

**Table 2.3.1 Macro-economic Indicators at National Level**

Indicator	Unit	1356 (1977/78)	1366 (1987/88)	1376 (1997/98)	1377 (1998/99)
<b>GDP</b>	US\$ billions	76.0	137.7	102.0	100.3
- Agriculture	% of GDP	10.0	25.4	20.8	16.4
- Industry	% of GDP	51.3	21.8	18.6	18.9
- Services	% of GDP	38.7	52.8	60.6	64.7
(annual average growth)					
GDP	%	-	-	3.0	1.7
- Agriculture	%	-	-	1.5	5.0
- Industry	%	-	-	5.1	0.8
- Services	%	-	-	4.8	1.8
GDP per capita	%	-	-	1.4	-0.3
<b>Domestic Prices</b>					
Consumer Prices	%	27.1	27.7	17.3	14.7
<b>Government Finance</b>					
Current Revenue	% of GDP	-	-	25.0	18.8
Current Budget Balance	% of GDP	-	-	6.3	-1.3
Overall Surplus/Deficit	% of GDP	-4.9	-7.1	-2.7	-6.6
<b>Trade</b>					
Total Exports (FOB)	US\$ millions	23,917	11,916	18,375	12,997
- Fuel	US\$ millions	23,501	10,800	15,464	9,900
- Textiles	US\$ millions	-	-	-	642
- Manufactures	US\$ millions	-	-	-	587
Total Imports (CIF)	US\$ millions	16,636	12,005	14,598	13,765
- Food	US\$ millions	-	-	-	2,323
- Fuel and Energy	US\$ millions	-	400	300	289
- Capital Goods	US\$ millions	-	-	-	5,499
Export Price Index	1995=100	67	94	112	119
Import Price Index	1995=100	59	91	92	88
Terms of Trade	1995=100	114	104	122	135
<b>Balance of Payments</b>					
Exports of Goods & Services	US\$ millions	27,775	12,147	19,566	14,119
Imports of Goods & Services	US\$ millions	24,919	14,377	18,018	16,210
Resources Balance	US\$ millions	2,856	-2,230	1,548	-2,091
(annual average growth)					
Exports of Goods & Services	%	-	-	-12.5	-30.9
Imports of Goods & Services	%	-	-	-4.6	-3.9

Source: World Bank.

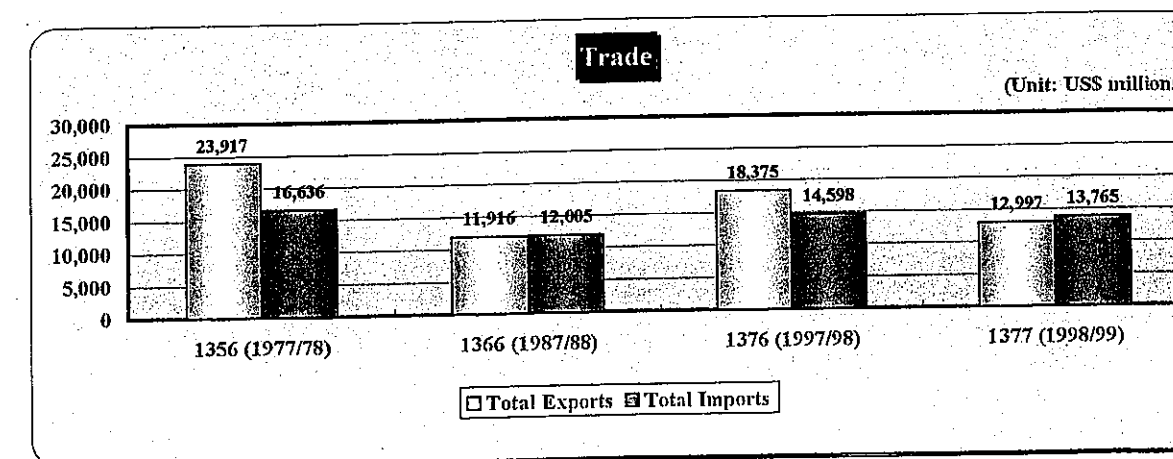
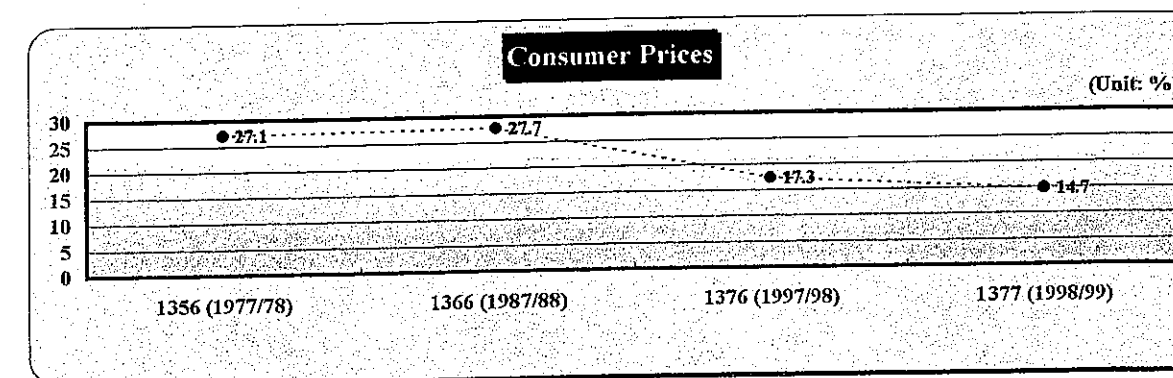
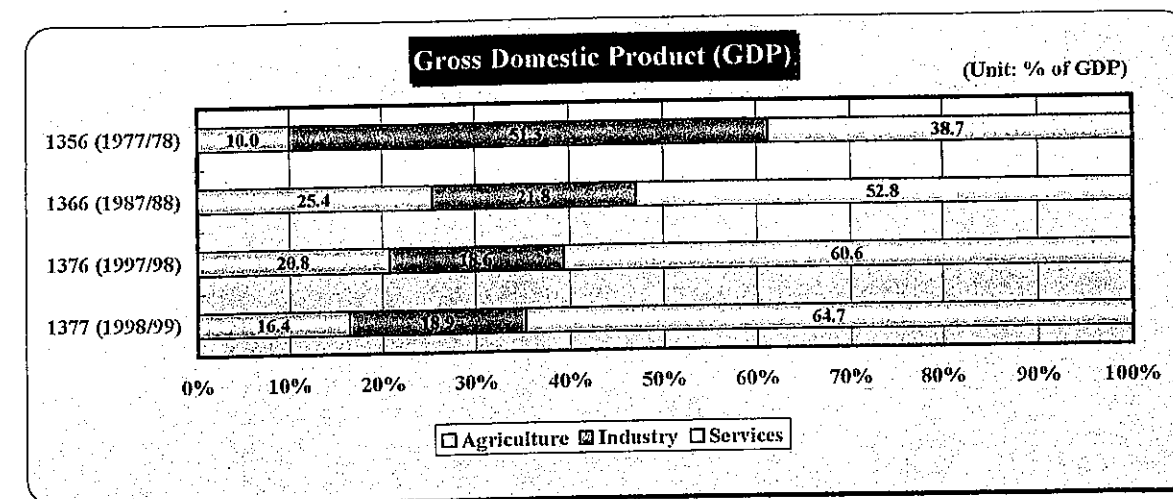
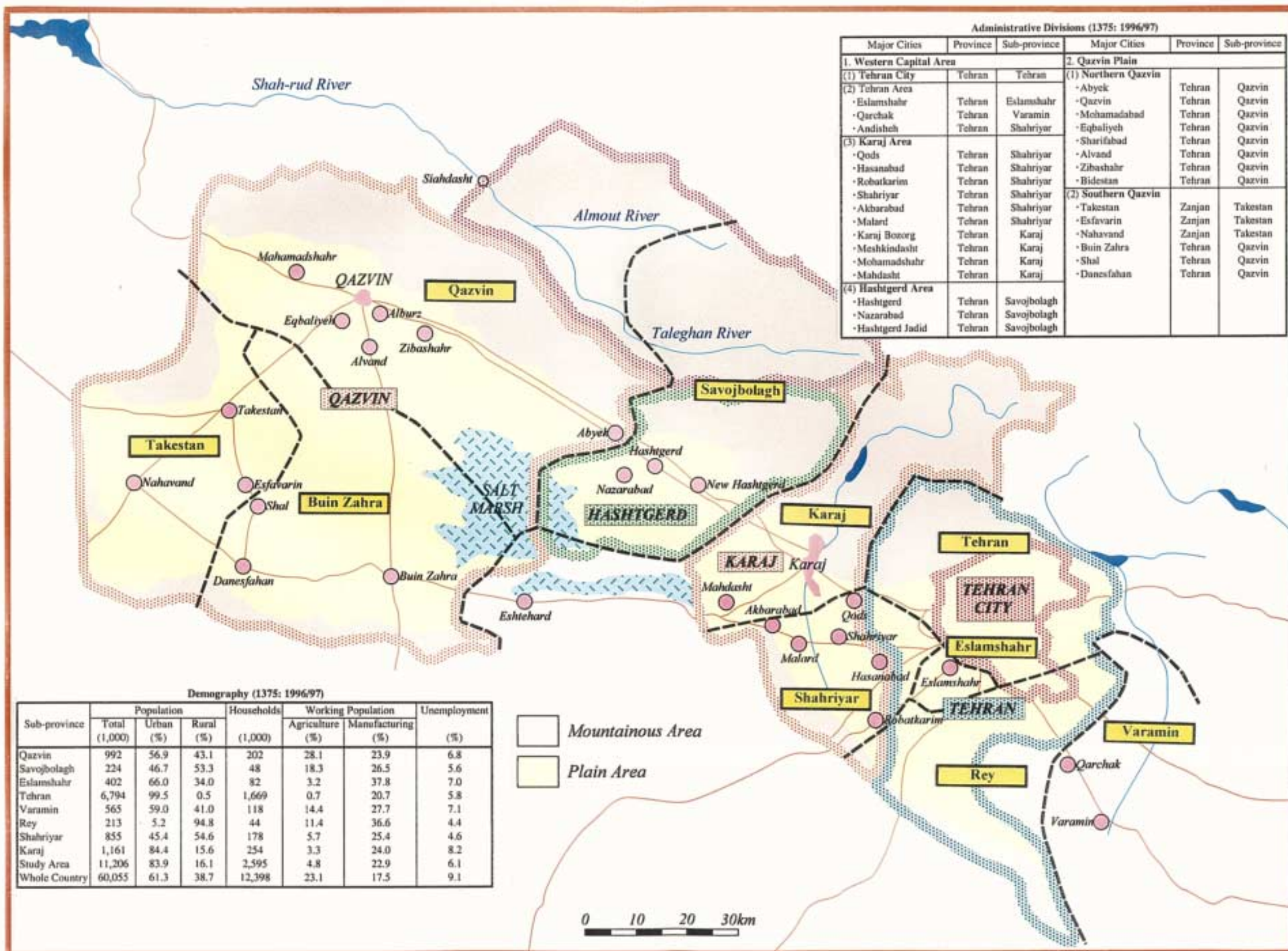


Figure 2.3.2 Regional Administration



Administrative Divisions (1375: 1996/97)

Major Cities	Province	Sub-province	Major Cities	Province	Sub-province
1. Western Capital Area			2. Qazvin Plain		
(1) Tehran City	Tehran	Tehran	(1) Northern Qazvin	Tehran	Qazvin
(2) Tehran Area	Tehran	Eslamshahr	- Abyek	Tehran	Qazvin
- Eslamshahr	Tehran	Varamin	- Qazvin	Tehran	Qazvin
- Qarchak	Tehran	Shahriyar	- Mohamadabad	Tehran	Qazvin
- Andisheh	Tehran		- Eqbaliyeh	Tehran	Qazvin
(3) Karaj Area	Tehran	Shahriyar	- Sharifabad	Tehran	Qazvin
- Qods	Tehran	Shahriyar	- Alvand	Tehran	Qazvin
- Hasanabad	Tehran	Shahriyar	- Zibashahr	Tehran	Qazvin
- Robatkarim	Tehran	Shahriyar	- Bidestan	Tehran	Qazvin
- Shahriyar	Tehran	Shahriyar	(2) Southern Qazvin	Zanjan	Takestan
- Akbarabad	Tehran	Shahriyar	- Takestan	Zanjan	Takestan
- Malard	Tehran	Shahriyar	- Esfavarin	Zanjan	Takestan
- Karaj Bozorg	Tehran	Karaj	- Nahavand	Zanjan	Takestan
- Meshkindasht	Tehran	Karaj	- Buin Zahra	Tehran	Qazvin
- Mohamadshahr	Tehran	Karaj	- Shal	Tehran	Qazvin
- Mahdasht	Tehran	Karaj	- Danesfahan	Tehran	Qazvin
(4) Hashitgerd Area	Tehran	Savojbolagh			
- Hashitgerd	Tehran	Savojbolagh			
- Nazarabad	Tehran	Savojbolagh			
- Hashitgerd Jadid	Tehran	Savojbolagh			

