Introduction

The statistics appeared in this chapter have been provided as register records by the Ministry of Energy on two topics of "water" and "electricity".

Water

This section includes information on "underground waters", "reservoir dams", and "length of networks and number of water and sewage extensions". The related statistics have been added to the Statistical Yearbook of Iran since the year 1346.

Statistics on underground waters and reservoir dams have been provided by Water Resources Management Company and statistics on the length of networks and number of water and sewage extensions has been obtained from the Water and Sewage Engineering Company.

It is notworthy that Central and Internal basin, Hamun basin, and Sarakhs basin were renamed by Water Resources Management Organization as Central Plateau, Eastern Border and Qareh Qum, respectively, in the year 1383.

Electricity

Data related to electric power industry was first collected in the year 1343 by the then Ministry of Water and Power (renamed the Ministry of Energy in the year 1353). Since the year 1346, the Ministry has regularly provided the annual statistics on the power industrycomprising power generation, transmission, distribution, and consumption. The statistics, a part of which appears in some tables of this yearbook, are presented in various annual publications released by the Ministry.

Moreover, through two successive censuses of population and housing in the years 1365 and 1375, the SCI collected data on residential units and households benefiting from piped water and electricity which are reflected in Chapter 10, “Construction and Housing,” of the yearbook.

Definitions and concepts

Water basin: see Chapter 1, Definitions and concepts.

Aquatic year: see Chapter 1, Definitions and concepts.

Water produced: the amount of water gained from various (surface and underground) water resources such as wells, springs, subterranean canals, dams and river basins.

Dam: a structure built against the flow of water to reserve water or change the direction of flow or manage it for satisfying different needs such as drinking, industry, irrigation (agriculture), electricity generation and control of flood.

Reservoir dam: a dam made for reserving, managing or controlling the flow of water to reserve it for procuring water for irrigation, drinking, industry, electricity generation and control of flood

Large reservoir dam: refers to all dams with a height of 15 metres or more as well as 10 to 15 metres high dams having a reservoir with a volume of 1 million cubic metres or more and/or a capacity of flood discharge of 2000 or more cubic metres per second.

Inflow: annual volume of water entered the reservoir of a dam through the river.

Outflow: total annual volume of water discharged from different outlets of a dam (weir, silt ejector channels, take-out gates, drainage channels) and evaporation.

Water extension: refers to the part of branched-off water pipes, containing pipe, related accessories, with a profile appropriate to the water metre and the extension capacity of public water, which connects a private water distribution line or public water distribution network from installation place of the extension valve to the delivery point (valve following the watermetre).

Public water distribution network: a collection of interconnected pipe lines with needed pressure for distributing water for household, office and industrial consumption in a region or inside the city , all of which belong to the Water and Sewage Company.

Sewage extension: refers to the part of minor sewage pipelines, including pipes and related accessories, with a profile appropriate to siphon or contractual capacity, which carries joint sewages away from the siphon to the private line or to the public network for collecting sewages.

Public network for collection and transmission of sewage: refers to all installations and equipment, such as main collectors, used for collection and transmission of sewage to water treatment house and pump houses of urban sewage and public side networks, all belonging to the Water and Sewage Company. The network is not responsible for collection, transmission and disposal of rainfall water flowing on passages, flood channels and channels inside and outside cities located in the customers' estates.

Nominal capacity (registered nominal power): refers to the maximumexpected output of an electricity generator in designing condition defined by the manufacturer. Nominal power is usually installed in KVA or KW for smaller generators on the generator.

Actual capacity or actual power (registered power): refers to the maximum amount of electricity that could be generated by a generator while regarding the environmental conditions (altitude, temperature, and relative moisture).

Maximum coincidental power generated: refers to the sum of electric power generated at the peak of network load during a certain period. The sum of maximum coincidental power generated might be equal or less than the total capacity of the plants.

Gross generation: refers to the amount of electricity generated by a generator or a plant during a certain period which is measured on output series of the main or supplementary generators and stated in kilowatt hour (kWh) or megawatt hour (MWh).

Net generation: refers to the electricity measured at the point of transmission to the power grid. During a certain period, the net generation may be calculated by subtracting the gross internal consumption form the gross generation in the same period.

Other institutions: the institutions which generate electricity for their own consumption and also sell a part of their production to other institutions but are independent from the Ministry of Energy; some examples are, Esfahan Steelworks, Mobarakeh Steel Industries, Petrochemical Industries, Tabriz Tractor Industries, and Sarcheshmeh Copper Industries.

Interconnected network: the collection of production sites and regions of energy consumption around the country connected together with a network of transmission lines and high voltage stations. The network lets electricity exchange between the regions covered, and makes the export of electric energy possible.

Isolated network (generation and power consumption): refers to regional, provincial and island networks not connected with adjacent networks or interconnected network.

Load-demand: the power consumed during a certain period in a certain part of the network.

Maximum coincidental load: in a full interconnected electricity system, maximum coincidental load for a day, a week, a month, or a year refers to the sum of load at the peak of consumption in regions in megawatt. Where the interconnected system does not cover the total country, the maximum coincidental load may be calculated by adding up maximum load of interconnected network and load of separate regions in megawatt simultaneously. With regard to the difference between peak hours of consumption in different regions connected to the interconnected network, maximum coincidental load is less than the sum of the maximum loads of the regions.

Maximum non-coincidental load: the sum of the peak of consumption in different regions of the country during a certain period, which are not necessarily simultaneous.

Power Company: the companies (Ltd.) which are by law engaged in generation, transmission and distribution of electricity or in a part of such activities and provide the customers with electricity. The definition covers the water and power organizations as well.

Power plant: refers to the installation place of generators and related equipment.

Hydroelectric power plant: a power plant in which the potential energy of water accumulated at dams or flowing energy of rivers water is used to drive the hydroelectric turbine for electricity generation.

Thermal power plant: a power plant in which chemical energy inherent in solid, liquid, gaseous fuels is transformed into electricity. This

definition covers nuclear, steam, gas, combined-cycle and diesel power plants.

Steam power plant: a kind of power plant in which thermal energy produced from liquid, solid and gas fuels is used for steam production and then driving the steam turbine to generate electricity**.**

Gas power plant: a type of power plant in which hot gas produced from the thermal energy in gas and liquid fuels drives gas turbine to generate electricity.

Combined-cycle power plant: a kind of power plant in which, in addition to electric energy in gas turbine, the heat in gases off the gas turbine is used for production of steam using a recycling steam kettle. The steam produced is transformed into electric energy in a steam turbo generator set.

Diesel power plant: a kind of power plant in which gas or liquid is used in cylinders to transform mechanical energy produced by coupled generator into electric energy.

Internal consumption: refers to the sum of electricity consumed internally by units and for non-technical cases, as well as consumption of lights, etc. in a power plant in a certain period in kilowatt-hour (kWh).

Losses: refers to the energy lost in transmission and distribution lines in a network or a certain system. Energy lost by transformers is considered as losses of transmission and distribution.

Sale or consumption of electricity: the amount of electricity sold to the consumers for various consumptions.

Energy produced by the fuel (thermal value): the amount of heat (kilo calorie or B.T.U.) produced through burning of the mass unit of a certain fuel.

Thermal output: considering that the thermal energy produced by 1 kWh is equal to 860 kcal, the output of thermal power plants (thermal output) is calculated through the following formula:

output(%) = (860/thermal energy consumed for 1 kWh of power generated) × 100

Line of power: the cables installed on poles to transmit the electric power from the production site (power plant) or substation to consumption places in different voltages.

Power transmission line: a line composed of conductors, insulators and other subsidiary equipment used for transmission of high amount of electricity, with high voltages in long distances between source points (power plants and receiving points.

Sub-transmission line: a collection of transmission lines with voltages from 63 to 132 kV.

Electricity customers: natural or legal persons whose specifications are registered by customers division according to the regulation of the power company after submitting the required documents and payment of the related costs, and are offered a customer number.

Household uses: electricity used by households to operate common electric appliances and for lights in residential units.

Public uses: electricity used for public services.

