208	964,344	949,388	0	0	979	12,351	1,676	0	0	0	7,669	175	2,710	0	0	0			
0	Industry	47,536	899	2,361	0	43,200	35,466	33,373	0	0	186	939	968	0	0	0	7,669	25	1,076	0	0	0			
1	Agri,Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4	Total Manufacturing	47,536	899	2,361	0	43,200	35,466	33,373	0	0	186	939	968	0	0	0	7,669	25	1,076	0	0	0			
4.1	31_Food Products	3,577	0	0	0	3,524	3,519	2,916	0	0	106	400	97	0	0	0	0	5	53	0	0	0			
4.2	32_Textile	4,516	2	0	0	4,444	4,369	4,212	0	0	24	72	55	0	0	0	79	2	99	0	0	0			
4.3	33_Wood Products	994	0	0	0	993	993	972	0	0	3	13	6	0	0	0	0	0	1	0	0	0			
4.4	34_Paper,& Products	1,823	56	0	0	1,739	1,333	1,296	0	0	2	22	14	0	0	0	406	0	26	0	0	0			
4.5	35_Industrial Chemicals	7,292	51	24	0	7,046	5,333	5,184	0	0	4	115	30	0	0	0	1,711	1	141	0	0	0			
4.6	36_Ceramics Products	6,666	365	41	0	6,195	4,720	3,866	0	0	19	111	702	0	0	0	1,474	1	67	0	0	0			
4.7	37_Iron & Steel	7,145	394	2,229	0	3,660	3,290	3,240	0	0	2	96	55	0	0	0	482	8	642	0	0	0			
4.8	38_Machinery	10,864	7	36	0	10,662	10,653	10,692	0	0	23	106	30	0	0	0	0	9	78	0	0	0			
4.9	39_Other Industries	4,549	1	31	0	4,517	960	972	0	0	4	5	1	0	0	0	3,537	0	1	0	0	0			
7	General Service and Household	2,893	0	0	0	1,626	1,490	0	0	0	744	527	220	0	0	0	0	139	1,265	0	0	0			
1	Household	2,387	0	0	0	1,299	1,145	0	0	0	696	449	0	0	0	0	0	125	1,118	0	0	0			
2	Commercial & General	506	0	0	0	359	345	0	0	0	48	78	220	0	0	0	0	14	147	0	0	0			
8	Transport	828,806	0	0	0	826,806	826,794	816,015	0	0	0	10,780	0	0	0	0	0	12	0	0	0	0			
1	Passenger	730,103	0	0	0	730,103	730,091	727,690	0	0	0	2,401	0	0	0	0	0	12	0	0	0	0			
2	Cargo	98,703	0	0	0	98,703	98,703	88,355	0	0	0	8,349	0	0	0	0	0	0	0	0	0	0			
9	Energy Conversion	941	0	0	0	573	573	0	0	0	0	105	466	0	0	0	0	0	367	0	0	0			
1	Electric Generation	445	0	0	0	229	229	0	0	0	0	92	137	0	0	0	0	0	216	0	0	0			
2	Refinery	496	0	0	0	345	345	0	0	0	0	13	331	0	0	0	0	0	151	0	0	0			
3	Petrochemicals																								

Table 4.5.2.5-1(4) : Sectorwise HC Emission Quantity in GTA (1994)

(Tehran) (ton/year)