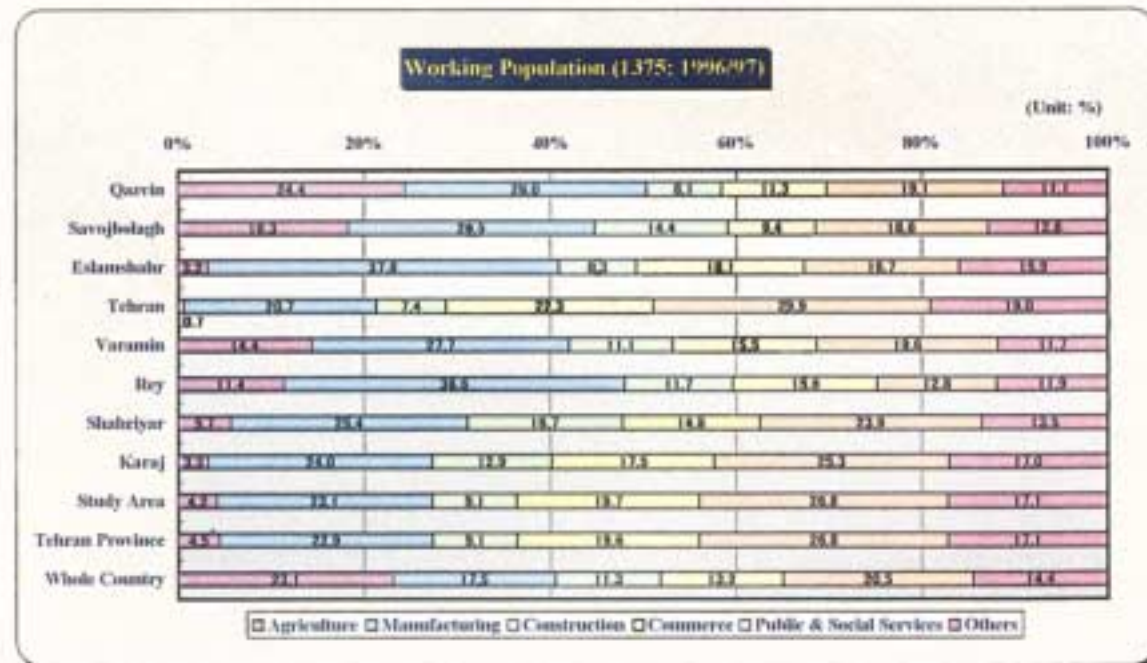
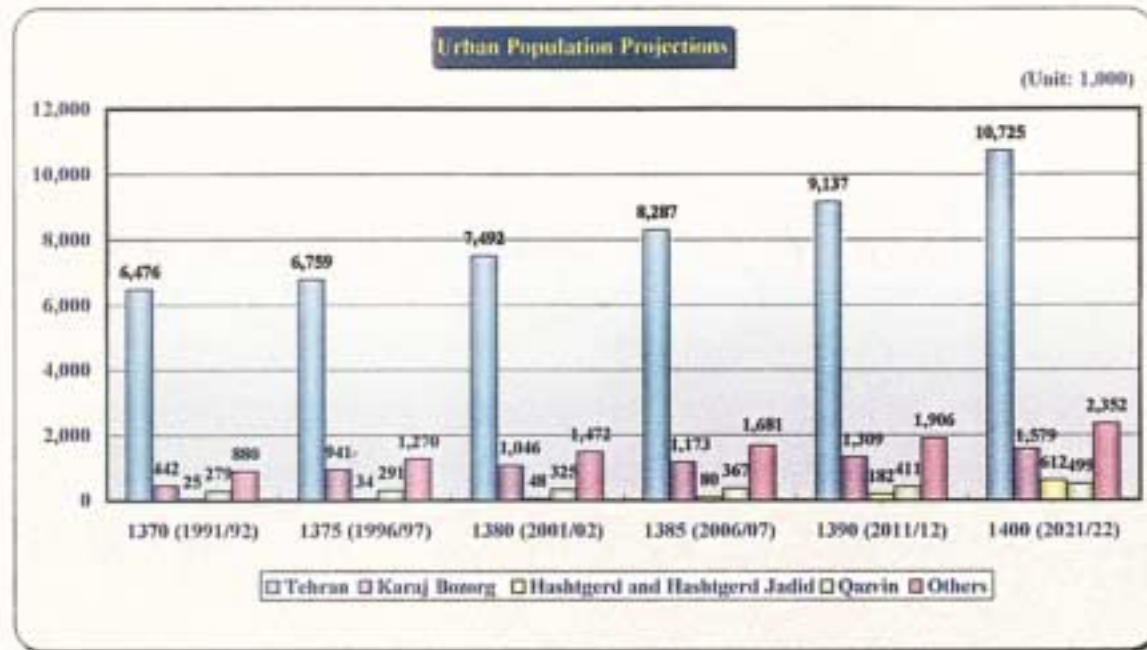
Demography (1375: 1996/97)

Sub-province	Population			Households (1,000)	Working Population		Unemployment (%)
	Total (1,000)	Urban (%)	Rural (%)		Agriculture (%)	Manufacturing (%)	
Qazvin	992	56.9	43.1	202	28.1	23.9	6.8
Savojbolagh	224	46.7	53.3	48	18.3	26.5	5.6
Eslamshahr	402	66.0	34.0	82	3.2	37.8	7.0
Tehran	6,794	99.5	0.5	1,669	0.7	20.7	5.8
Varamin	565	59.0	41.0	118	14.4	27.7	7.1
Rey	213	5.2	94.8	44	11.4	36.6	4.4
Shahriyar	855	45.4	54.6	178	5.7	25.4	4.6
Karaj	1,161	84.4	15.6	254	3.3	24.0	8.2
Study Area	11,206	83.9	16.1	2,595	4.8	22.9	6.1
Whole Country	60,055	61.3	38.7	12,398	23.1	17.5	9.1

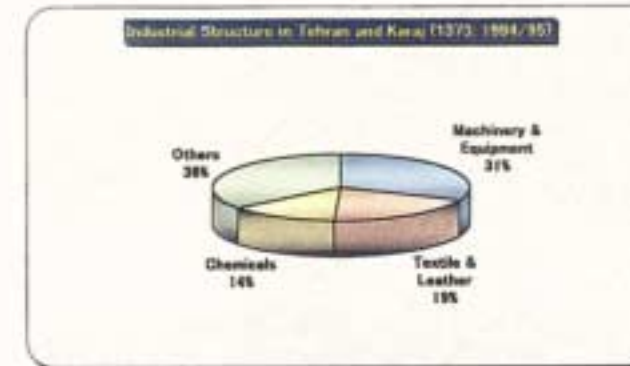
Mountainous Area  
 Plain Area

0 10 20 30km

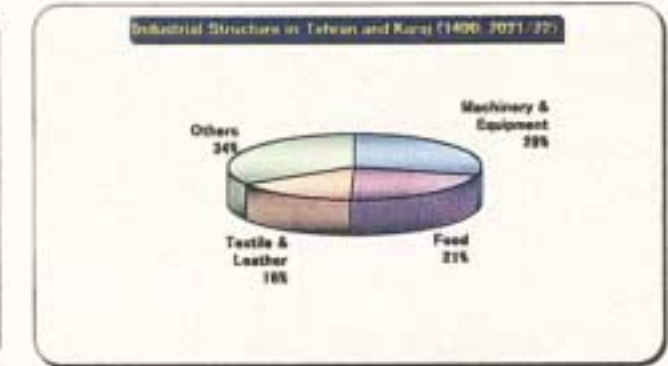
**Table 2.3.3 Regional Demography**



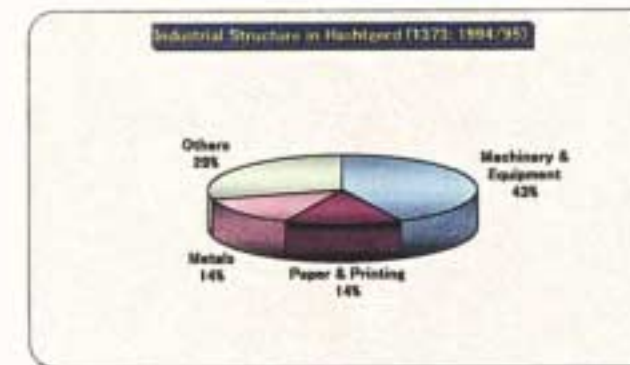
**Table 2.3.4 Regional Industry**



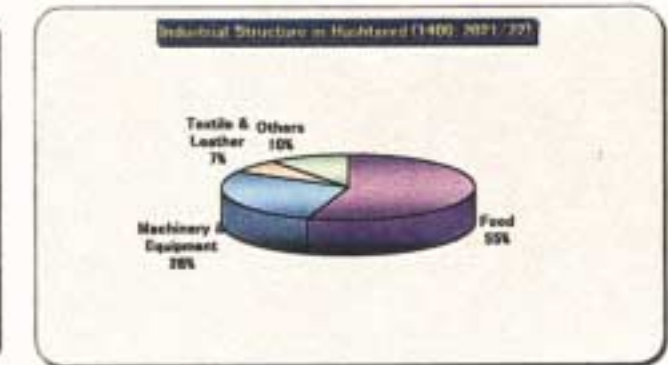
Note: Percentage is based on the number of employees (30,473 persons).  
Source: National Water Master Plan, 1998.



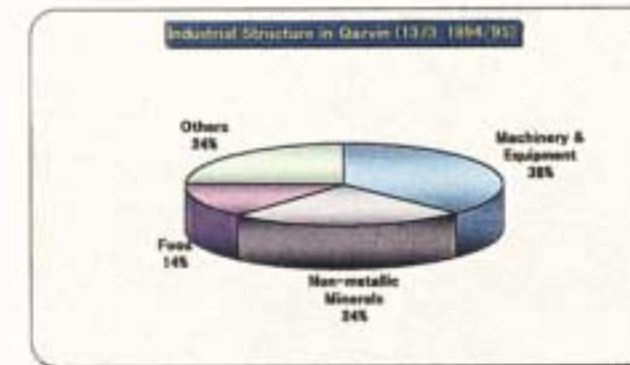
Note: Percentage is based on the number of employees (378,649 persons).  
Source: National Water Master Plan, 1998.



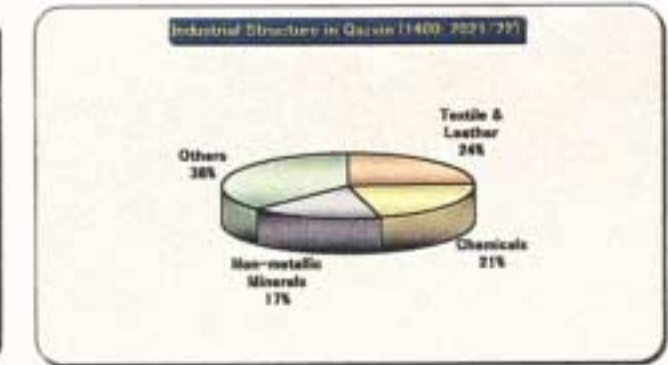
Note: Percentage is based on the number of employees (489 persons).  
Source: National Water Master Plan, 1998.



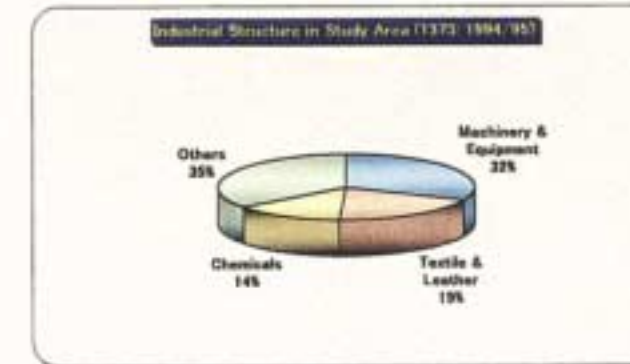
Note: Percentage is based on the number of employees (2,703 persons).  
Source: National Water Master Plan, 1998.



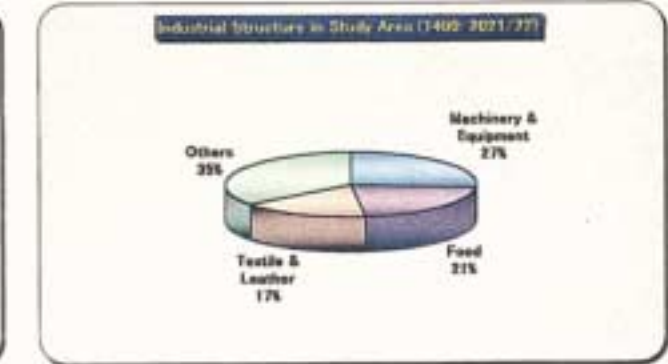
Note: Percentage is based on the number of employees (5,433 persons).  
Source: National Water Master Plan, 1998.



Note: Percentage is based on the number of employees (78,418 persons).  
Source: National Water Master Plan, 1998.