Agricultural uses: electricity used for pumping surface and underground water or repumping water for production of crops or carrying out agricultural activities. Agricultural activities are defined in ISIC Rev. 3.

Industrial uses: electricity used for doing jobs in establishments engaged in manufacturing and mining activities.

Distribution network: a collection consisting of ground and aerial medium voltage lines(20, 11 and 33 kv) and low voltage (220 and 380 v) and ground and aerial substations used for electricity distribution in a specific area .

Transmission and sub-transmission network: it consists of a series of substations, lines, cables and other electrical equipment connected from power plants to final consumers for energy transmission.

A line circuit or electrical cable: It consists of a number of electrically inseparable conductors that form a three-phase cable or another system and is able to transmit electrical energy from one place to another place.

Etectrical substation or power station: A site with a collection of installations and electrical equipment including transformers, switches, measurement instruments, inflow and outflow lines, a reactor, a capacitor and different grounds used for transmission and distribution of electricity. An electreical substation is a part of an electrical network centralized in a given site used for selective connection or disconnection of

electrical circuits in a network. Also, it is possible to transmit electricity between networks used at different voltage levels.

Selected information

In aquatic year 1394-1395,the amount of annual discharge of the underground water resources was 61262 mln cu m which had a 0.2 percent increase in comparison to the aquatic year 1393-1394. It should be noted that out of 6 main basins, the central plateau with 50% had the maximum annual discharge.

In the year 1395, the inflow of the large reservoir dams amounted to 40695 mln cu m had a 12.6% increase in comparison to the last year. In this year, 30301 mln cu m of large reservoir dams have been consumed, 65.0 percent of which belongs to the agricultural consumptions.

In the same year, over 7427 mln cu m of water is produced in the water and sewage companies of the country (urban and rural) out of which about 5450 mln cu m was sold. Sale of water increased by 0.8 percent compared to the preceding year. This is while that the production of water grew by 0.4 percent compared to the previous year.

In the year 1395, there were over 21million 220 thousand water urban and rural extensions which had a 2.4 percent increase in comparison to the preceding year. Out of this number about 15 million 827 thousand extensions were for the urban areas which had a 2.5% increase compared to the previous year.

In the year 1395, the gross electricity generation of institutions affiliated to the Ministry of Energy was about 128291 mln kilowatt hours, of which about 47.4 percent has been produced in the steam power plants. Furthermore, the gross electricity generation amount had a 3 percent increase compared to the preceding year.

In this year, 237436 mln kilowatt hours of domestic sold electricity was consumed by 33 million 824 thousand subscribers. In this respect, the amount of electricity sold and the number of electricity subscribers increased about 4.2 and 3.0 percent respectively compared to the preceding year.

Among all electricity subscribers in the year 1395, percentage of subscribers in the house, public,agricultural and manufacturing sectors was 80.9, 4.6, 1.2 and 0.7 percent, respectively. Also in this year, the percentage of the sold electricity which was consumed in the house, manufacturing, agricultural, public sectors and for the streets lighting was 33.0, 32.7, 15.3, 9.7 and 2.0 percent respectively.

At the end of the year 1395, a number of 56793 villages (about 4.5 mln rural households) were electrified which increased by 1.1% in comparison to the previous year.

9.1. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE(1) BY MAIN BASINS

(mln cu m)

Aquatic year and main basins	Total discharge	Deep well		Semi-deep well		Subterranean canals (Qanat)		Spring	
		Number	Annual discharge	Number	Annual discharge	Number	Annual discharge	Number	Annual discharge
1379-80	69549	118986	30757	314405	13263	33036	7962	49785	17566
1384-85	79837	155800	35843	432943	12778	36307	7527	112787	23690
1389-90	70482	191261	34367	497579	12479	39531	6259	159454	17378
1390-91	64523	195766	34872	567898	12311	41109	4752	173825	12588
1391-92	64932	200859	34545	569708	12164	41130	4735	173611	13488
1392-93	61407	199087	33729	582426	12241	41149	4738	174161	10699
1393-1394	61094	196010	33125	593164	12204	41154	4715	173296	11050
1394-1395	***61262***	***194822***	***33139***	***599178***	***12263***	***41169***	***4660***	***174248***	***11199***
Caspian Sea	6695	35967	2593	238721	1484	2628	233	76745	2385
Persian Gulf and Oman Sea	17749	43286	6548	105228	3982	4841	513	55237	6706
Lake Orumiyeh	2211	7051	824	95811	1092	1807	121	10517	174
Central Plateau	30568	100669	20405	146426	5276	26719	3267	27541	1620
Eastern Border	1414	1862	725	8700	338	3111	300	1428	50
Qareh Qum	2625	5987	2044	4292	91	2063	226	2780	264

1.Annual discharge for wells, subterranean canals and springs are updated annually based on selected sources.
Source: Ministry of Energy.

9.2. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE(1) BY REGIONAL WATER ORGANIZATIONS, AQUATIC YEAR 1394-1395 (mln cu m)

Ostan	Total discharge	Deep well		Semi-deep well		Subterranean		Spring	
		Number	Annual discharge	Number	Annual discharge	Number	Annual discharge	Number	Annual discharge
Total	***61262***	***194822***	***33140***	***599178***	***12263***	***41169***	***4660***	***174248***	***11200***
East Azarbayejan	1374	4643	552	49538	541	1968	171	3129	109
West Azarbayejan	1741	5081	753	58049	754	543	41	851	193
Ardebil	404	2099	170	4962	89	221	19	3354	125
Esfahan	5011	15775	1703	33334	1153	4203	707	8686	1448
Alborz	818	5329	658	11186	44	157	9	1736	107
Ilam	412	1270	274	850	28	4	1	744	109
Bushehr	514	1350	133	11800	328	46	13	180	40
Tehran	2722	15982	2186	27375	129	536	248	2503	159
Chaharmahal&Bakhtiyari	2089	2237	336	1767	167	1011	90	4760	1496
South Khorasan	1211	2425	841	849	37	6251	266	2196	66
Khorasan-e-Razavi	6379	12902	5221	11708	248	6779	556	6814	353
North Khorasan	870	1578	404	2447	42	630	86	2958	338
Khuzestan	1319	3455	774	7133	210	3	1	1086	334
Zanjan	1149	3865	666	13593	297	725	35	5836	150
Semnan	959	2941	698	1996	35	738	85	1873	141
Sistan&Baluchestan	1982	1446	375	17530	1189	1282	377	905	41
Fars	7990	31273	4063	51740	2488	1754	401	2233	1038
Qazvin	1035	4236	796	5948	102	299	39	13847	98
Qom	903	1183	543	3756	179	753	163	1397	19
Kordestan	1052	2381	355	14725	175	519	24	38592	497
Kerman	6397	16039	4494	18517	1337	2391	456	1593	110
Kermanshah	1746	4099	554	11041	466	401	30	11187	696
Kohgiluyeh&Boyerahmad	1383	880	121	2046	97	61	5	3918	1160
Golestan	775	8871	423	26942	188	344	31	3766	132
Gilan	792	985	133	51461	246	0	0	16153	414
Lorestan	964	3266	483	3814	122	1176	31	5692	329
Mazandaran	1688	15841	520	121337	333	34	7	21688	827
Markazi	2924	7818	1908	7565	343	4254	497	3159	176
Hormozgan	1532	4328	736	17573	617	169	33	639	147
Hamedan	2047	8303	1474	7822	185	1287	74	2386	314
Yazd	1078	2941	793	774	90	2630	164	387	31

1. Annual discharge for wells, subterranean canals and springs are updated annually based on selected sources.
Source: Ministry of Energy.