	Sector	Total Emission Volume	Coal	Cokes, etc.	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commercial Power	Domestic Power	Others
	Emission Volume (Iran)																								
5	Emission Volume (Tehran)	87,318	0	0	0	86,848	86,792	76,090	0	0	667	8,778	1,288	0	0	0	0	66	1,488	0	0	0			
6	Industry	2,948	0	0	0	2,794	2,787	1,284	0	0	111	650	741	0	0	0	0	7	154	0	0	0			
1	Agri.Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
3	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4	Total Manufacturing	2,948	0	0	0	2,794	2,787	1,284	0	0	111	650	741	0	0	0	0	7	154	0	0	0			
4.1	31_Food Products	534	0	0	0	527	525	112	0	0	64	277	73	0	0	0	0	1	8	0	0	0			
4.2	32_Textile	276	0	0	0	266	266	162	0	0	14	50	41	0	0	0	0	1	10	0	0	0			
4.3	33_Wood Products	52	0	0	0	52	52	37	0	0	2	9	5	0	0	0	0	0	0	0	0	0			
4.4	34_Paper & Products	80	0	0	0	76	76	50	0	0	1	15	10	0	0	0	0	0	4	0	0	0			
4.5	35_Industrial Chemicals	324	0	0	0	304	304	199	0	0	3	79	22	0	0	0	0	0	20	0	0	0			
4.6	36_Ceramics Products	774	0	0	0	765	764	150	0	0	11	77	526	0	0	0	0	0	10	0	0	0			
4.7	37_Iron & Steel	327	0	0	0	235	234	125	0	0	1	66	41	0	0	0	0	2	92	0	0	0			
4.8	38_Machinery	536	0	0	0	525	522	411	0	0	14	75	22	0	0	0	0	3	11	0	0	0			
4.9	39_Other Industries	42	0	0	0	42	42	37	0	0	2	2	0	0	0	0	0	0	0	0	0	0			
7	General Service and Household	1,265	0	0	0	790	744	0	0	0	545	140	59	0	0	0	0	46	474	0	0	0			
1	Household	1,091	0	0	0	672	630	0	0	0	510	120	0	0	0	0	0	42	419	0	0	0			
2	Commercial & General	174	0	0	0	119	114	0	0	0	35	21	59	0	0	0	0	5	55	0	0	0			
8	Transport	81,690	0	0	0	81,690	81,688	73,806	0	0	0	7,882	0	0	0	0	0	2	0	0	0	0			
1	Passenger	67,594	0	0	0	67,594	67,592	65,814	0	0	0	1,778	0	0	0	0	0	2	0	0	0	0			
2	Cargo	14,096	0	0	0	14,096	14,096	7,991	0	0	0	6,104	0	0	0	0	0	0	0	0	0	0			
9	Energy Conversion	1,413	0	0	0	573	573	0	0	0	0	105	468	0	0	0	0	0	839	0	0	0			
1	Electric Generation	722	0	0	0	229	229	0	0	0	0	92	137	0	0	0	0	0	493	0	0	0			
2	Refinery	691	0	0	0	345	345	0	0	0	0	13	331	0	0	0	0	0	346	0	0	0			
3	Petrochemicals																								

Table 4.5.2.5-1(5) : Sectorwise SPM Emission Quantity in GTA (1994)

(Ton/Year)

	Sector	Total Emission Volume	Coal	Coke, etc	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Others: Commerce Power	Others: Domestic Power
6	Emission Volume (Tehran)	207,735	391	1,026	0	203,870	200,383	63,226	0	0	1,883	136,871	6,404	0	0	0	3,347	241	2,345	0	0	0		
6	Industry	16,901	391	1,026	0	14,556	11,163	177	0	0	793	4,697	5,517	0	0	0	3,347	26	924	0	0	0		
6 1	Agri,Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6 2	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6 3	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6 4	Total Manufacturing	16,901	391	1,026	0	14,556	11,163	177	0	0	793	4,697	5,517	0	0	0	3,347	26	924	0	0	0		
6 41	31 Food Products	3,059	0	0	0	3,014	3,008	15	0	0	455	1,999	541	0	0	0	0	6	45	0	0	0		
6 42	32 Textile	686	1	0	0	828	791	22	0	0	102	362	306	0	0	0	34	2	59	0	0	0		
6 43	33 Wood Products	113	0	0	0	112	112	5	0	0	11	63	34	0	0	0	0	0	1	0	0	0		
6 44	34 Paper & Products	424	75	0	0	378	199	7	0	0	8	109	76	0	0	0	177	0	22	0	0	0		
6 45	35 Industrial Chemicals	1,686	22	10	0	1,532	785	27	0	0	19	574	165	0	0	0	745	2	121	0	0	0		
6 46	36 Non-metal products	5,461	166	16	0	5,216	4,575	21	0	0	80	555	3,919	0	0	0	642	1	58	0	0	0		
6 47	37 Iron & Steel	2,720	172	970	0	1,026	613	17	0	0	8	479	308	0	0	0	210	8	550	0	0	0		
6 48	38 Machinery	956	3	16	0	870	660	57	0	0	96	541	165	0	0	0	0	10	67	0	0	0		
6 49	39 Other Industries	1,595	0	14	0	1,580	40	5	0	0	16	16	3	0	0	0	1,540	0	0	0	0	0		
6 7	General Service and Household	5,291	0	0	0	4,184	4,061	0	0	0	1,091	1,931	1,040	0	0	0	0	123	1,107	0	0	0		
6 71	Household	3,756	0	0	0	2,778	2,667	0	0	0	1,021	1,646	0	0	0	0	0	111	979	0	0	0		
6 72	Commercial & General	1,535	0	0	0	1,406	1,394	9	0	0	70	284	1,040	0	0	0	0	12	129	0	0	0		
6 8	Transport	182,717	0	0	0	182,717	182,628	53,048	0	0	0	129,580	0	0	0	0	0	89	0	0	0	0		
6 81	Passenger	76,616	0	0	0	76,616	76,527	47,304	0	0	0	29,223	0	0	0	0	0	89	0	0	0	0		
6 82	Cargo	106,101	0	0	0	106,101	106,101	5,744	0	0	0	100,357	0	0	0	0	0	0	0	0	0	0		
6 9	Energy Conversion	2,826	0	0	0	2,511	2,511	0	0	0	0	464	2,047	0	0	0	0	0	315	0	0	0		
6 91	Power plants	1,186	0	0	0	1,005	1,005	0	0	0	0	406	597	0	0	0	0	0	165	0	0	0		
6 92	Refinery	1,636	0	0	0	1,506	1,506	0	0	0	0	58	1,450	0	0	0	0	0	130	0	0	0		