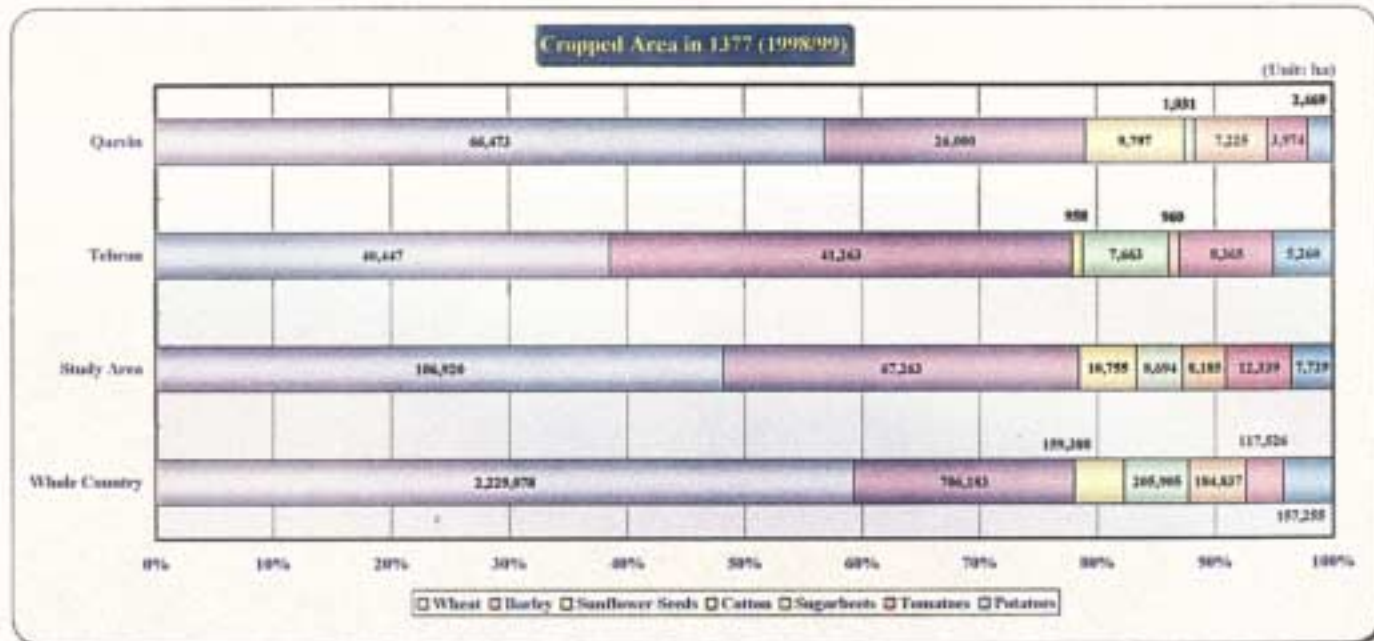


Note: Percentage is based on the number of employees (305,419 persons).  
Source: National Water Master Plan, 1998.

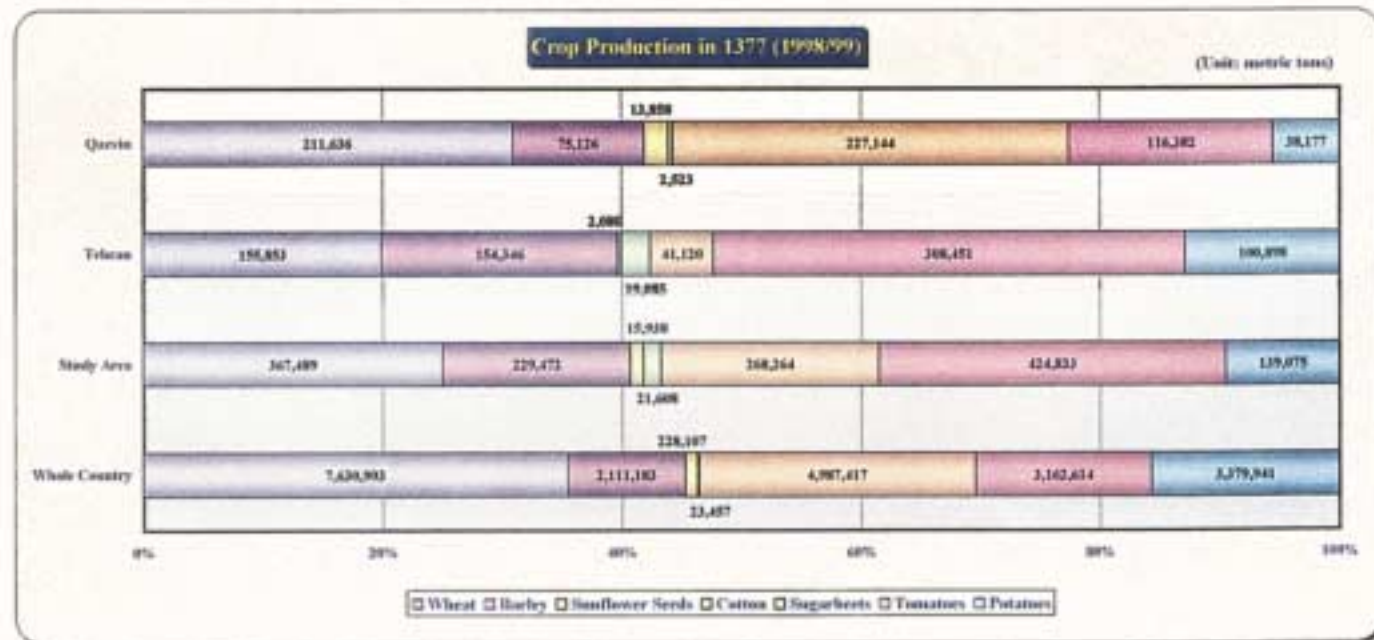


Note: Percentage is based on the number of employees (484,092 persons).  
Source: National Water Master Plan, 1998.

**Table 2.3.5 Regional Agriculture**

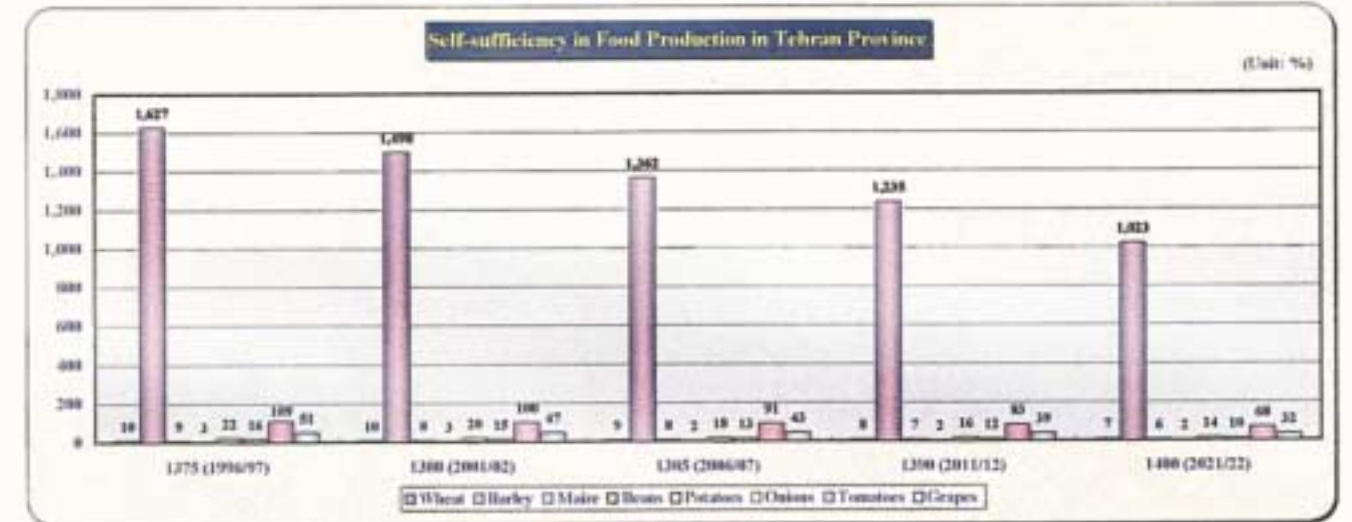


Note: Tehran includes the whole Tehran province.  
Source: "Agricultural Production Costs, 1376/77", Agricultural Statistics and Information Department, Ministry of Agriculture.

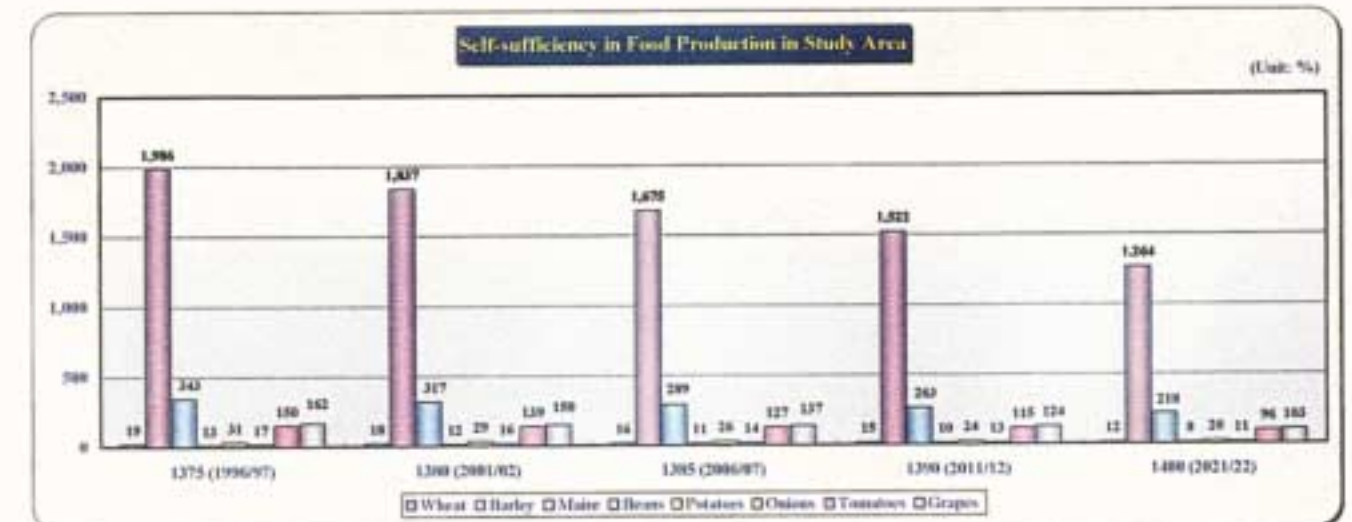
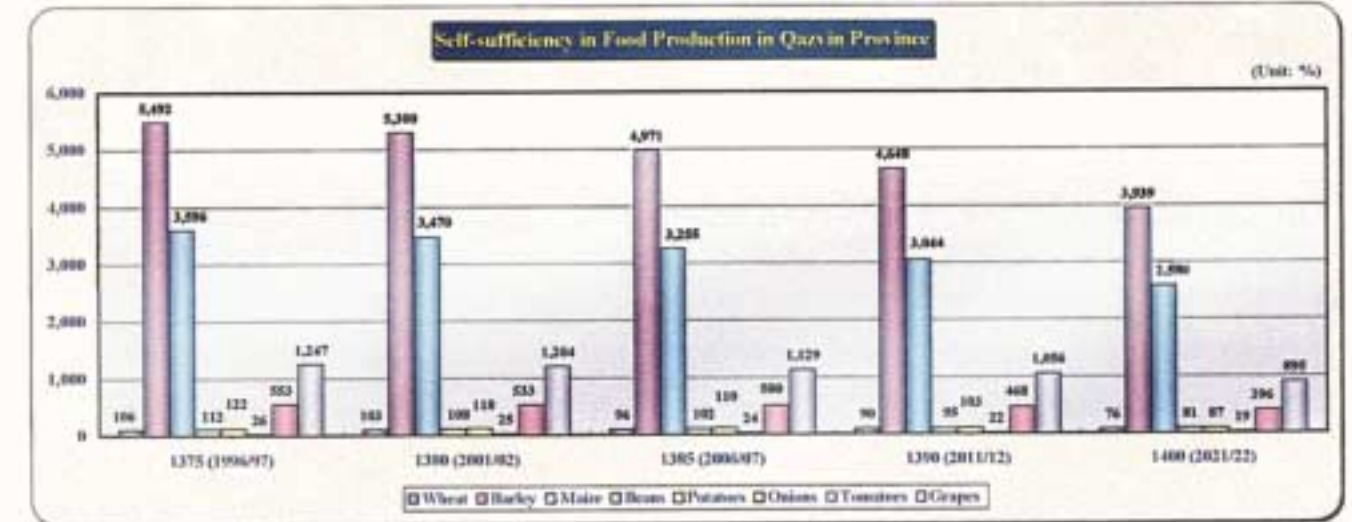


Note: Tehran includes the whole Tehran province.  
Source: "Agricultural Production Costs, 1376/77", Agricultural Statistics and Information Department, Ministry of Agriculture.