9.3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other [5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
1380	30400	27311	18386	8925	11467	8819	1209	382	1058
1385	50873	54716	44913	9803	17157	13233	2276	589	1059
1390	33740	32822	17122	15700	25675	16175	2226	855	6419
1391	38546	34294	17014	21134	25169	15405	3020	861	5883
1392	30048	31620	46742	×	27894	18489	3005	867	5164
1393	28223	30409	41233	-	26313	17880	2859	761	4813
1394	36155	30567	43461	-	25585	16703	3043	739	5099
1395	***40695***	***39816***	***49268***	***-***	***30301***	***19694***	***3182***	***700***	***6724***
East Azarbayejan	***4790***	***4881***	***3098***	***4881***	***2030***	***1438***	***47***	***10***	***534***
Aydoghamush	75	75	0	75	35	22	0	0	13
Aras[2,6]	3198	3232	3098	134	1715	1260	0	0	455
Khoda Afarin[2]	4279	4304	0	4304	0	0	0	0	0
Arasbaran	10	7	0	7	6	6	0	0	0
Tajbar Sarab	2	2	0	2	1	1	0	0	0
Zonuz	7	8	0	8	8	2	0	0	6
Sattarkhanahar	34	49	0	49	44	29	8	4	2
Sahand[7]	121	127	0	127	58	29	4	0	26
Alavian	92	93	0	93	88	56	15	6	11
Ghale chai	40	52	0	52	51	31	0	0	20
Kord Kandi	5	5	0	5	3	3	0	0	0
Nahand	21	25	0	25	22	0	21	0	1
West Azarbayejan.	***1901***	***2243***	***172***	***2071***	***2037***	***829***	***232***	***4***	***971***
Aras 2	6	3	0	3	2	2	0	0	0
Aghchay	112	114	0	114	74	61	0	0	13
Barun	81	85	0	85	79	74	5	0	0
Bukan	1107	1363	0	1363	1295	420	152	3	720
Hasanlu	50	48	0	48	36	30	0	0	6
Deriq Salmas	13	13	0	13	10	10	0	0	0
Zola	64	61	0	61	57	42	0	0	15
Saruq	42	47	0	47	10	4	6	0	0
Shahrchay	171	156	0	156	145	60	50	0	36
Shahid Ghanbari	30	36	0	36	24	24	0	0	0
Qiqaj	6	8	0	8	7	7	0	0	0
Mahabad	219	311	172	139	298	96	19	1	182

9.3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other [5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Ardebil	***142***	***137***	***0***	***137***	***124***	***52***	***34***	***0***	***38***
Sabalan	52	48	0	48	44	13	0	0	31
Saqizchi	10	10	0	10	4	3	0	0	0
Qurichay	9	8	0	8	7	7	0	0	0
Gilarlu	0	0	0	0	0	0	0	0	0
Moghadasardebili	7	7	0	7	7	3	0	0	5
Yamchi	63	64	0	64	62	26	34	0	2
Esfahan	***1413***	***1366***	***978***	***388***	***1094***	***595***	***399***	***54***	***46***
Baghkal-e-Khansar	4	3	0	3	1	1	0	0	0
Hana	6	7	0	7	6	6	0	0	0
Khamiran	10	8	0	8	7	7	0	0	0
Zayandehrud	1149	1097	978	119	1070	576	399	54	42
Qareh Aqach	2	7	0	7	5	5	0	0	0
Golpayegan[8]	242	244	0	244	4	0	0	0	4
Ilam	***281***	***283***	***0***	***283***	***96***	***55***	***19***	***0***	***22***
Ilam	85	92	0	92	32	3	19	0	10
Doborj	181	179	0	179	59	52	0	0	7
Kangir	14	12	0	12	5	1	0	0	5
Bushehr	***165***	***208***	***0***	***208***	***182***	***153***	***0***	***0***	***28***
Reis Ali delvari	165	208	0	208	182	153	0	0	28
Tehran	***1667***	***1556***	***1301***	***473***	***1428***	***416***	***842***	***7***	***163***
Taleghan	437	391	307	83	380	232	137	0	10
Karaj	422	447	443	3	294	39	255	0	0
Lar	411	421	186	235	413	88	186	0	139
Latiyan[2]	348	368	364	4	206	0	191	1	14
Mamlo[2]	208	147	0	147	135	56	73	6	0

9.3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Chaharmahal&Bakhtiyari	***25***	***30***	***0***	***30***	***14***	***13***	***0***	***0***	***0***
Choghakhor	24	28	0	28	13	12	0	0	0
Naghan	2	2	0	2	1	1	0	0	0
Surak	0	0	0	0	0	0	0	0	0
South Khorasan	***12***	***7***	***0***	***7***	***6***	***6***	***0***	***0***	***0***
Asadyieh	2	0	0	0	0	0	0	0	0
Parsa	1	0	0	0	0	0	0	0	0
Haji Abad	2	1	0	1	1	1	0	0	0
Farrokhi	3	1	0	1	0	0	0	0	0
Darreh Bid	0	0	0	0	0	0	0	0	0
Kerit	1	1	0	1	1	1	0	0	0
Nahrain	3	3	0	3	3	3	0	0	0
North Khorasan	***95***	***84***	***0***	***84***	***63***	***42***	***16***	***0***	***5***
Barzu	26	20	0	20	18	13	4	0	0
Bidvaz	17	22	0	22	19	12	3	0	3
Chary	1	1	0	1	1	1	0	0	0
ShirinDarreh	51	41	0	41	25	14	9	0	2
Gelul	1	0	0	0	0	0	0	0	0
Khorasan Razavi	***417***	***284***	***0***	***284***	***149***	***49***	***97***	***0***	***3***
Tabarak Qochan	16	12	0	12	9	5	2	0	3
Chali DarrehTorghabeh	1	1	0	1	1	1	0	0	0
Daroungar-e-Dargaz	6	2	0	2	2	2	0	0	0
Shahid Dehqan-e-Taybad	6	1	0	1	0	0	0	0	0
Dusti[6]	255	196	0	196	78	0	78	0	0
Dolatabad	1	1	0	1	1	1	0	0	0
Zavin Kalat	1	1	0	1	1	1	0	0	0
Sad-e- Khaf	10	1	0	1	1	1	0	0	0
Sangerd	7	2	0	2	2	2	0	0	0
Shahid Yaghobi	8	4	0	4	3	3	0	0	0
Toroq	13	11	0	11	9	1	8	0	0
Fariman	13	10	0	10	10	10	0	0	0
Kardeh	10	8	0	8	7	3	4	0	0
Komayestan	4	2	0	2	1	1	0	0	0
Yam	4	3	0	3	2	2	0	0	0
Ardak Chenaran	25	18	0	18	15	11	4	0	0
Qareh Tikan	16	3	0	3	3	3	0	0	0
Chahchahe	20	8	0	8	3	3	0	0	0

9.3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Khuzestan	***20275***	***20794***	***42105***	***4802***	***18442***	***13307***	***720***	***575***	***3840***
Jareh	99	88	0	88	86	86	0	0	0
Dez	6413	7066	5706	1360	5745	3706	12	41	1986
Seymareh[2]	2422	2450	1874	576	0	0	0	0	0
Karun1(Shahid Abbaspour)[2, 10]	6733	7210	7130	79	0	0	0	0	0
Karun 3[2,10]	5540	5102	5027	74	0	0	0	0	0
Karkheh[2,11]	4405	3668	3061	607	3336	2148	240	24	923
Karun 4[2,10,12]	3608	3723	3659	64	0	0	0	0	0
Gotvand-e-Olia[2,11,10]	8343	8733	7638	1095	8374	6669	444	486	774
Marun	952	928	82	846	901	697	24	24	156
Masjed-Soleyman[2,10]	7925	7940	7927	13	0	0	0	0	0
Zanjan	***65***	***46***	***0***	***46***	***30***	***7***	***16***	***0***	***7***
Talvar	24	6	0	6	4	3	0	0	1
Tahem	20	19	0	19	17	0	16	0	0
Kineh Vers	14	14	0	14	8	2	0	0	6
Golabar	7	7	0	7	2	2	0	0	0
Semnan	***16***	***14***	***0***	***14***	***11***	***7***	***3***	***0***	***1***
Damghan	13	13	0	13	11	7	3	0	1
Kalpush	3	0	0	0	0	0	0	0	0
Sistan&Baluchestan	***857***	***457***	***0***	***1264***	***404***	***273***	***75***	***0***	***57***
Pishin	36	35	0	35	25	18	7	0	0
Chahehnimeh 4 [2]	500	408	0	408	125	113	0	0	12
Chahehnimeh[2]	797	783	0	783	231	129	61	0	41
Kheirabad	8	5	0	5	3	2	1	0	0
Zirdan	50	18	0	18	18	10	5	0	3
Sha iKelk	2	0	0	0	0	0	0	0	0
Mashkid-e-Olia	22	15	0	15	2	1	1	0	0