Table 4.5.2.5-1(6) : Sectorwise Total Emission Quantity in GTA (1994)

(1000 TOE/year)

	Sector	Total Emission Volume	Coal	Coke, etc	Crude Oil	Petroleum Products	Fuel Oil	Gasoline	Naphtha	Jet Fuel	Kerosene	Gas Oil	Heavy Oil	Lube Oil	Other Petroleum Products	Refinery Off-gas	Oil Cokes	LPG	Natural Gas	LNG	City Gas	Total Electric Power	Commerc Power	Domestic Power	Others
	Emission Volume (Iran)																								
6	Emission Volume (Tehran)	1,670,803	6,732	16,066	0	1,511,733	1,480,184	1,009,789	0	0	13,914	229,142	207,340	0	0	0	49,028	2,521	38,310	0	0	0			
6	Industry	292,202	5,732	15,056	0	257,864	206,373	35,703	0	0	4,196	42,406	126,064	0	0	0	49,028	462	13,549	0	0	0			
6_1	Agri,Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6_2	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6_3	Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
6_4	Total Manufacturing	292,202	5,732	15,056	0	257,864	206,373	35,703	0	0	4,196	42,406	126,064	0	0	0	49,028	462	13,549	0	0	0			
6_4_1	31_Food Products	36,667	0	0	0	36,021	35,928	3,120	0	0	2,397	18,049	12,363	0	0	0	0	92	666	0	0	0			
6_4_2	32_Textile	16,721	12	0	0	15,637	15,293	4,506	0	0	539	3,206	6,962	0	0	0	505	36	972	0	0	0			
6_4_3	33_Wood Products	2,439	0	0	0	2,430	2,430	1,040	0	0	57	595	739	0	0	0	0	0	9	0	0	0			
6_4_4	34_Paper & Products	7,427	369	0	0	6,733	4,141	1,387	0	0	43	982	1,730	0	0	0	2,587	5	324	0	0	0			
6_4_5	35_Industrial Chemicals	27,799	328	152	0	25,946	14,600	5,546	0	0	99	5,181	3,779	0	0	0	10,913	27	1,773	0	0	0			
6_4_6	36_Ceramics Products	112,130	2,456	264	0	108,565	99,146	4,160	0	0	429	5,009	89,552	0	0	0	9,397	22	845	0	0	0			
6_4_7	37_Iron & Steel	42,846	2,515	14,212	0	18,092	14,977	3,466	0	0	43	4,322	7,046	0	0	0	3,072	103	6,067	0	0	0			
6_4_8	38_Machinery	22,047	47	230	0	20,784	20,615	11,439	0	0	511	4,887	3,779	0	0	0	0	169	986	0	0	0			
6_4_9	39_Other Industries	24,106	4	200	0	23,896	1,356	1,040	0	0	66	147	64	0	0	0	22,554	5	7	0	0	0			
7	General Service and Household	60,219	0	0	0	49,310	47,508	0	0	0	9,715	16,881	20,912	0	0	0	0	1,801	10,910	0	0	0			
7_1	Household	34,790	0	0	0	25,106	23,467	0	0	0	9,092	14,375	0	0	0	0	0	1,639	9,642	0	0	0			
7_2	Commercial & General	25,429	0	0	0	24,202	24,041	0	0	0	623	2,486	20,912	0	0	0	0	161	1,267	0	0	0			
8	Transport	1,139,183	0	0	0	1,139,169	1,139,907	974,086	0	0	0	164,820	0	0	0	0	0	257	0	0	0	0			
8_1	Passenger	906,043	0	0	0	906,043	905,786	868,616	0	0	0	37,170	0	0	0	0	0	257	0	0	0	0			
8_2	Cargo	233,120	0	0	0	233,120	233,120	105,470	0	0	0	127,650	0	0	0	0	0	0	0	0	0	0			
9	Energy Conversion	79,248	0	0	0	66,396	66,396	0	0	0	0	5,032	60,364	0	0	0	0	0	13,851	0	0	0			
9_1	Electric Generation	30,161	0	0	0	22,020	22,020	0	0	0	0	4,403	17,617	0	0	0	0	0	8,141	0	0	0			
9_2	Refinery	49,087	0	0	0	43,376	43,376	0	0	0	0	629	42,747	0	0	0	0	0	5,711	0	0	0			
9_3	Petrochemicals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Table 4.5.2.5-2(1): Districtwise SOx Emission Quantity in GTA (1994)