**Table 2.3.6 Regional Food Supply**



Note: 1) Tehran province comprises seven sub-province of Sarqablagh, Edahshahr, Tehran, Varamin (Qazvin only), Rey (Alvanabad only), Shahlyar and Kaveh, while Qazvin province consists of these provinces of Qazvin, Talestan and Shahr Taleh.  
2) Crop production has been fixed at an average figure of 1375/76 (1996-00), and remains unchanged over the respective periods.  
3) Per capita crop consumption has been determined at an average figure of 1368 (1987/88), 1371 (1992/93) and 1379 (1997/98) by taking into account feed and seed uses, and waste.  
Source: 1) "Food Balance Sheet", FAO.  
2) "Agricultural Production Costs, 1376/77 and 1377/78", Agricultural Statistics and Information Department, Ministry of Agriculture.  
3) "National Water Master Plan", 1998.



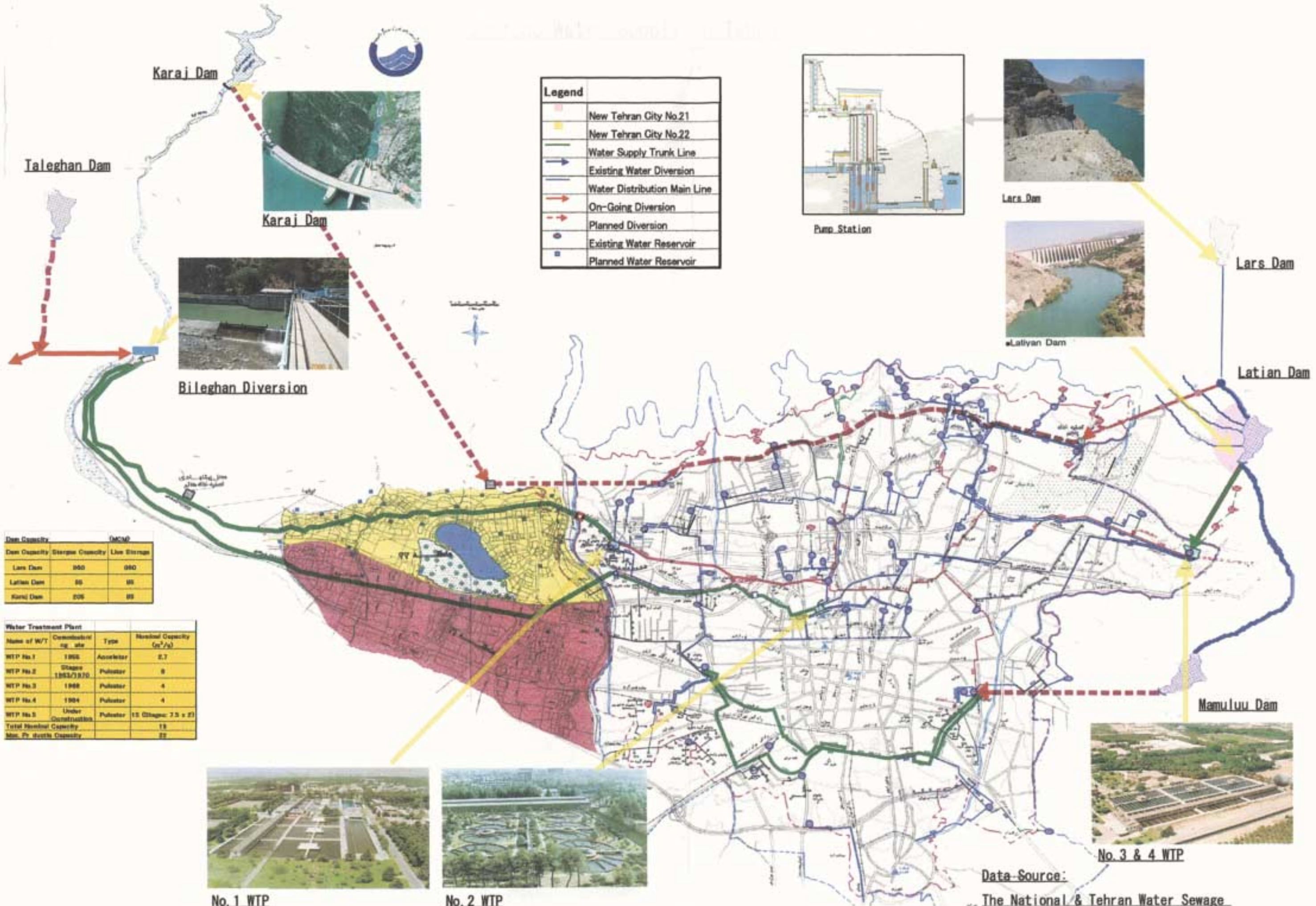
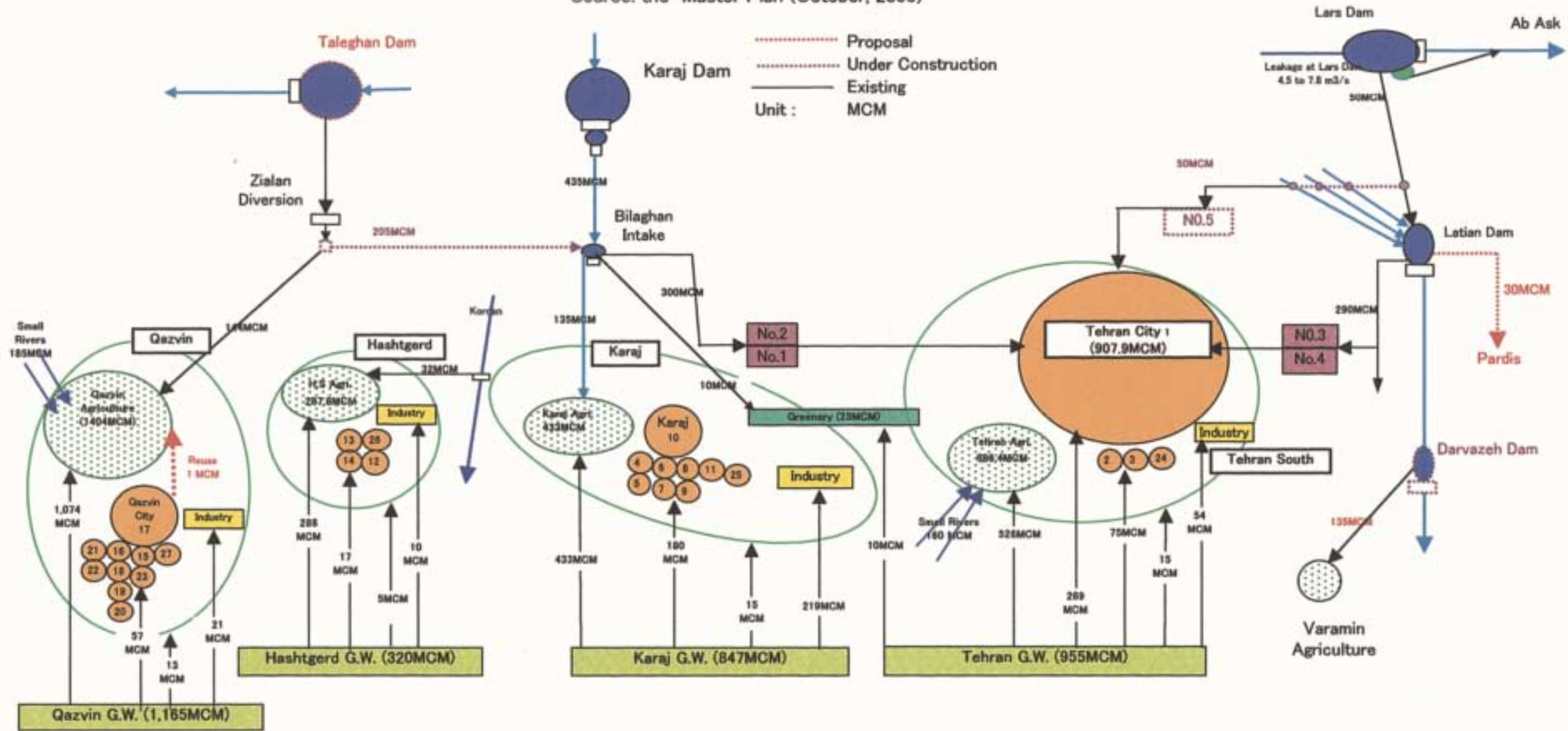


Figure 2.4.4.1 Surface Water Supply in Tehran City

Data Source:  
The National & Tehran Water Sewage  
Companies

Figure 2.4.4.2 Water Allocation Plan of Tehran City  
 Source: the Master Plan (October, 2000)



1	Western Capital Area	Code
1.1	Tehran City	1
1.2	Tehran South	
	Gharchak	2
	Eslamshahr	3
	New Cities	24
1.3	Karaj Area	
	Hosseinabad	4
	Abzarabad	5
	Robat Karim	6
	Shahrivar	7
	Chode	8
	Malard	9
	Karaj (Karaj Bozar)	10
	Mahdeest	11
	New Cities	25
1.4	Hashtgerd Area	
	New Hashtgerd	12
	Hashtgerd	13
	Nazareabad	14
	New Cities	26
2	Qazvin Plain	
2.1	North Qazvin	
	Abyek	15
	Alvand	16
	Qazvin	17
	Egallah	18
	South Qazvin	
	Buin	19
	Danfeshan	20
	Shal	21
	Esfarvarin	22
	Takestan	23
	New Cities	27