9.3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Fars	***765***	***364***	***54***	***345***	***282***	***150***	***75***	***14***	***42***
Izadkhast	1	1	0	1	1	1	0	0	0
Tangab	59	16	0	16	6	0	0	0	6
Dorudzan[2]	112	193	39	153	147	78	53	14	2
Rudbal	73	12	0	12	12	0	0	0	12
Salman Farsi	481	114	0	114	93	50	23	0	20
Sivand	3	3	0	3	3	3	0	0	0
Mollasadra[2](Tangehbaragh)	70	59	14	45	20	18	0	0	2
Qom	***261***	***210***	***0***	***210***	***149***	***52***	***97***	***0***	***0***
Panzdah Khordad	34	28	0	28	19	6	13	0	0
Kucheri	227	182	0	182	130	46	84	0	0
Kordestan	***889***	***969***	***0***	***969***	***207***	***13***	***56***	***0***	***138***
Azad	273	382	0	382	40	0	0	0	40
Baneh	4	6	0	6	6	0	6	0	0
Zarivar	49	43	0	43	21	0	0	0	20
Sang siyah	9	4	0	4	2	1	0	0	1
Sural	8	6	0	6	1	0	0	0	1
Qeshleq	87	78	0	78	64	10	45	0	9
Garan	71	63	0	63	10	0	0	0	10
Zivieh	26	26	0	26	24	2	0	0	22
Siazakh	363	361	0	361	40	0	5	0	35
Kerman	***695***	***490***	***66***	***424***	***446***	***116***	***7***	***0***	***323***
Baft	42	38	0	38	24	5	4	0	15
Sirjan (Tanguiyeh)	31	6	0	6	5	2	3	0	0
Jiroft	413	209	66	143	194	60	0	0	134
Nesa	209	237	0	237	223	49	0	0	174
Kermanshah	***2095***	***1735***	***0***	***1736***	***129***	***20***	***23***	***0***	***86***
Azadi	58	86	0	86	62	0	0	0	62
Zagros	16	10	0	10	1	0	0	0	1
Soleymanshah[2]	38	20	0	20	11	3	1	0	7
Shiyan	2	0	0	0	0	0	0	0	0
Gavshan[2]	184	58	0	58	36	14	22	0	0
Gilangharb	3	2	0	2	1	1	0	0	0
Tang-e-Hammam	43	32	0	32	17	1	0	0	16
Darian	1753	1527	0	1527	0	0	0	0	0
Kohgiluyeh&Boyerahmad	***272***	***315***	***0***	***315***	***285***	***56***	***164***	***3***	***61***
Shah Qasem	2	1	0	1	1	1	0	0	0
Kosar	270	314	0	314	284	55	164	3	61
Golestan	***218***	***229***	***0***	***124***	***165***	***125***	***0***	***9***	***32***
Alagol	41	25	0	25	1	0	0	1	0
Daneshmand	14	27	0	27	11	8	0	2	1
Bustan 2[2]	35	40	0	40	18	14	0	0	4
Golestan [2]	91	97	0	97	45	29	0	6	10

9.3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Nomel	4	4	0	4	3	3	0	0	0
Voshmgir[2]	85	87	0	87	80	69	0	0	10
Negarestan	9	8	0	8	7	1	0	0	6
Gilan	***2029***	***2125***	***1395***	***730***	***1954***	***1573***	***116***	***10***	***255***
Sefidrud	1824	1955	1395	560	1803	1562	16	10	216
Shahr-e-Bijar	205	170	0	170	151	11	100	0	39
Lorestan	***446***	***174***	***0***	***174***	***57***	***36***	***2***	***0***	***19***
Eyvashan	47	14	0	14	8	7	0	0	1
Tanghaleh	1	1	0	1	0	0	0	0	0
Khanabad	14	15	0	15	11	9	0	0	2
Kaznar	1	1	0	1	1	1	0	0	0
Maruk	59	30	0	30	21	18	0	0	4
Hozian	11	7	0	7	2	1	0	0	1
Rudbar	314	106	0	106	13	0	2	0	11
Mazandaran	***370***	***360***	***100***	***260***	***238***	***170***	***25***	***0***	***43***
Alborz	119	129	0	129	70	44	9	0	17
Alimalat	24	24	0	24	7	7	0	0	0
Berenjestanak	10	12	0	12	3	3	0	0	0
Sonbolrud	5	5	0	5	4	2	0	0	3
Shahid Rajaee	157	137	100	37	135	106	10	0	20
Shiyadeh	5	4	0	4	4	3	0	0	1
Salaheddinkola	2	2	0	2	1	1	0	0	0
Farimsahra	1	1	0	1	1	1	0	0	0
Meijeran	46	45	0	45	13	5	6	0	2
Markazi	***118***	***94***	***0***	***94***	***70***	***11***	***40***	***12***	***6***
Saveh	29	25	0	25	22	11	6	0	6
Kamal Saleh	89	69	0	69	47	0	34	12	1
Hormozgan	***303***	***263***	***0***	***263***	***153***	***108***	***45***	***0***	***0***
Esteqlal	93	69	0	69	46	7	39	0	0
Jegin	125	119	0	119	85	83	2	0	0
Shamil & Nian	85	74	0	74	22	18	4	0	0

9. 3. STATISTICS ON LARGE RESERVOIR DAMS[1] BY REGIONAL WATER ORGANIZATIONS (continued)

(mln cu m)

Year and reservoir dams	Inflow[2]	Outflow[3]			Water consumption[4]				
		Total	From turbines ducts for electricity generation	Other [5]	Total	Agriculture	Drinking	Manu facturing	Other [5]
Hamedan	***113***	***99***	***0***	***103***	***58***	***23***	***32***	***0***	***3***
Ekbatan[2]	62	53	0	53	36	5	29	0	2
Abshineh[2]	5	3	0	3	2	0	2	0	0
Shirinsu	0	1	0	1	0	0	0	0	0
Kalan-e-Malayer	48	31	0	31	16	16	0	0	0
Sarabi	16	15	0	15	4	2	1	0	1

1. For the 168 large reservoir dams (based on the ICOLD definition) with the capacity of 48.7 bln.cu.m, almost equaling 95% of the total volume of the dams under use.

2. Total inflow and outflow were calculated through omission of the influence of being chain of(Latiyan and Mamlo dams in Tehran), (ShahidAbbaspur, Karun3, Karun 4, Masjed-Soleymanand Gotvand-e-Oliadams in Khuzestan), (Dorudzan and Mollasadra in Fars), (Seymareh in Ilam and Karkheh in Khuzestan) ,(Golestan1, Golestan 2 and Voshmgir in Golestan), (Chahehnimeh 1,2,3 and 4 in Sistan&Baluchestan), (Ekbatan and Abshineh in Hamedan) and (Soleymanshah and Gavshan in Kermanshah) and (Aras and Khoda Afarin in East-Azarbayejan)Ostans.Moreover, inflow volume is calculated through balance of volume changes in reservoir and amount of outflows.

3. Other outflows include evaporation, weir, dam take-out gates, slit ejection, direct pumping from reservoir, drainage and leaking.Moreover, difference between total and sum of parts is due to existence of some chain dams.

4. The amount of water included for different consumption is the volume of water released for different consumption. With respect to the location of dams and the distance between them and consumption place, specially in agricultural sector, the water released for the agriculture is different from the volume of the water delivered to this sector. The difference is due to different reasons including middle basin, midway offtake, penetration, evaporation. Moreover, drinking water is the volume of water discharged from the dam.

5. Other consumption including water at the time of stability of flow of the river.

6. Outflow of Aras dam and Dusti dam is equal to total outflow of the dam and consumptions only include Iran consumption.

7. Major part of 180 mln cu m of inflow to the Golpayegan reservoir dam in the year 1395 relates to the transferring of the water from Dez branches to Qomrud.