(ton/year)

Fuel \ District	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1 Gasoline																					
Industrial Non-big Unit	1.4	1.2	3.0	18.6	15.5	7.5	3.3	3.4	19.5	1.1	4.9	9.3	7.0	1.4	5.8	4.2	3.2	22.0	5.8	21.9	156.7
Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Sub-total)	1.4	1.2	3.0	18.6	15.5	7.5	3.3	3.4	19.4	1.1	4.9	9.3	7.0	1.4	5.8	4.2	3.2	22.0	5.8	21.9	156.6
2 Kerosene																					
Industrial Non-big Unit	28.2	8.4	42.2	83.7	94.6	66.6	13.2	28.2	103.1	9.7	41.0	49.4	41.1	13.8	39.7	43.4	17.0	156.4	34.4	153.1	1,066.8
Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercial/Household	174.8	245.9	163.7	351.4	297.5	190.0	213.0	248.2	150.9	211.7	162.8	227.8	132.2	262.1	342.4	201.6	208.4	167.8	134.8	199.7	4,295.8
Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Sub-total)	202.9	254.3	205.9	435.1	392.1	256.6	226.1	276.4	254.0	220.4	224.4	277.2	173.3	275.8	382.1	245.0	225.3	344.2	169.0	352.3	5,331.7
3 Gas Oil																					
Industrial Non-big Unit	506.9	187.4	626.6	2,030.7	2,305.7	1,348.0	304.4	494.9	2,496.6	171.0	663.9	664.6	998.1	207.6	856.7	649.6	398.5	3,671.0	856.0	3,992.3	23,895.6
Industrial Big Unit	0.0	1.6	0.0	30.3	1.6	0.0	0.0	2.6	185.4	2.6	2.2	0.0	0.0	0.0	92.6	19.4	0.0	178.0	0.0	98.5	593.1
Commercial/Household	459.7	645.0	437.4	949.2	823.5	599.9	591.7	666.0	406.4	577.0	534.1	794.8	360.4	709.4	943.2	562.8	569.6	529.3	372.1	543.0	11,799.8
Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,208.8	2,208.8
(Sub-total)	966.6	834.2	1,264.3	3,010.2	2,930.7	1,865.9	896.1	1,163.4	3,070.4	751.3	1,199.7	1,649.7	1,358.5	917.0	1,892.5	1,418.8	968.4	4,370.3	1,230.1	6,507.6	38,707.4
4 Heavy Oil																					
Industrial Non-big Unit	800.3	778.6	1,231.1	3,400.5	6,956.6	2,956.9	1,035.9	1,342.9	5,409.0	502.3	1,270.3	2,328.9	1,906.6	612.7	5,563.1	5,374.7	1,109.0	18,767.7	6,524.6	33,030.1	102,853.0
Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	131.1	0.0	162.0	0.0	0.0	0.0	267.5	0.0	0.0	321.4	0.0	736.4	1,630.4
Commercial/Household	340.1	460.1	437.8	1,124.0	442.0	1,080.6	975.3	899.0	497.6	770.6	1,300.6	3,910.4	463.0	866.5	1,419.7	793.7	792.0	887.4	584.9	727.7	18,581.9
Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14,009.7	0.0	0.0	0.0	33,921.6	47,928.2
(Sub-total)	1,140.4	1,175.7	1,668.9	4,524.5	7,400.8	4,037.5	2,011.2	2,041.4	6,037.7	1,272.9	2,756.0	6,239.3	2,369.6	1,479.2	7,240.3	20,176.1	1,899.0	19,976.4	9,109.5	68,417.9	170,993.6