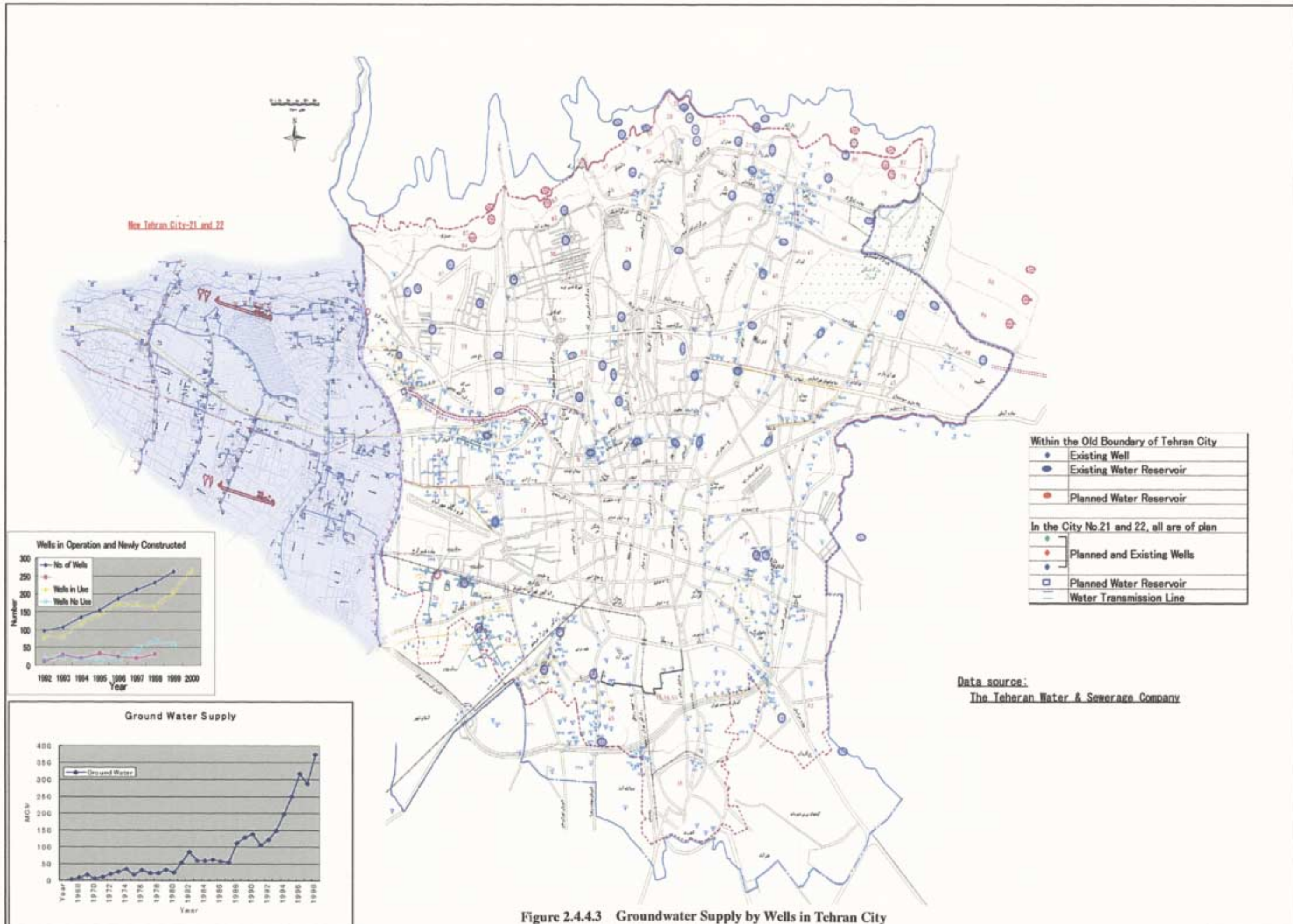
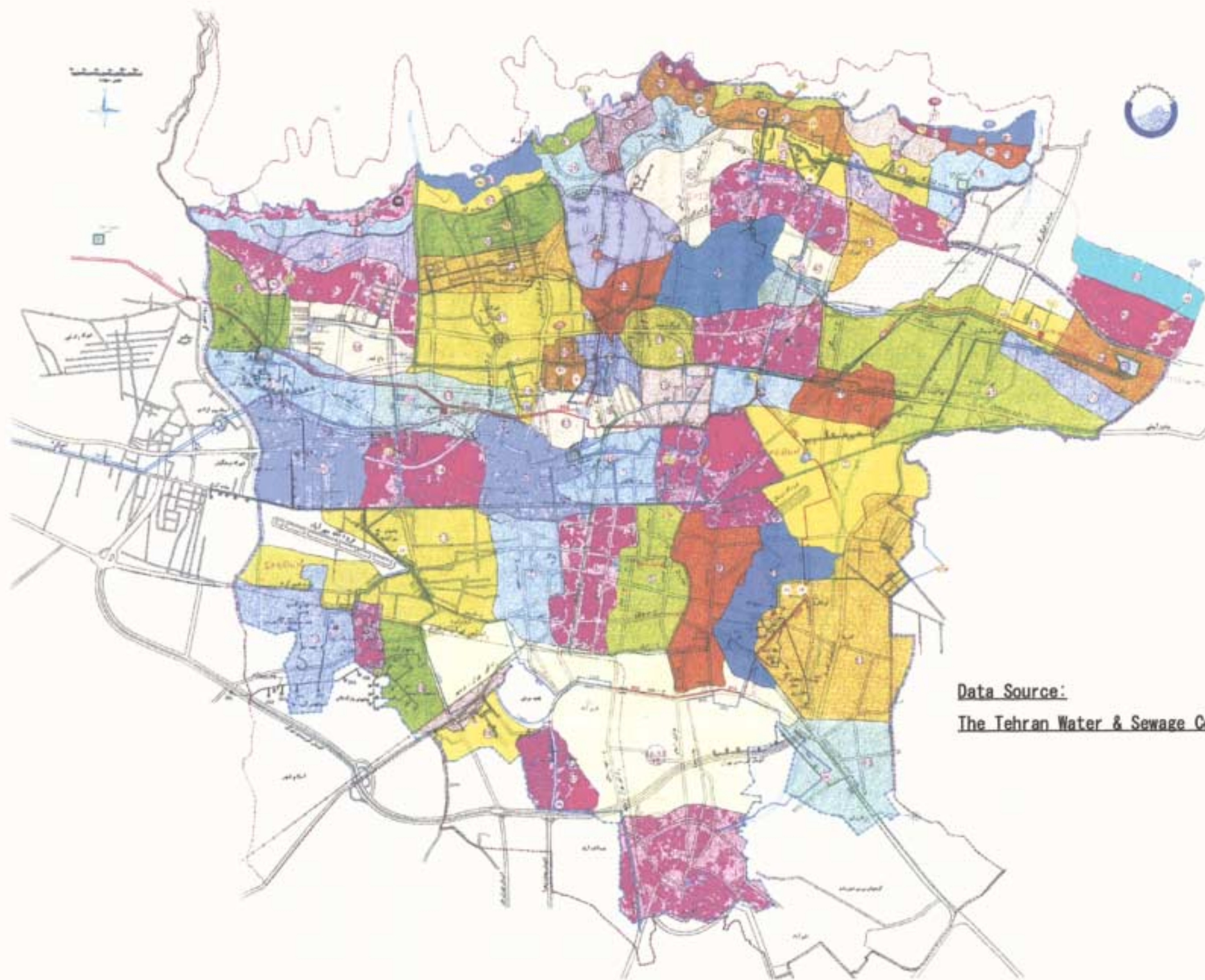


Figure 2.4.4.3 Groundwater Supply by Wells in Tehran City

Data source:  
The Teheran Water & Sewerage Company



Data Source:  
The Tehran Water & Sewage Company

Figure 2.4.4.4 Water Service Classified by Overhead Water Tank



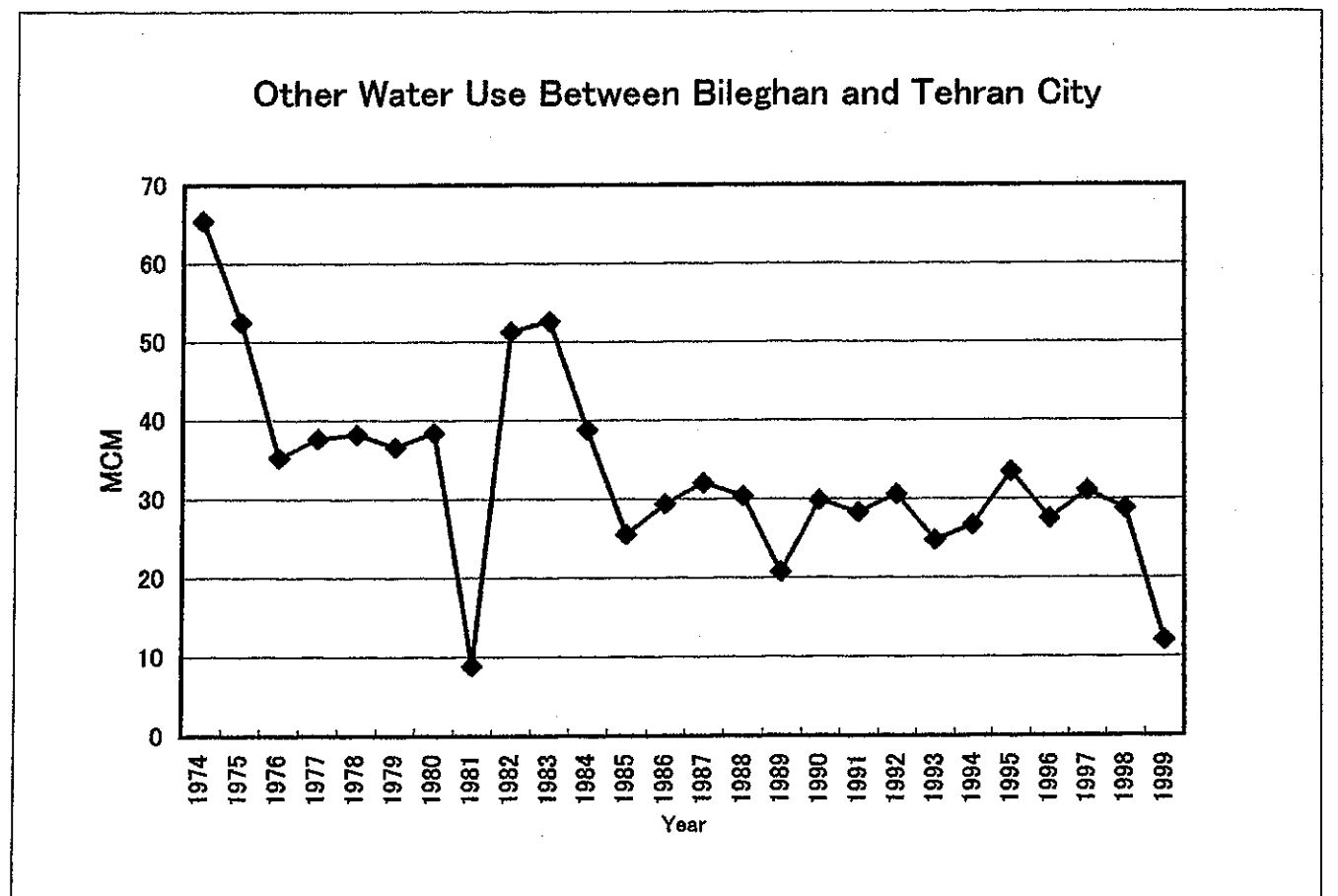
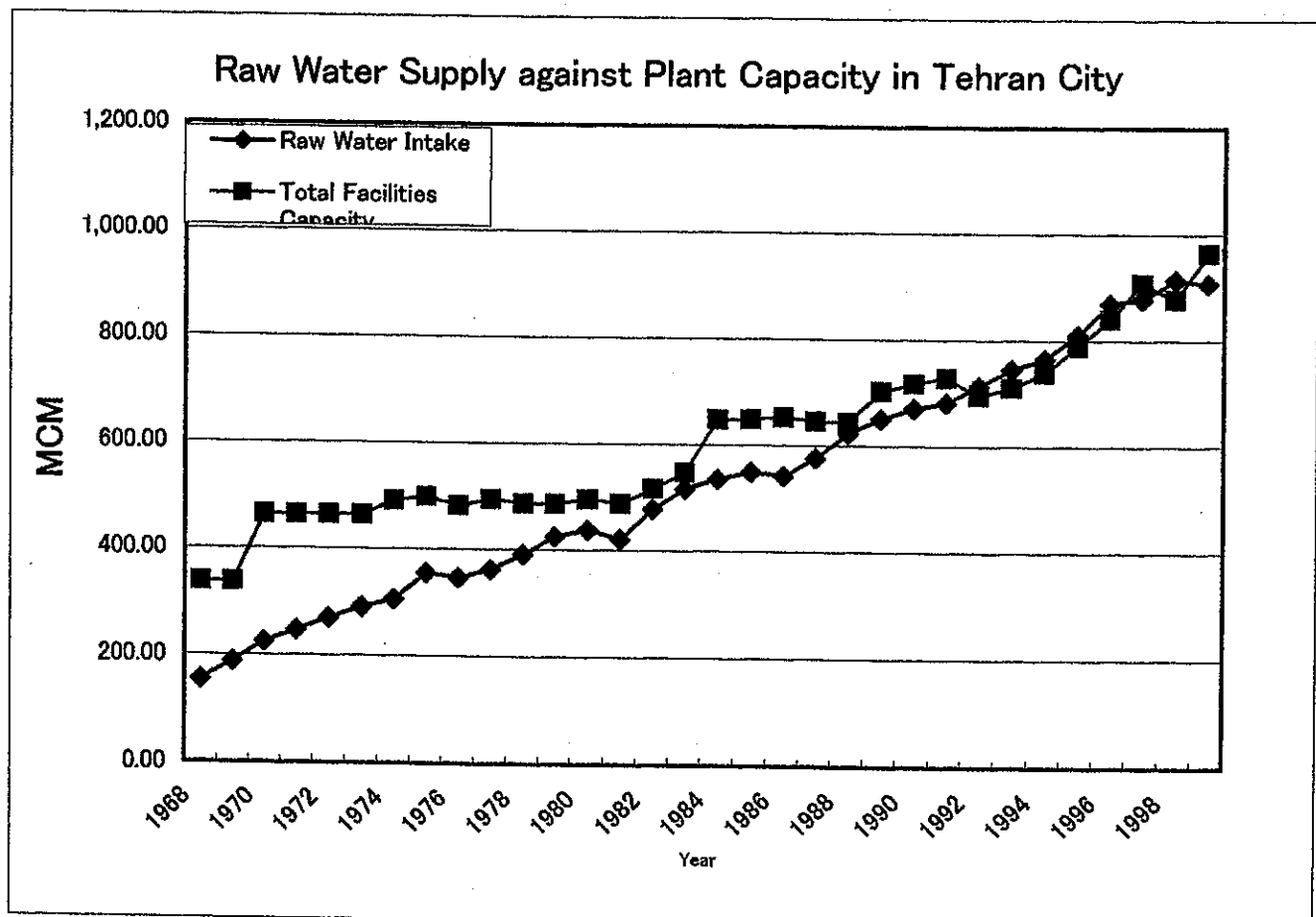
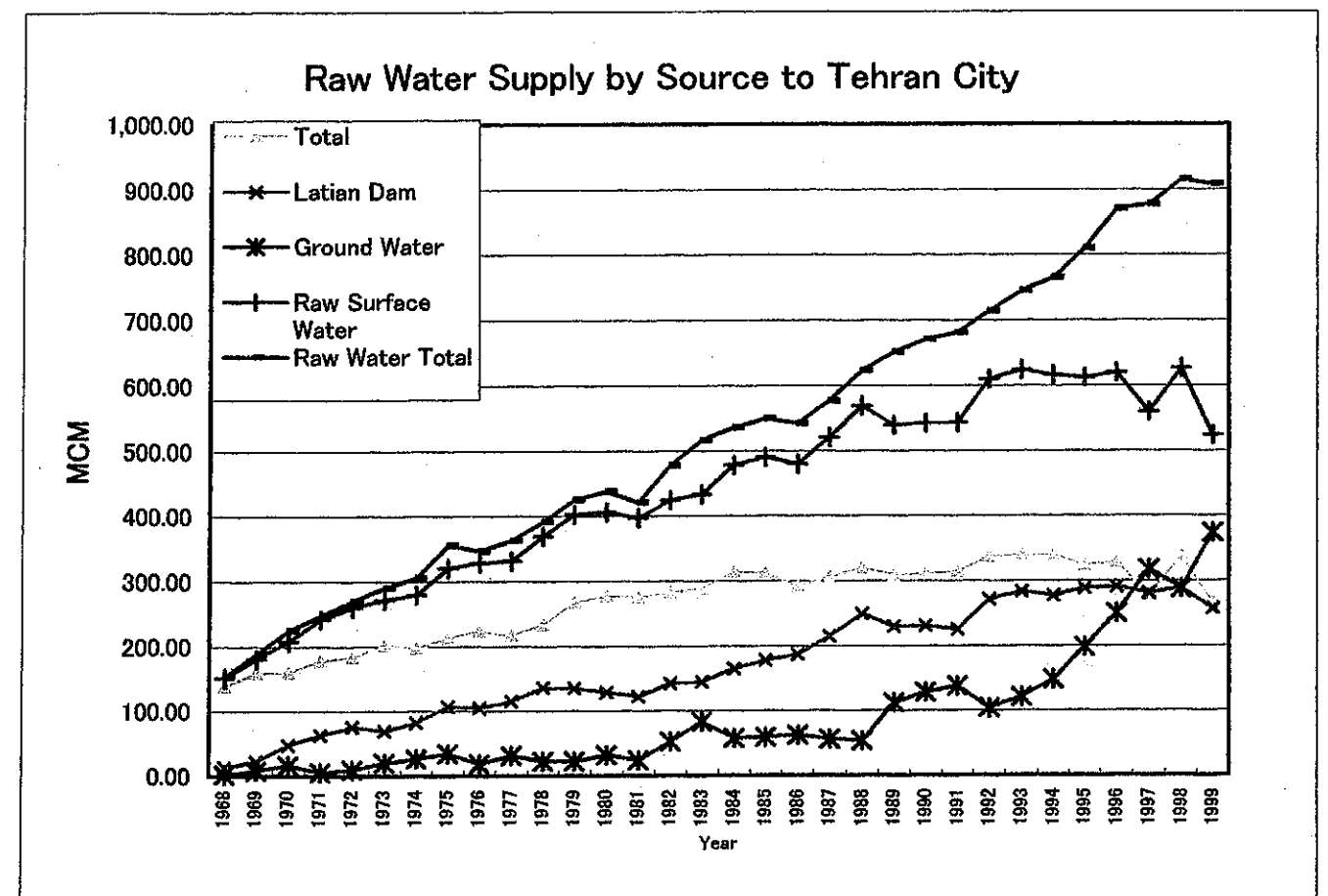
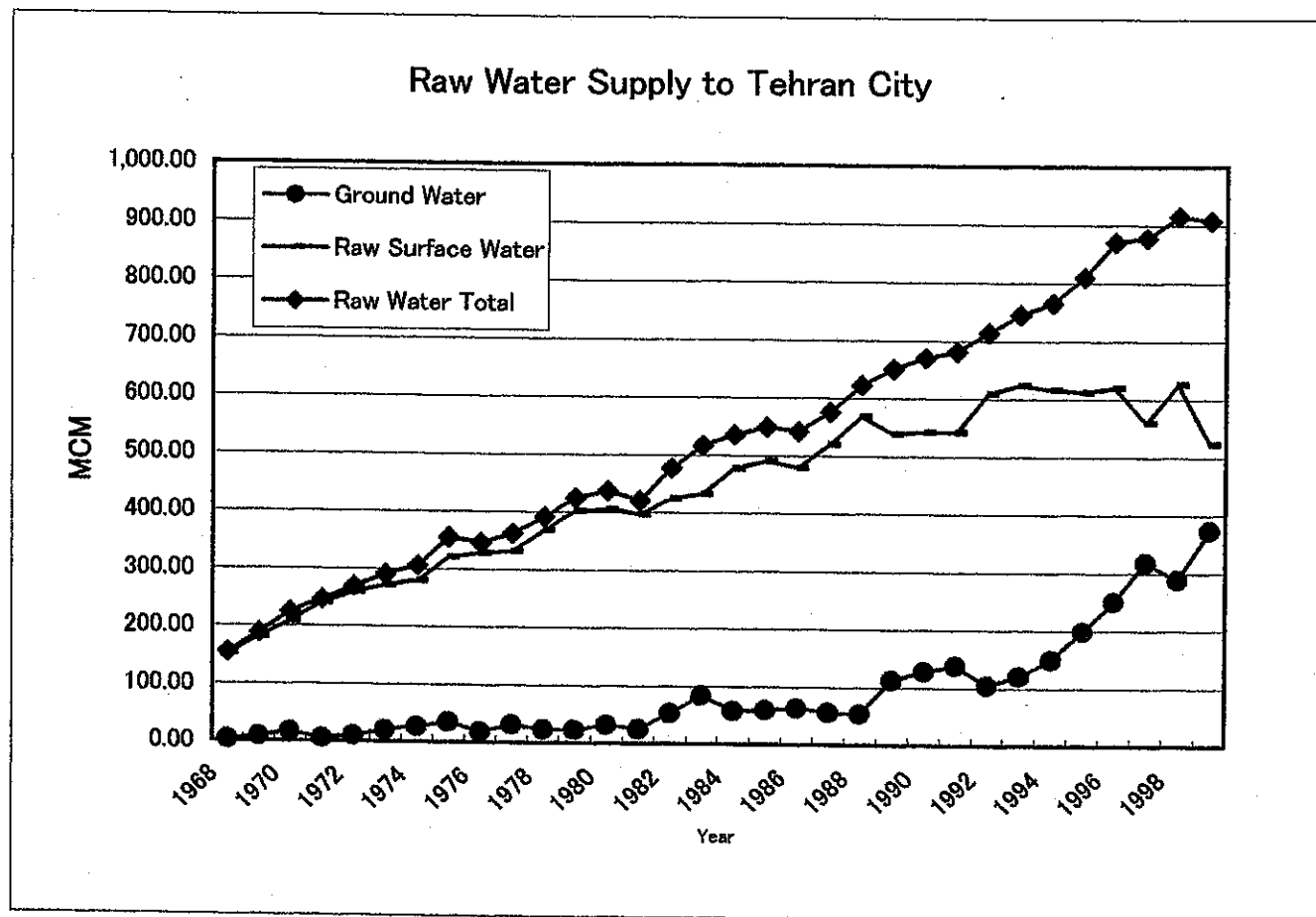