8.Major part of other consumption in dams of Dez, Karkheh and Gotvand-e-Olya were due to the improvement of drinking water.

9.The consumption from the chain dams of Karun 3, Karun 4 and Gotvand-e-Olya is included in the consumption of Gotvand-e-Olya dam.

10. Krun 4 reservoir dam is located in Chaharmahal&Bakhtiyari Ostan. However,since it is located on the Karun river, it is classified in Khuzestan Ostan.

11. Net outflow of the turbine with elimination of series dams is 20174 mln cu m.

12. Statistics for Rudbar reservoir dam in Lorestan Ostan have been included in the system of dams since the Month of Tir, of the year 1395.

13. In Sahand dam, 57 mln cu m was released without use due to the lack of water need and not finishing the downward network.

14. Main difference between consumption (30.3 bln cu m) and net outflow(39.8 bln cu m) is as follows:

- 1.5 bln cu m of Aras and Dusti dams for consumption of Iran's neighboring country

- 4.5 bln cu m of weir and other unconsumed outflows(mainly are related to the following dams: Dez,Darian, Azad, Sazlekh, Agh Chay, Doborj, Ilam, Karaj, Garan, Kusar, Sefidrud, Rudbar, Meijeran, Alborz, Kalan-e-Malayer and Kamal Saleh).

- 2.3 bln cu m from evaporation of dams of the country.

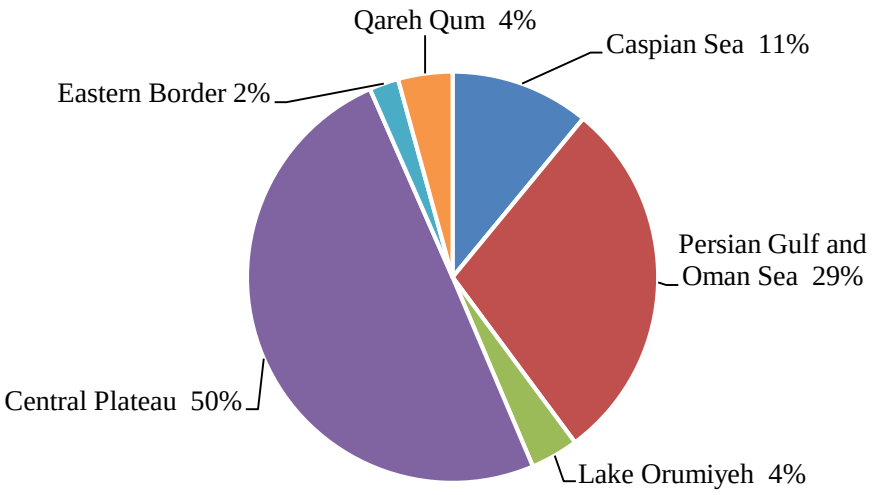
a- Aras, Bukan, Zayanderud, Taleghan, Karaj, Karkheh, Golpayegan, Gavshan and Kosar dams supply water both for their Ostans and other Ostans.

b- Seymareh dam is located in Ilam Ostan and Company for Development of Water Resources and Energy of Iran is responsible for this dam but due to its aquatic relationship with Karkheh dam it is classified in Khuzestan Ostan.

c- Kucheri dam is located in Esfahan Ostan and Tehran Regional Water Company is responsible for this dam but since it supplies drinking water of Qom city, it is classified in Qom Ostan.

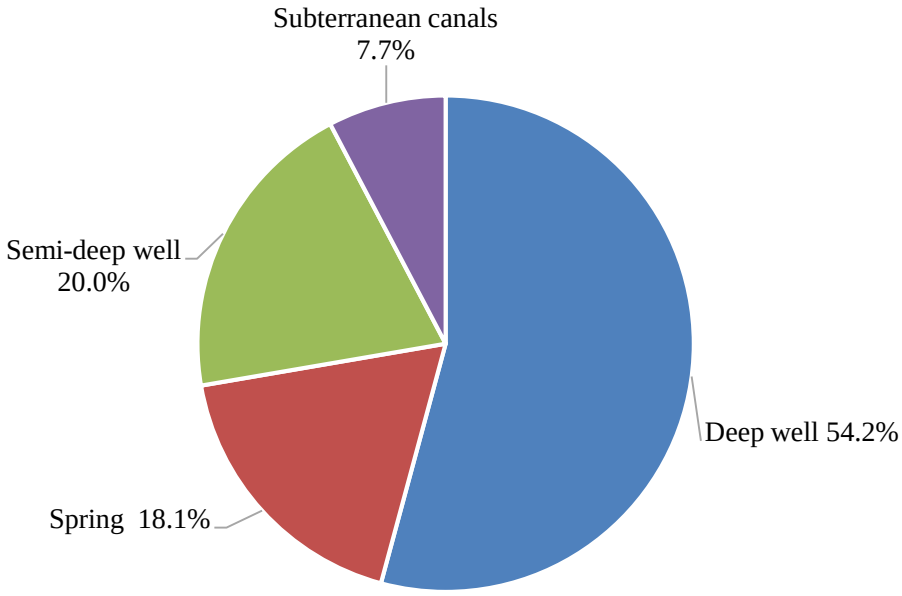
Source: Ministry of Energy.

9.1. ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES BY MAIN BASINS,THE ACQUATIC YEAR 1394-95



For data see Table 9.1.

9.2. PERCENTAGE OF ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES, THE YEAR 1394-95



For data see Table 9.1.

9. 4. DATA FOR CAPACITY OF RESERVOIRS, URBAN WATER DISTRIBUTION AND TRANSMISSION NETWORK

(cu m / km)

Year and urban water and sewage company	Capacity of reservoirs	Length of the network for water distribution	Length of pipelines for water transmission
1380	8402485	77955	13458
1385	10914721	119059	18500
1390	13101344	133163	25475
1391	13599484	136398	26238
1392	13963308	141410	26994
1393	14136572	144084	27671
1394	14550118	146649	28222
1395	***14760389***	***151108***	***28984***
East Azarbayejan	920288	9098	1131
West Azarbayejan	374530	4778	705
Ardebil	234685	2377	476
Esfahan	936120	11615	2362
Kashan	121375	1824	359
Alborz	473759	2869	695
Ilam	125100	1301	486
Bushehr	231050	3225	865
Tehran	2995260	15337	2588
Chaharmahal&Bakhtiyari	161300	1662	339
South Khorasan	127750	1957	577
Khorasan-e-Razavi	497190	4661	1682
Mashhad	586000	3684	727
North Khorasan	112700	1301	281
Khuzestan	671074	6917	1513
Ahvaz	82000	2778	229
Zanjan.	160770	1612	296
Semnan	179450	2354	540
Sistan&Baluchestan	250440	4102	1353
Fars	565805	6923	2317
Shiraz	345910	3049	210
Qazvin	243790	1880	264
Qom	290800	2139	156
Kordestan	168765	4629	385
Kerman	689610	9842	1871
Kermanshah	307170	2991	547
Kohgiluyeh&Boyerahmad	124010	1435	292
Golestan	244050	2755	531
Gilan	382243	4995	654
Lorestan	273900	2673	537
Mazandaran	422072	7194	1013
Markazi	272895	3265	710
Hormozgan	386196	5814	1187
Hamedan	301705	2556	458
Yazd	500627	5516	648

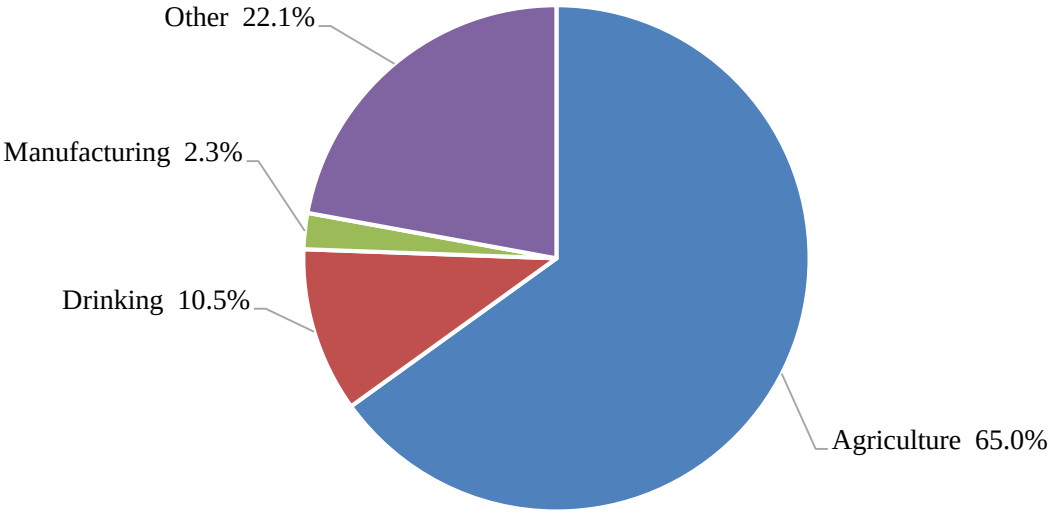
Source: Water and Sewage Engineering Company.