5 LPG																					
Industrial Non-big Unit	2.5	1.4	5.8	24.2	20.2	10.9	3.2	4.4	20.8	1.3	9.2	8.0	10.4	1.9	9.2	5.7	4.6	32.9	7.6	28.4	213.0
Industrial Big Unit	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.1	4.1
Commercial/Household	37.7	52.9	35.5	76.6	51.2	42.4	47.0	53.9	32.9	46.3	41.3	56.9	28.9	57.2	75.3	44.2	46.7	41.5	29.6	43.6	939.9
Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Sub-total)	40.1	54.3	41.4	100.9	71.4	53.2	50.2	58.3	53.7	47.7	46.5	65.0	39.3	59.0	83.5	49.9	50.3	78.4	37.2	72.1	1,157.0
6 Natural Gas																					
Industrial Non-big Unit	0.6	0.5	3.6	14.7	14.1	9.7	1.3	1.0	16.1	0.4	2.0	4.1	6.4	0.5	5.5	2.6	3.5	29.9	6.7	23.9	144.1
Industrial Big Unit	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.7	2.2	1.0	0.0	1.1	0.0	1.4	10.0
Commercial/Household	8.3	8.6	5.9	12.8	8.5	7.2	7.9	9.0	5.5	7.8	7.0	9.6	4.9	9.6	12.7	7.4	7.7	7.0	5.0	7.3	156.2
Energy Conversion	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.5	52.5	
(Sub-total)	8.9	12.3	9.6	27.7	22.7	13.9	9.2	10.0	27.0	8.2	9.1	13.9	13.3	10.7	20.4	20.1	11.1	34.1	11.7	73.1	364.8
7 Solid Fuel																					
Industrial Non-big Unit	110.5	330.3	477.2	5,989.3	3,218.9	1,501.4	509.9	1,094.2	3,580.2	338.1	1,181.5	1,679.6	1,404.6	254.3	1,175.1	929.4	1,021.5	5,995.1	1,514.3	8,046.1	36,077.7
Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Sub-total)	110.5	330.3	477.2	5,989.3	3,218.9	1,501.4	509.9	1,094.2	3,580.2	338.1	1,181.5	1,679.6	1,404.6	254.3	1,175.1	929.4	1,021.5	5,995.1	1,514.3	8,046.1	36,077.7
8 Total																					
Industrial Non-big Unit	1,450.3	1,254.7	2,569.6	11,561.6	12,627.5	5,699.2	1,871.1	2,968.9	11,632.2	1,024.6	3,182.5	4,933.6	4,376.2	1,121.9	7,654.0	7,202.6	2,554.2	28,371.0	10,991.4	42,966.8	166,156.0
Industrial Big Unit	0.0	1.6	0.0	30.5	1.6	0.0	0.0	2.6	300.7	2.7	164.2	0.0	0.0	0.7	362.3	20.4	0.0	502.4	0.0	836.5	2,236.4
Commercial/Household	1,018.6	1,402.6	1,080.4	2,514.1	1,982.6	1,880.1	1,834.9	1,875.1	1,095.3	1,613.4	2,045.8	4,996.7	1,009.4	1,903.7	2,793.3	1,599.8	1,623.6	1,647.0	1,126.2	1,520.8	36,746.7
Energy Conversion	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14,015.7	0.0	0.0	0.0	36,170.9	50,189.7
(Sub-total)	2,468.9	2,662.3	3,670.2	14,106.2	13,991.7	7,756.3	3,706.0	4,844.6	13,028.3	2,640.7	5,412.6	9,932.4	5,385.7	3,026.3	10,799.7	22,838.5	4,177.8	30,520.4	12,077.6	81,486.9	254,331.6

Table 4.5.2.5-2(2): Districtwise NOx Emission Quantity in GTA (1994)

(ton/year)