Figure 2.4.4.5 Raw Water Supply to Tehran City

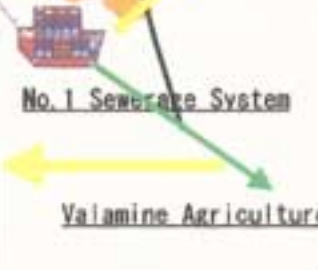
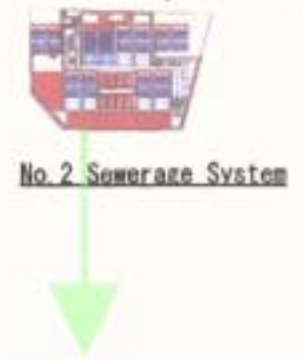
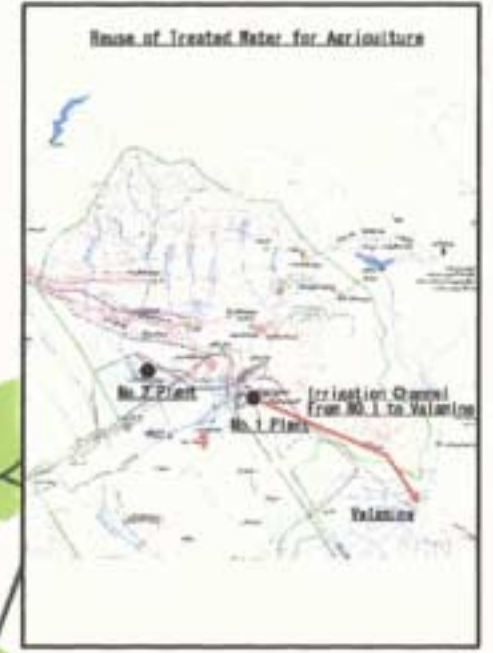
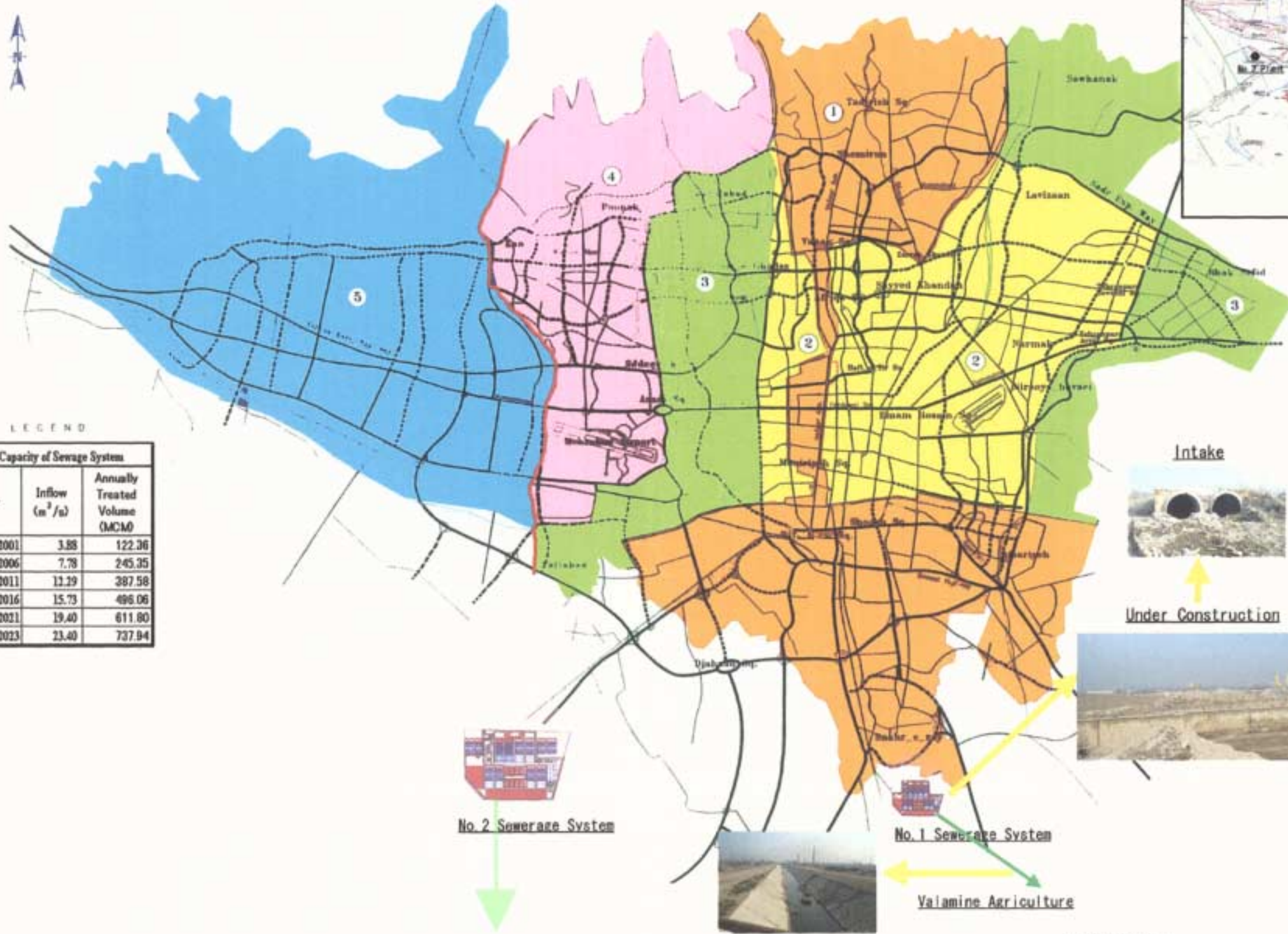


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Tehran Water & Sewage Company