9. 5. DATA FOR WATER SUPPLY, PRODUCTION AND SALE CAPACITIES AND NUMBER OF EXTENTIONS OF URBAN WATER (1000 cu m/number)

Year and urban water and sewage company	Max. capacity of water supply (litre second)	Production (1000 cu m)	Sale[1] (1000 cu m)	Extensions (number)
1380	165328	4008252	2617518	8060690
1385	214154	5094428	3464452	10115430
1390	247392	5323362	3900727	12891481
1391	258750	5425077	4034954	13614415
1392	265281	5643076	4236009	14386295
1393	263019	5847738	4330157	14963718
1394	268138	6009000	4445000	15431590
1395	***261971***	***6045392***	***4502617***	***15827243***
East Azarbayejan	10103	241689	194842	1077543
West Azarbayejan	8382	192422	149109	609025
Ardebil	3839	76427	56502	307538
Esfahan	19408	384087	318801	1106199
Kashan	1538	40584	32026	139830
Alborz	9178	243043	183378	398271
Ilam	1344	40142	31368	135424
Bushehr	3241	102205	70985	241519
Tehran	62027	1395705	1067816	1861379
Chaharmahal&Bakhtiyari	2410	51863	38918	221822
South Khorasan	1905	42831	29322	181240
Khorasan-e-Razavi	7487	162883	109124	636651
Mashhad	8149	225613	173473	884263
North Khorasan	3174	41154	30664	180198
Khuzestan	15780	411192	248548	659059
Ahvaz	7438	158879	114888	327983
Zanjan	3314	69505	53284	218077
Semnan	2518	61346	44922	238736
Sistan&Baluchestan	6065	121498	86594	323123
Fars	6404	180705	134442	658770
Shiraz	5873	138699	103825	428351
Qazvin	3933	79410	64885	290177
Qom	7448	110125	88704	305025
Kordestan	4775	107204	72987	329759
Kerman	7714	179499	133357	573565
Kermanshah	7330	160212	92563	369109
Kohgiluyeh&Boyerahmad	3037	41457	29834	150768
Golestan	3875	80438	61096	268888
Gilan	5218	143817	110552	452081
Lorestan	3731	108696	79106	380310
Mazandaran	8903	250945	177255	585526
Markazi	4740	108696	86617	307701
Hormozgan	3669	106313	85636	234362
Hamedan	3743	93631	70562	359184
Yazd	4278	92480	76632	385787

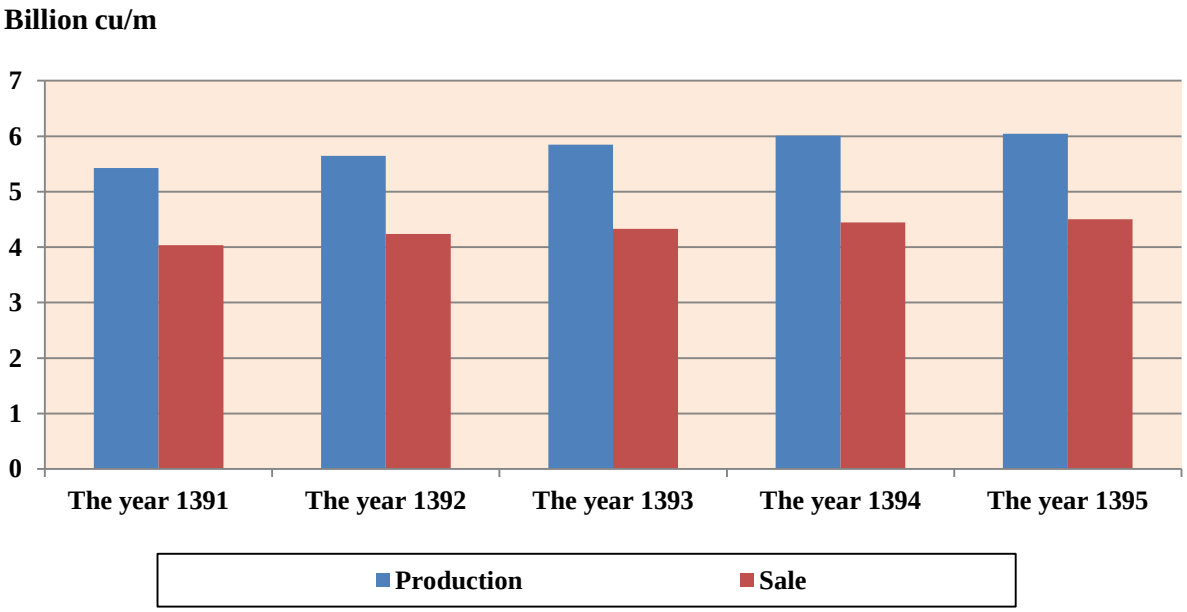
1.Water sale refers to water consumption.
Source: Water and Sewage Engineering Company.

9.3. WATER CONSUMPTION OF LARGE RESERVOIR DAMS BY TYPE OF USE, THE YEAR 1395



For data see Table 9.3.

9.4. PRODUCTION AND SALE OF WATER IN URBAN AREAS BY URBAN WATER AND SEWAGE COMPANY



For data see Table 9.5.

9.6. DATA FOR WATER SUPPLY, PRODUCTION AND SALE CAPACITIES AND NUMBER OF EXTENTIONS OF RURAL WATER (1000 cu m/number)

Year and Ostan	Max. capacity of water supply (litre second)	Production (1000 cu m)	Sale[1] (1000 cu m)	Extensions (number)
1385	51242	1019180	652929	3200860
1390	77038	1160295	794211	4415236
1391	77806	1217272	842466	4734879
1392	78479	1311453	913055	4975782
1393	75623	1396408	964205	5155136
1394	77095	1390976	963604	5280728
1395	***81054***	***1382449***	***947807***	***5392903***
East Azarbayejan	2433	72300	51060	306372
West Azarbayej an	2641	78892	56637	261595
Ardebil	789	25000	17600	114347
Esfahan	2018	57269	40940	237072
Alborz	1252	17940	8860	57917
Ilam	539	13743	9733	49218
Bushehr	1079	32017	20373	89980
Tehran	3670	54796	32932	148290
Chaharmahal&Bakhtiyari	2320	23150	15900	85822
South Khorasan	928	23599	16588	134741
Khorasan-e-Razavi	3943	112221	81960	570343
North Khorasan	961	26851	18098	110148
Khuzestan	4507	78460	46983	179000
Zanjan	1052	34247	17111	98055
Semnan	858	17793	8001	162141
Sistan&Baluchestan	1321	44752	31704	58166
Fars	7026	109660	77280	410830
Qazvin	1176	29953	21357	113291
Qom	627	14720	9720	31577
Kordestan	4864	27170	19000	57022
Kerman	2790	56260	41604	121076
Kermanshah	1891	34190	24190	255016
Kohgiluyeh & Boyerahmad	3065	14721	10465	131221
Golestan	3627	54640	38430	217846
Gilan	2273	66370	42000	281043
Lorestan	4949	36080	25900	127694
Mazandaran	4360	94734	66758	401432
Markazi	6418	32202	23790	144004
Hormozgan	4062	43120	32399	174269
Hamedan	2622	37821	27445	159178
Yazd	993	17778	12989	104197

1.Water sale refers to water consumption.
Source: Water and Sewage Engineering Company.