	Fuel \ District	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1	Gasoline																					
	Industrial Non-big Unit	6.3	5.2	13.2	62.9	69.1	33.6	14.5	15.2	62.6	4.8	22.0	41.3	31.4	8.0	25.7	16.6	14.3	96.0	25.7	97.5	707.6
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
	Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	6.3	5.2	13.2	62.9	69.1	33.6	14.5	15.2	63.3	4.8	22.1	41.3	31.4	8.0	25.7	16.6	14.3	96.0	25.7	97.5	711.6
2	Kerosene																					
	Industrial Non-big Unit	84.0	16.1	60.9	160.5	181.6	128.1	25.3	50.3	197.7	18.6	79.9	94.8	76.9	26.4	76.1	63.3	32.5	300.1	66.0	293.7	2,044.9
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Commercial/Household	126.0	177.2	118.0	253.4	171.2	137.0	163.5	178.9	108.8	152.6	131.8	164.2	95.3	188.9	248.9	145.3	150.2	135.4	97.0	143.8	3,075.4
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	180.0	193.4	198.9	413.9	352.8	265.1	178.8	229.3	306.5	171.3	211.7	259.0	174.2	215.4	323.0	228.6	182.7	435.5	163.0	437.3	5,120.3
3	Gas Oil																					
	Industrial Non-big Unit	247.5	91.5	403.7	991.5	1,125.5	657.2	149.8	241.8	1,218.9	83.6	319.2	417.2	466.4	116.0	418.3	413.3	194.8	1,792.3	418.9	1,783.2	11,599.2
	Industrial Big Unit	0.0	0.9	0.0	14.8	0.8	0.0	0.0	1.3	80.8	1.3	1.1	0.0	0.0	0.0	45.2	9.5	0.0	89.9	0.0	46.1	289.6
	Commercial/Household	97.2	136.3	92.5	200.6	131.8	114.1	125.1	140.8	86.3	122.0	112.9	166.0	78.2	149.9	199.4	116.9	120.4	110.6	78.7	116.8	2,496.2
	Energy Conversion	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	132.0	0.0	0.0	1,867.5	2,001.7
	(Sub-total)	344.7	230.9	496.2	1,206.9	1,258.0	771.3	273.7	383.4	1,386.0	207.0	433.2	583.2	542.5	266.0	662.9	671.7	315.0	1,988.9	497.5	3,813.8	16,354.6
4	Heavy Oil																					
	Industrial Non-big Unit	110.9	100.1	169.9	469.3	980.4	408.1	143.9	165.3	746.5	89.3	175.7	321.4	263.4	84.6	787.8	741.8	152.6	2,590.2	1,178.5	4,558.9	14,196.9
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.1	0.0	25.1	0.0	0.0	0.0	35.5	0.0	0.0	44.4	0.0	101.9	225.0
	Commercial/Household	16.6	24.8	24.2	62.1	24.4	59.7	53.8	38.6	27.5	42.5	71.8	215.9	26.7	47.8	76.4	43.6	43.7	49.0	32.3	40.2	1,025.6
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,780.8	0.0	0.0	0.0	6,734.6	9,515.4
	(Sub-total)	129.2	125.0	194.1	531.4	984.8	467.7	196.8	203.9	792.1	131.9	272.7	537.3	290.1	132.3	881.7	3,566.4	196.4	2,683.5	1,206.8	11,436.2	24,961.2
5	LPG																					
	Industrial Non-big Unit	2.1	1.2	5.0	20.6	17.2	9.3	2.7	3.7	22.6	1.1	4.5	6.8	6.6	1.4	7.0	4.8	3.9	28.1	6.5	24.2	181.6
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.1	3.5
	Commercial/Household	22.2	31.2	21.0	46.2	30.2	25.0	27.7	31.8	19.4	27.4	24.4	33.0	17.1	33.8	44.4	26.1	27.0	24.5	17.5	25.7	564.7
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	24.3	32.4	25.9	66.9	47.4	34.3	30.4	35.6	42.2	28.5	28.8	39.8	25.9	35.1	51.4	30.9	30.9	55.9	23.9	50.0	739.8
6	Natural Gas																					
	Industrial Non-big Unit	42.0	35.1	263.4	1,072.5	1,029.6	489.6	94.3	89.9	1,321.2	29.2	149.1	298.5	612.9	35.3	404.9	192.3	263.7	1,892.7	491.8	1,744.1	10,620.1
	Industrial Big Unit	0.0	0.0	0.0	10.1	2.7	0.0	0.0	0.0	245.0	2.1	0.0	0.0	0.0	49.2	158.7	71.9	0.0	82.9	0.0	104.7	727.2
	Commercial/Household	314.2	441.3	297.1	642.1	426.4	356.4	396.1	451.3	276.1	389.0	351.0	491.6	243.0	479.5	633.4	371.6	383.7	349.9	249.5	366.0	7,911.3
	Energy Conversion	0.0	711.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,109.3	0.0	0.0	0.0	9,469.0	12,289.4
	(Sub-total)	356.2	1,187.5	560.5	1,724.7	1,458.8	846.0	490.4	521.2	1,842.3	420.3	500.1	788.1	855.9	564.0	1,196.9	2,745.4	647.4	2,325.4	741.4	11,683.8	31,448.1
7	Solid Fuel																					
	Industrial Non-big Unit	46.8	139.9	202.2	2,537.8	1,364.0	636.2	216.1	483.7	1,908.6	143.3	500.6	711.7	595.2	107.8	497.9	392.1	432.9	2,413.2	841.7	2,661.9	16,113.4
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	46.8	139.9	202.2	2,537.8	1,364.0	636.2	216.1	483.7	1,908.6	143.3	500.6	711.7	595.2	107.8	497.9	392.1	432.9	2,413.2	841.7	2,661.9	16,113.4
8	Total																					
	Industrial Non-big Unit	509.2	389.2	1,136.3	5,335.2	4,747.3	2,361.9	644.4	1,029.8	5,096.5	350.1	1,251.1	1,889.7	2,077.0	377.5	2,197.9	1,849.4	1,084.4	9,114.5	2,827.1	11,063.7	55,397.0
	Industrial Big Unit	0.0	0.9	0.0	25.0	3.4	0.0	0.0	1.3	347.6	3.4	26.2	0.0	0.0	49.2	239.4	81.4	0.0	216.5	0.0	254.8	1,249.1
	Commercial/Household	578.4	810.9	552.8	1,203.4	784.0	694.2	766.2	841.2	518.1	733.5	691.8	1,072.7	459.2	899.9	1,207.4	704.0	729.0	669.3	475.0	690.3	15,061.4
	Energy Conversion	0.0	713.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,022.1	0.0	0.0	0.0	16,071.1	22,806.5
	(Sub-total)	1,087.5	1,914.3	1,691.1	6,563.5	5,534.8	3,056.1	1,400.7	1,872.2	5,964.0	1,087.1	1,969.1	2,962.4	2,535.1	1,326.7	3,639.5	7,660.8	1,809.4	10,000.4	3,302.0	30,079.4	95,449.0