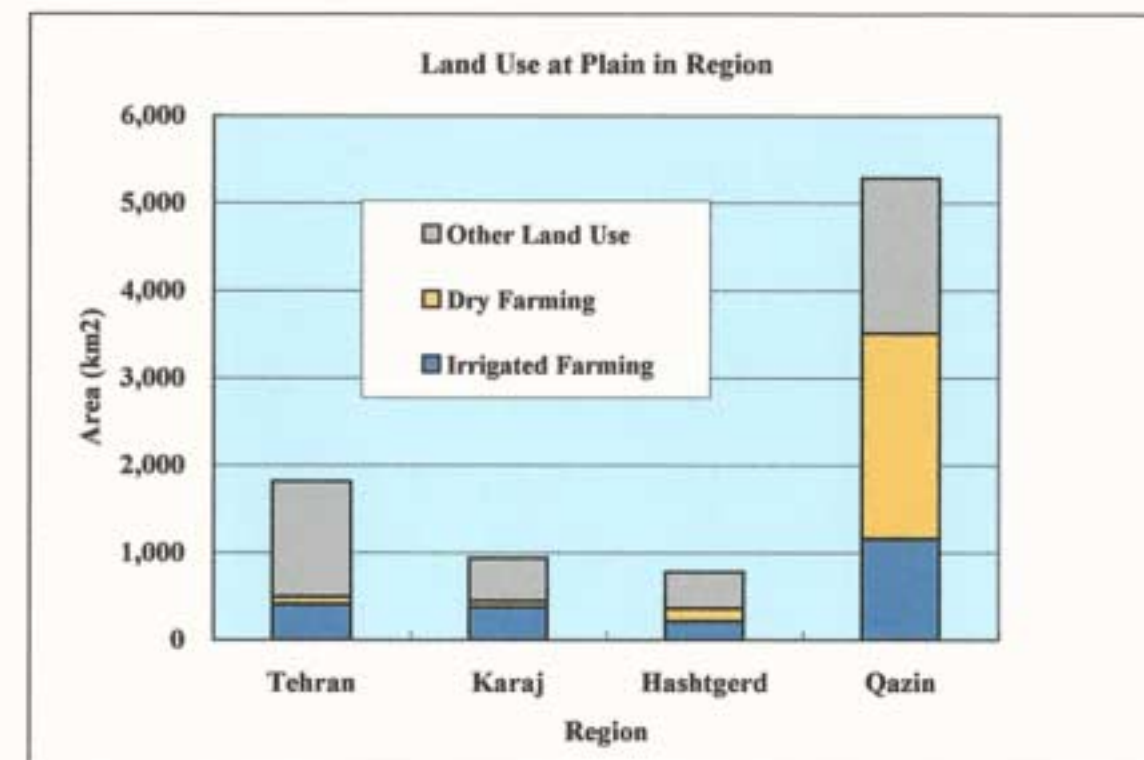
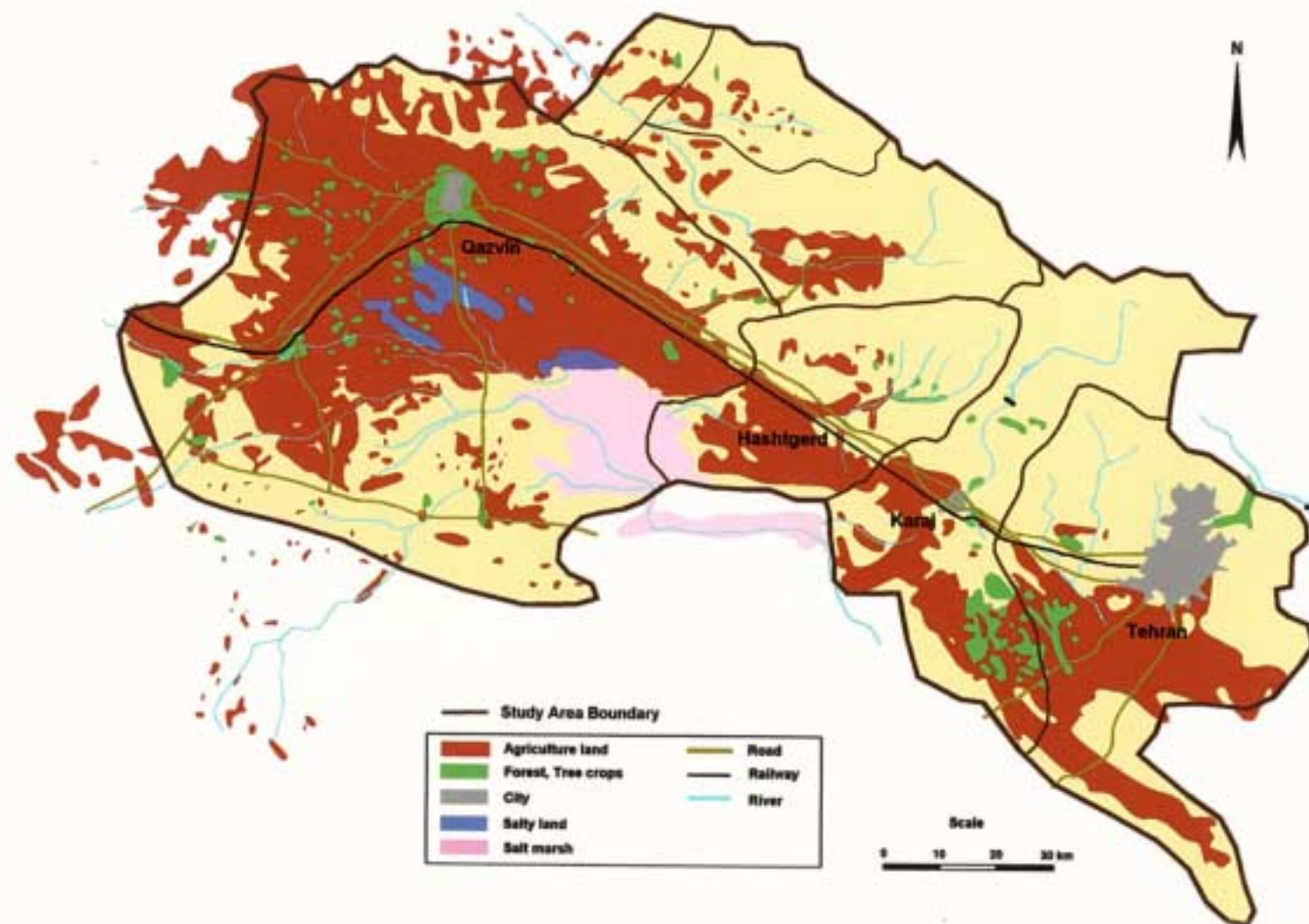
LEGEND

Planned Capacity of Sewage System		
Year	Inflow (m <sup>3</sup> /s)	Annually Treated Volume (MCMO)
2001	3.88	122.36
2006	7.78	245.35
2011	11.29	387.58
2016	15.73	496.06
2021	19.40	611.80
2023	23.40	737.94



Data Source:  
The Tehran Water & Sewage Company

Figure 2.4.5.1 Tehran Sewage Plan



Area Classification in Region

Classification	Unit : km2				Total
	Tehran	Karaj	Hashtgerd	Qazvin	
Mountain	860	1,430	570	1,965	4,825
Plain	1,820	940	780	5,290	8,830
<b>Total</b>	<b>2,680</b>	<b>2,370</b>	<b>1,350</b>	<b>7,255</b>	<b>13,655</b>

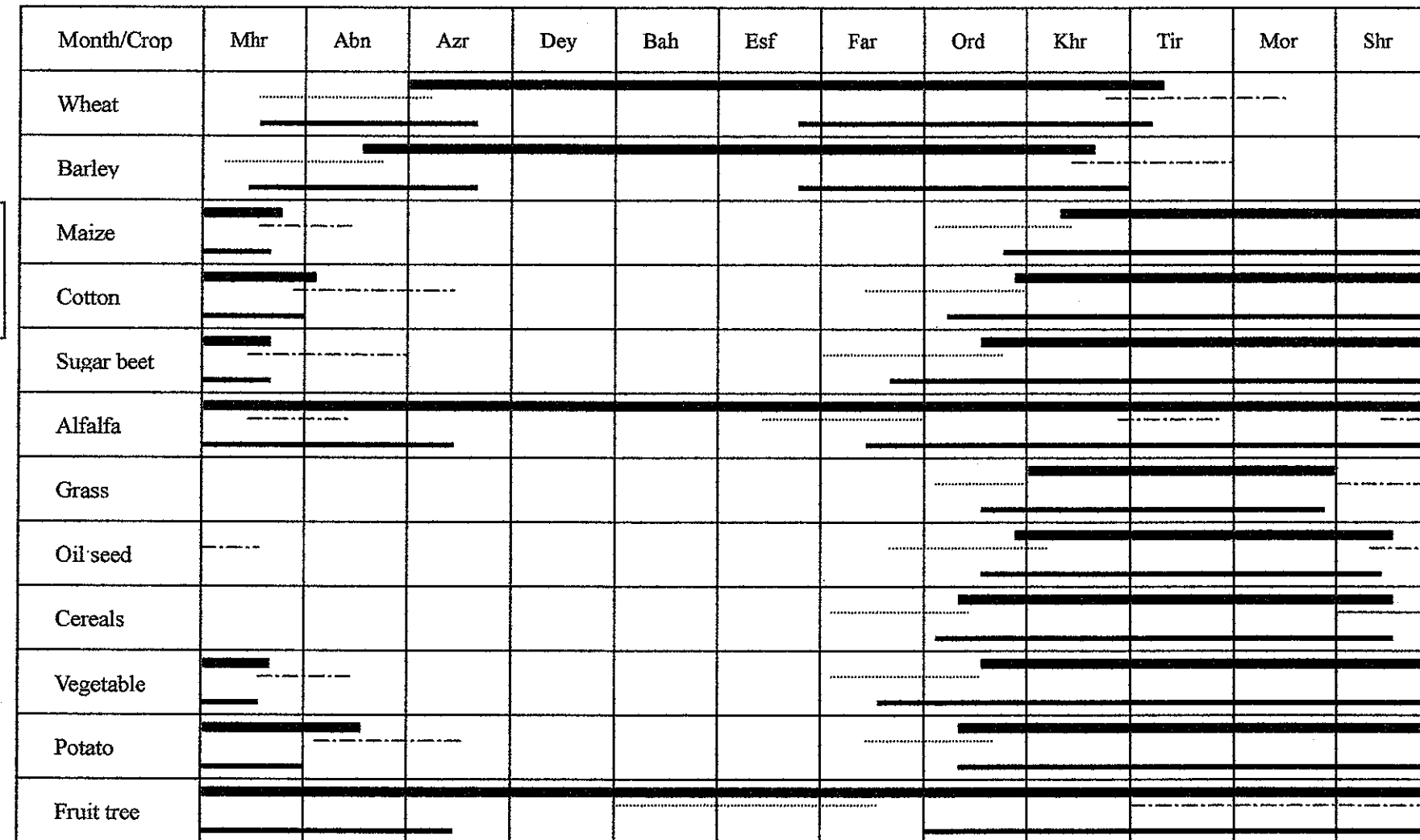
Land Use at Plain in Region

Region	Agricultural Area			Other Land Use Area	Total
	Irrigated Farming	Dry Farming	Total		
Tehran	409	81	490	1,330	1,820
Karaj	378	66	444	496	940
Hashtgerd	214	142	356	424	780
Qazvin	1,159	2,351	3,510	1,780	5,290
<b>Total</b>	<b>2,160</b>	<b>2,640</b>	<b>4,800</b>	<b>4,030</b>	<b>8,830</b>

Note: Irrigated farming area is based on the data in 1998.  
Other land use area includes urban and rural area.

Figure 2.5.1 Land Use Condition

**Typical Cropping Calendar and Irrigation Requirement Period of Crops**



———— Irrigation      - - - - - Planting      ······· Harvesting      ——— Growing      Unit ; m3/ha

**Standard of Monthly Crop Water Supply under the Qazvin Irrigation Company**

Crop	Irrigation Times	Mhr	Abn	Azr	Dey	Bah	Esf	Far	Ord	Khr	Tir	Mor	Shr	Total
		Sep. 23 - Oct. 22	Oct. 23 - Nov. 21	Nov. 22 - Dec. 21	Dec. 22 - Jan. 20	Jan. 21 - Feb. 19	Feb. 20 - Mar. 20	Mar. 21 - Apr. 20	Apr. 21 - May 21	May 22 - Jun. 21	Jun. 22 - Jul. 22	Jul. 23 - Aug. 22	Aug. 23 - Sep. 22	
Wheat (low yield)	5	1,000	1,000					1,000	2,000	2,000				7,000
Wheat (high yield)	4		2,000	1,000				1,000	2,000	2,000				8,000
Wheat	5	2,000	1,000					1,000	2,000	1,000				7,000
Barley	4		1,000					1,000	2,000	2,000				6,000
Beetroot	14	1,000						2,000	2,000	2,500	3,500	3,500	2,000	16,500
Pea, Lentil	4							1,500	1,000	2,000	1,000			5,500
Maize	8	1,000								2,000	2,500	2,500	2,000	10,000
Corn	9	2,000								2,000	2,500	2,500	2,000	11,000
Potato	11								2,500	2,000	3,500	2,500	2,000	12,500
Tomato (seed)	14	2,000						1,000	3,000	2,000	3,000	3,000	2,000	16,000
Tomato (transplant)	13	2,000							3,000	3,000	2,000	3,000	2,000	15,000
Onion, Carrot	14							1,500	3,000	3,000	3,000	2,500	2,000	15,000
Sunflower	5								2,000	1,500	2,500	1,000		7,000
Black eyed cowpea	7								1,000	2,000	2,500	2,500	1,000	9,000
Sorghum	6								1,500	1,200	1,200	2,200	1,400	7,500
Cotton	8								2,000	1,000	2,500	2,500	2,000	10,000
Watermelon	5								1,000	2,000	1,500	1,500	1,000	7,000
Alfalfa	16	2,000						1,500	2,000	3,000	3,000	3,000	2,000	16,500
Castor beans	5								1,000	2,000	2,000	2,000		7,000
Cucumber	6								2,000	1,500	2,000	1,500		7,000
Young fruit garden	19	1,500	1,000					1,000	1,000	1,500	2,000	2,000	2,000	12,000
Old fruit garden	19	3,000	1,500					1,500	1,500	2,000	3,000	3,000	3,000	18,500
Vineyard	6								1,500		1,500	1,500		4,500
Traditional vineyard	6								3,000	2,000				5,000