9.7. DATA FOR CAPACITY OF RESERVOIRS, RURAL WATER DISTRIBUTION AND TRANSMISSION NETWORK

(cu m / km)

Year and Ostan	Capacity of reservoirs	Length of the network for water distribution	Length of pipelines for water transmission
1385	2914866	116474	64500
1390	3292684	155248	87848
1391	3361062	160414	91670
1392	3480029	162781	93498
1393	3332951	167234	95094
1394	3483849	171609	100713
1395	***3628788***	***172980***	***103705***
East Azarbayejan	175833	8192	7176
West Azarbayejan	146550	6528	4748
Ardebil	80722	3379	2266
Esfahan	121830	5306	2971
Alborz	45960	1066	673
Ilam	60699	1366	1591
Bushehr	69250	3364	1871
Tehran	112140	2534	1135
Chaharmahal&Bakhtiyari	85884	2870	1804
South Khorasan	117993	3158	4100
Khorasan-e-Razavi	303693	12837	8588
North Khorasan	84729	2604	1857
Khuzestan	136693	12182	7938
Zanjan	79257	3139	2376
Semnan	36829	1184	794
Sistan &Baluchestan	164269	8634	5973
Fars	283484	12226	7016
Qazvin	61950	2405	1612
Qom	49601	881	715
Kordestan	85308	2123	2176
Kerman	218363	11765	5666
Kermanshah	124458	5043	2964
Kohgiluyeh & Boyerahmad	94773	3396	2725
Golestan	84855	5092	3027
Gilan	136558	17109	3730
Lorestan	67148	4508	3868
Mazandaran	168058	10722	4326
Markazi	87525	3909	2099
Hormozgan	123415	6580	4147
Hamedan	121234	4476	2142
Yazd	99727	4402	1631

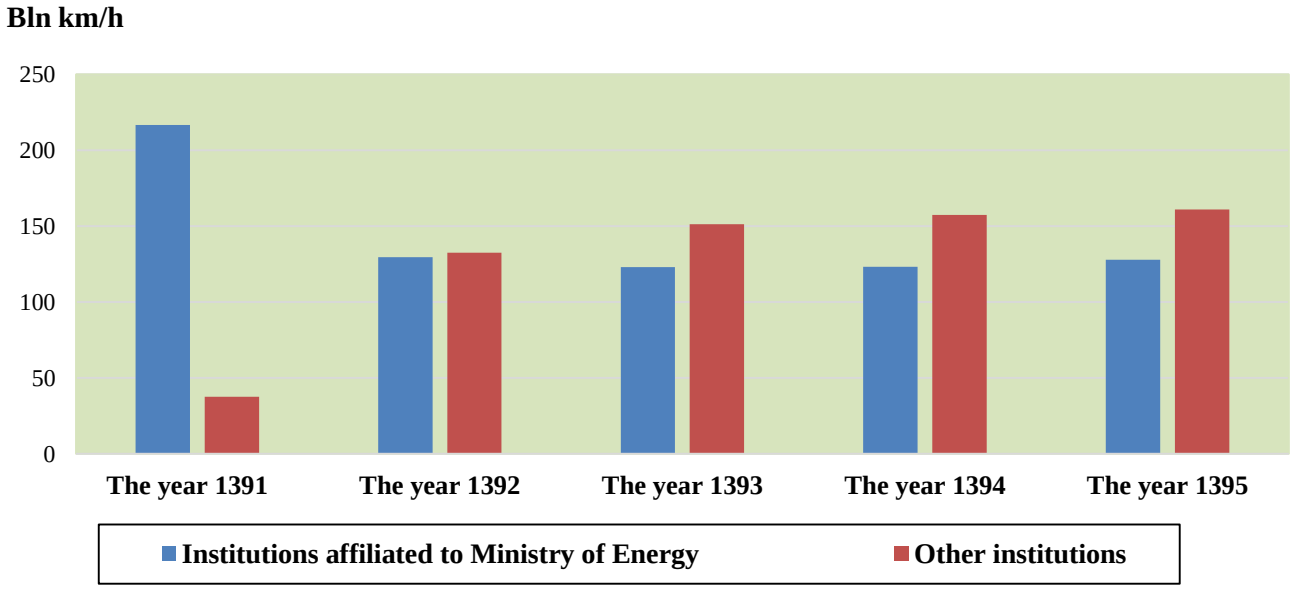
Source: Water and Sewage Engineering Company.

9.8. NOMINAL CAPACITY AND GROSS ELECTRICITY GENERATION OF INSTALLED GENERATORS

Year	Nominal capacity ((1000 kW h)			Gross electricity generation (mln kW h)		
	Total	Institutions affiliated to the Ministry of Energy	Other institutions	Total	Institutions affiliated to the Ministry of Energy	Other institutions
1380	34233	28043	6190	129996	124275	5721
1385	45151	40909	4242	192534	181538	10996
1390	65212	52252	12960	240063	208413	31650
1391	68941	53998	14943	254265	216989	37276
1392	70278	(1)35897	(1)34381	262192	(1)129539	(1)132653
1393	73160	35075	38085	274480	123151	151329
1394	74103	34945	39158	280688	123215	157473
1395	***76428***	***35764***	***40664***	***289196***	***128291***	***160905***

1. In the year1392, a remarkable number of power plants in public sector were ceded to private sector. This led to decrease in the figures related to the institutions affiliated to the Ministry of Energy and the increase in the figures for other institutions affiliated to the private sector.
Source: Ministry of Energy.

9.5. GROSS ELECTRICITY GENERATION IN THE COUNTRY



For data see Table 9.8.

9.9. CAPACITY OF INSTALLED GENERATORS AND MAXIMUM POWER GENERATED AT THE POINT OF PEAK CONSUMPTION OF THE POWER PLANTS (1000 kW)

Year and type of generator	Nominal capacity (nominal power)	Actual capacity (actual capacity)	Power generated at the point of peak consumption
1380	28944	26496	21853
1385	45288	40985	32997
1390	65212	57522	42245
1391	68941	60724	43243
1392	70279	61907	45659
1393	73160	63987	46696
1394	74103	64707	49116
1395	***76428***	***66598***	***51579***
Ministry of energy	35763	32862	26144
Hydroelectric	11578	11578	7812
Steam	11240	10941	9181
Gas	7101	5540	4744
Combined cycle	4275	3389	3323
Diesel	439	284	78
Atomic	1020	1020	1006
Renewable	110	110	0
Large scale industries	5581	4617	968
Steam	589	490	359
Gas	4992	4127	609
Private sector	35084	29119	24467
Steam	4000	3778	3154
Gas	15796	12780	10307
Combined cycle	15195	12468	11006
Renewable	93	93	0

Source: Ministry of Energy.

9. 10. CAPACITY OF INSTALLED GENERATORS AND GROSS ELECTRICITY GENERATION OF POWER PLANTS, THE YEAR 1395

Ostan	Nominal capacity(1000 kW)	Actual capacity (1000 kW)	Gross generation (mln kW h)
Total	***76428***	***66598***	***289196***
East Azarbayejan	1714	1526	7329
West Azarbayejan	1414	1146	5548
Ardebil	1017	821	2621
Esfahan	5070	4511	22922
Alborz	1625	1347	8740
Ilam	675	643	612
Bushehr	5181	4495	17787
Tehran[(1)]	6362	5061	25052
Chaharmahal&Bakhtiyari	1053	1052	1669
South Khorasan	786	586	2776
Khorasan-e-Razavi	3589	3082	16134
North Khorasan	983	748	3048
Khuzestan	15124	14218	34327
Zanjan	723	575	1789
Semnan	661	532	2409
Sistan &Baluchestan	1487	1183	5370
Fars	4678	3625	20388
Qazvin	2096	1889	12023
Qom	721	603	4457
Kordestan	981	791	4433
Kerman	3432	2600	15318
Kermanshah	1404	1258	6791
Kohgiluyeh & Boyerahmad	17	17	27
Golestan	973	882	2597
Gilan	2831	2618	14258
Lorestan	295	268	57
Mazandaran	3371	3262	12067
Markazi	1342	1257	6630
Hormozgan	3267	2957	15335
Hamedan	1023	1023	5321
Yazd	2534	2023	11363

Source: Ministry of Energy.