Table 4.5.2.5-2(3): Districtwise CO Emission Quantity in GTA (1994)

(ton/year)

	Fuel \ District	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
1	Gasoline																					
	Industrial Non-big Unit	293.5	243.0	619.9	3,692.8	3,244.2	1,574.7	660.4	712.1	3,878.4	225.4	1,033.3	1,938.3	1,473.2	283.9	1,204.7	675.0	668.9	4,599.9	1,204.6	4,575.7	33,219.9
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.5	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	179.9
	Commercial/Household	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	293.5	243.0	619.9	3,692.8	3,244.2	1,574.7	660.4	712.1	4,050.8	225.4	1,036.7	1,938.3	1,473.2	283.9	1,204.7	675.0	668.9	4,599.9	1,204.6	4,575.7	33,399.9
2	Kerosene																					
	Industrial Non-big Unit	4.9	1.5	7.4	14.6	16.5	11.6	2.3	4.6	19.9	1.7	7.3	6.6	7.2	2.5	6.9	7.0	3.0	27.3	6.0	29.7	185.9
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Commercial/Household	30.5	42.9	28.9	61.3	41.4	33.1	37.1	43.3	26.3	36.9	31.9	39.7	23.1	45.7	59.7	35.2	39.3	32.8	22.5	34.7	744.0
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	35.4	44.3	36.9	75.9	57.9	44.6	39.4	47.9	44.3	38.6	39.1	46.4	30.2	48.1	66.6	42.7	39.3	60.0	29.5	64.4	929.9
3	Gas Oil																					
	Industrial Non-big Unit	19.6	7.3	32.0	76.6	89.2	52.1	11.8	19.2	99.6	8.6	25.3	33.1	26.6	9.2	33.2	32.6	15.4	142.1	33.2	141.3	917.1
	Industrial Big Unit	0.0	0.1	0.0	1.2	0.1	0.0	0.0	0.1	0.6	0.1	0.1	0.0	0.0	0.0	3.6	0.8	0.0	6.6	0.0	3.6	23.0
	Commercial/Household	20.5	26.6	19.5	42.4	27.6	24.1	26.4	29.7	18.2	25.6	23.9	36.5	16.1	31.7	47.1	24.7	25.4	20.4	16.6	24.2	528.9
	Energy Conversion	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	98.6	105.7
	(Sub-total)	40.1	34.2	51.5	122.2	117.1	76.2	38.2	48.9	121.3	32.5	49.2	69.6	54.6	40.9	78.9	58.2	40.9	172.3	49.8	266.0	1,577.7
4	Heavy Oil																					
	Industrial Non-big Unit	7.6	6.9	11.7	32.2	66.9	26.0	9.6	12.7	51.2	4.8	12.1	22.0	18.1	5.8	52.6	50.9	10.5	177.6	80.7	312.6	972.4
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	1.7	0.0	0.0	0.0	2.4	0.0	0.0	3.0	0.0	7.0	16.4
	Commercial/Household	4.0	5.3	5.2	13.3	5.2	12.8	11.5	8.3	5.9	9.1	15.4	46.3	5.7	10.2	16.8	9.4	9.4	10.6	6.9	8.6	219.6
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	136.9	0.0	0.0	136.9
	(Sub-total)	11.6	12.2	16.8	45.5	72.1	40.8	21.3	21.0	58.3	13.9	29.2	68.3	23.8	16.0	71.9	60.2	19.8	191.2	87.6	328.2	1,345.1