Source ; Qazvin Irrigation Company (2000)

**Figure 2.5.2-1. Monthly Irrigation Water Requirement**

Irrigation Cropping Area (1998)

Crop	Tehran		Karaj		Hashtgerd		Qazvin		Total
	ha	%	ha	%	ha	%	ha	%	
1. Wheat	9,740	23.8	7,820	20.7	6,150	28.7	32,500	28.1	56,210
2. Barley	8,985	21.9	7,183	19.0	4,500	21.0	16,250	14.0	36,918
3. Maize	616	1.5	1,264	3.3	180	0.8	3,060	2.6	5,120
4. Rice									
5. Sugarcane									
6. Cotton	100	0.2					2,017	1.7	2,117
7. Sugarbeet			370	1.0	820	3.8	2,600	2.2	3,790
8. Alfalfa	3,707	9.1	3,493	9.2	2,050	9.6	10,300	8.9	19,550
9. Forage (high yield)	3,318	8.1	2,032	5.4	1,280	6.0	3,750	3.2	10,380
10. Forage (low Yield)	157	0.4	153	0.4	50	0.2	120	0.1	480
11. Sunflower, Soybeans					30	0.1	675	0.6	705
12. Pulses	251	0.6	169	0.4	80	0.4	2,050	1.8	2,550
13. Cash crop (melon/onion)	6,459	15.8	4,941	13.1	740	3.4	6,760	5.8	18,900
14. Potatos	383	0.9	283	0.7	32	0.1	2,575	2.2	3,273
15. Dates									
16. Citrus									
17. Orchard	7,220	17.6	10,080	26.7	5,550	25.9	33,200	28.7	56,050
18. Other fruit									
19. Tea									
20. Other crop									
<b>Total</b>	<b>40,936</b>	<b>100.0</b>	<b>37,788</b>	<b>100.0</b>	<b>21,462</b>	<b>100.0</b>	<b>115,857</b>	<b>100.0</b>	<b>216,043</b>

Source: Basic data is from Jamb Consultant, based on the data of agricultural statistics and Agricultural Organization. Each area is estimated by JICA Study Team based on the basic data and the size of beneficial area.

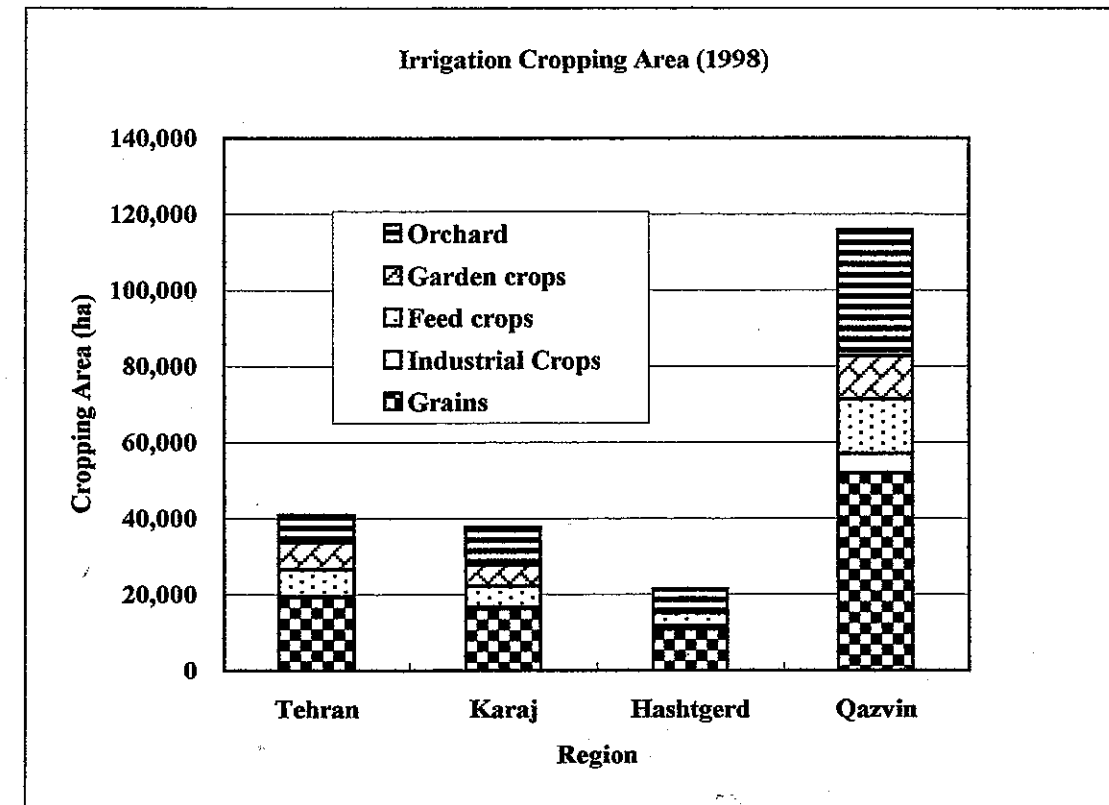


Figure 2.5.2 Irrigation Cropping Pattern

Monthly Irrigation Water Demand (1998)

Region	Unit : MCM													Total
	Mhr	Abn	Azr	Dey	Bah	Esf	Far	Ord	Khr	Tir	Mor	Shr		
Tehran	31	5	0	0	0	0	14	94	94	91	82	54	465	
Karaj	24	5	0	0	0	0	12	81	92	93	84	54	445	
Hashtgerd	14	3	0	0	0	0	8	50	58	49	41	26	249	
Qazvin	28	55	0	0	0	0	56	247	354	311	239	159	1,449	
<b>Total</b>	<b>98</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>91</b>	<b>473</b>	<b>597</b>	<b>543</b>	<b>445</b>	<b>293</b>	<b>2,608</b>	

Note: Water demand is calculated based on the irrigated area in 1998.

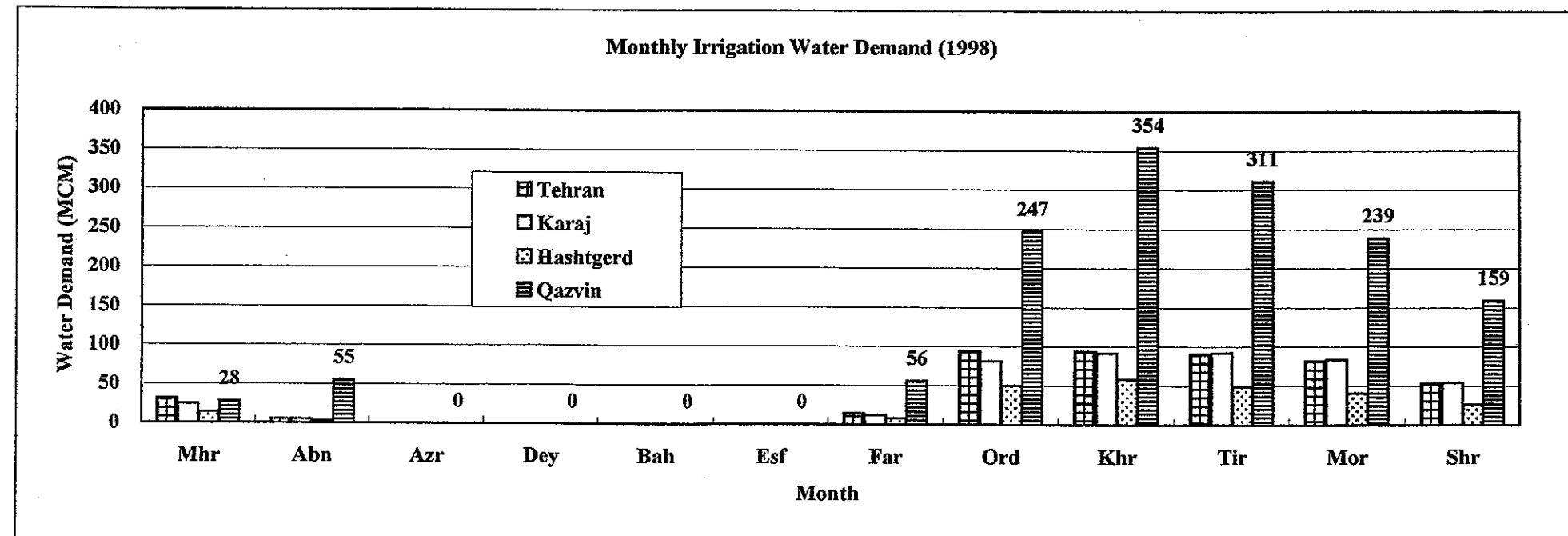


Figure 2.5.2-2. Irrigation Water Demand

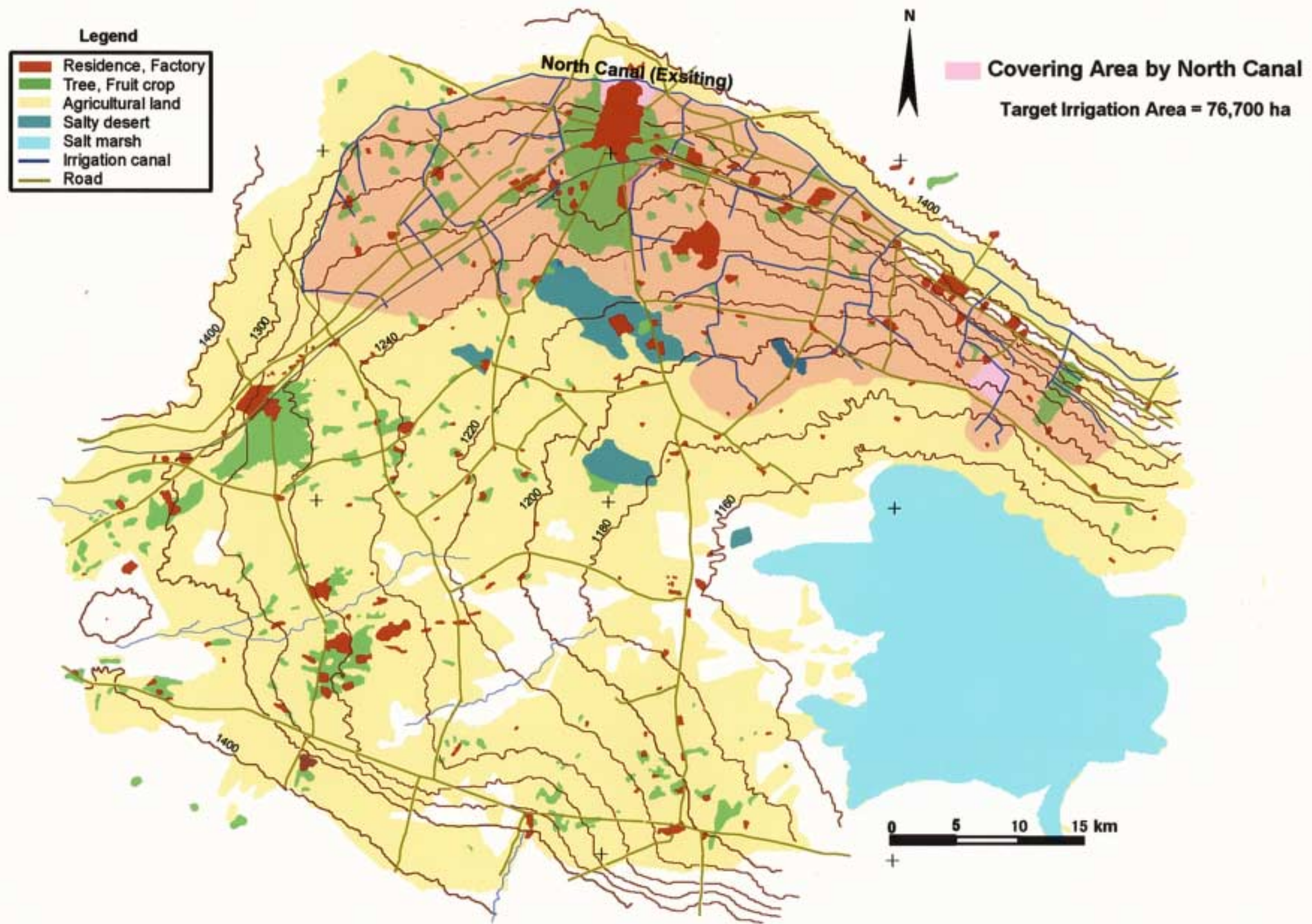


Figure 2.5. 3. Irrigation Canal System in North Qazvin