5	LPG																					
	Industrial Non-big Unit	0.3	0.2	0.7	2.6	2.3	1.2	0.4	0.5	3.1	0.2	0.6	0.9	1.2	0.2	0.9	0.6	0.5	2.6	0.9	2.3	24.4
	Industrial Big Unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Commercial/Household	5.6	7.8	5.2	11.3	7.5	6.3	6.9	8.0	4.9	6.8	6.1	6.3	4.3	6.4	11.1	8.5	8.7	8.1	4.4	6.4	136.7
	Energy Conversion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(Sub-total)	5.8	8.0	5.9	14.1	9.9	7.5	7.3	8.5	7.9	7.0	6.7	9.2	5.5	6.6	12.0	7.2	7.3	10.4	5.2	9.7	163.6
6	Natural Gas																					
	Industrial Non-big Unit	4.0	3.4	26.3	102.8	98.7	46.9	9.0	9.7	129.7	2.6	14.3	28.4	58.8	3.4	38.6	18.4	24.3	181.5	47.2	187.2	1,008.8
	Industrial Big Unit	0.0	0.0	0.0	1.0	0.3	0.0	0.0	0.0	23.5	0.2	0.0	0.0	0.0	4.7	15.2	0.9	0.0	7.9	0.0	10.0	69.7
	Commercial/Household	50.3	70.6	47.5	102.7	69.2	57.4	63.4	72.2	44.2	62.2	56.2	76.7	38.9	76.7	101.3	59.5	61.4	50.0	39.9	58.6	1,205.8
	Energy Conversion	0.0	21.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.1	0.0	0.0	0.0	283.3	367.6
	(Sub-total)	54.3	95.2	72.8	206.6	167.2	104.3	72.4	78.9	194.4	65.2	70.5	107.1	97.6	84.8	155.4	141.9	85.7	245.4	87.1	519.1	2,712.0
7	Solid Fuel																					
	Industrial Non-big Unit	31.8	95.2	137.5	1,725.7	927.5	432.6	146.9	315.3	1,025.8	97.4	340.4	484.0	404.7	73.3	336.6	266.6	294.3	1,641.0	436.3	1,742.1	10,957.1
	Industrial Big Unit																					0.0
	Commercial/Household																					0.0
	Energy Conversion																					0.0
	(Sub-total)	31.8	95.2	137.5	1,725.7	927.5	432.6	146.9	315.3	1,025.8	97.4	340.4	484.0	404.7	73.3	336.6	266.6	294.3	1,641.0	436.3	1,742.1	10,957.1
8	Total																					
	Industrial Non-big Unit	361.7	367.3	834.4	5,849.5	4,444.3	2,147.2	869.6	1,071.0	5,197.8	338.9	1,433.2	2,515.3	2,001.7	378.1	1,675.8	1,252.0	1,017.0	6,773.1	1,808.9	6,909.0	47,266.6
	Industrial Big Unit	0.0	0.1	0.0	2.1	0.3	0.0	0.0	0.1	205.8	0.3	4.3	0.0	0.0	4.7	21.2	7.6	0.0	16.3	0.0	20.6	285.5
	Commercial/Household	110.9	156.4	106.1	231.0	150.3	133.8	145.4	161.4	99.5	140.9	133.4	206.4	88.0	172.8	231.1	139.3	139.3	120.7	91.3	132.8	2,895.3
	Energy Conversion	0.0	21.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	297.0	0.0	0.0	0.0	713.4	941.8
	(Sub-total)	472.6	534.2	940.4	6,082.7	4,594.9	2,280.9	1,006.0	1,232.6	5,502.8	480.1	1,570.8	2,723.7	2,089.7	555.6	1,928.1	1,695.8	1,156.3	6,910.1	1,900.2	7,835.8	51,409.2