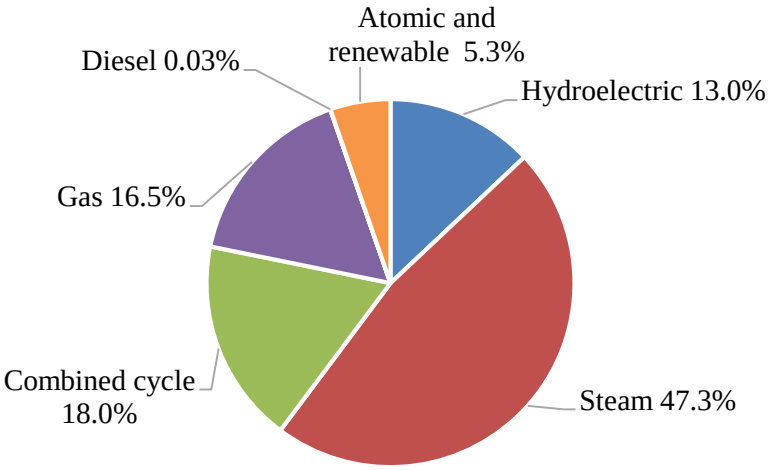
9. 11. ELECTRICITY GENERATION AND INTERNAL CONSUMPTION OF THE POWER PLANTS

(mln kWh)

Year and type of generator	Gross generation	Internal consumption of plants	Net generation
1380	127169	6123	121046
1385	192535	7773	184762
1390	240063	8442	231621
1391	254265	8352	245913
1392	262192	8727	253465
1393	274480	8426	266054
1394	280689	7888	272801
1395	***289196***	***8285***	***280911***
Ministry of energy	128292	4518	123774
Hydroelectric	16419	76	16343
Steam	60768	3933	56835
Combined cycle	23037	348	22689
Gas	21184	157	21027
Diesel	46	4	42
Atomic	6711	0	6711
Renewable	127	0	127
Large scale industries	6482	195	6287
Steam	2040	193	1847
Gas	4442	2	4440
Private sector	154422	3572	150850
Steam	22284	1685	20599
Gas	51151	371	50780
Combined cycle	80824	1516	79308
Renewable	163	0	163

Source: Ministry of Energy.

9.6. SHARE OF ELECTRICITY GENERATORS TYPES OF THE POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY FROM GROSS GENERATION OF POWER , THE YEAR 1395



For data see Table 9.11.

9. 12. GROSS ELECTRICITY GENERATION OF HYDROELECTRIC POWER PLANTS BY REGIONAL WATER ORGANIZATION AND TYPE OF DAM (1000 kW hours)

Year and regional water organization	Total		Concrete arch		Earth		Other	
	Number	Generation	Number	Generation	Number	Generation	Number	Generation
1380	13	5056652	8	4902159	5	154493	-	-
1385	29	18168964	13	12634896	18	5550129	12	182164
1390	46	13287425	26	8489912	9	4707067	11	90446
1391	47	12446570	26	7636570	10	4745855	11	64145
1392	48	14469847	26	8709761	11	5751593	11	8493
1393	48	13862370	26	8003593	11	5842814	11	15960
1394	51	14086848	28	8518422	12	5523407	11	45019
1395	***52***	***16419181***	***28***	***9412166***	***13***	***6945188***	***11***	***61827***
East Azarbayejan	0	0	0	0	0	0	0	0
West Azarbayejan	2	92036	0	0	2	92036	0	0
Ardebil	1	42392	0	0	0	0	1	42392
Esfahan	2	109608	2	109608	0	0	0	0
Ilam	1	530218	1	530218	0	0	0	0
Tehran	5	520154	3	326353	2	193801	0	0
Chaharmahal &Bakhtiyari	3	1652932	2	1652932	0	0	1	0
Khorasan-e-Razavi	2	0	2	0	0	0	0	0
Khuzestan	7	12319180	3	6466702	4	5852478	0	0
Fars	3	15027	1	4701	2	10326	0	0
Kordestan	1	61995		0	1	61995	0	0
Kerman	1	23645	1	23645	0	0	0	0
Kermanshah	1	4046	1	4046	0	0	0	0
Kohgiluyeh &Boyerahmad	5	27148	3	14803	0	0	2	12345
Gilan	4	254523	2	254523	0	0	2	0
Lorestan	4	2438	3	2438	1	0		0
Mazandaran	7	756749	3	22197	1	734552	3	0
Markazi	2	0	1	0	0	0	1	0
Hamedan	1	7090	0	0	0	0	1	7090

Source: Ministry of Energy.

9. 13. GROSS ELECTRICITY GENERATION, FUEL CONSUMPTION, ENERGY GENERATION AND OUTPUT OF THERMAL POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY, LARGE SCALE INDUSTRIES AND PRIVATE SECTOR

Year and type of ownership of the power plant	Gross electricity generation (mln kw hours)	Fuel consumed			Energy generated from fuel consumption (bln kcal)	Thermal energy consumed to generate one kWh of electricity (kcal)	Output (percent)
		Gas oil (mln lit)	Fuel oil (mln lit)	Natural gas (mln cu m)			
1380	122081	1618	6799	24012	295114	2414	35.6
1385	174280	4362	7587	32168	393246	2403	35.8
1390	227428	9406	12019	38901	530623	2333	36.9
1391	239752	7768	14450	40692	554963	2315	37.2
1392	242908	12186	10816	36648	565332	2327	37
1393	255869	8872	10273	50172	606707	2371	36.3
1394	263392	6084	6946	58424	606045	2301	37.4
1395	***265774***	***5867***	***4483***	***61782***	***604856***	***2276***	***37.8***
Power plants affiliated to the Ministry of Energy	105034	1332	4055	23436	243158	2315	37.1
Large scale industries	6482	10	0	2070	19543	3015	28.5
Private sector	154258	4525	428	36276	342155	2218	38.8

Source: Ministry of Energy.

9.14.GENERATION, INTERNAL CONSUMPTION OF POWER PLANTS, PURCHASE,LOSSES AND SALES OF ELECTRIC POWER OF INSTITUTIONS AFFILIATED TO THE MINISTRY OF ENERGY (mln kWh)

Description	The year 1380	The year 1385	The year 1390	The year 1391	The year 1392	The year 1393	The year 1394	The year 1395
Gross generation	124275	181538	208414	216988	129540	123150	123215	128292
Less: Internal consumption of plants	5942	7064	7985	7849	5386	4583	4548	4520
Net generation	118333	174474	200429	209139	124154	118567	118667	123772
Plus:Electricity purchased from large-scale industries(1)	5721	10997	23637	29365	125273	141834	147920	149743
Less: Distribution and transmission networks losses	20857	35566	34102	36755	37407	34610	33297	33513
Net sales	97476	144831	188917	201280	211094	225541	233043	239903
Net exports	305	233	5012	7132	7879	5888	5732	2467
Domestic sales.....	97171	144598	183905	194148	203215	219653	227311	237436

1.Other institutions include large scale industries and private plants.
Source: Ministry of Energy.

9.15. MAXIMUM COINCIDENTAL AND NON-COINCIDENTAL LOADS OF REGIONAL POWER COMPANIES (1000 kW)

Description	Maximum coincidental load
1380	23220
1385	33453
1390	41481
1391	42027
1392	44724
1393	46204
1394	48462
1395	***50926***
Azarbayejan Regional Power Company	2911
Esfahan Regional Power Company	3414
Bakhtar Regional Power Company	2412
Tehran Regional Power Company	9324
Khorasan Regional Power Company	3290
Khuzestan Regional Power Company	7125
Zanjan Regional Power Company	1416
Semnan Regional Power Company	436
Sistan&Baluchestan Regional Power Company	1199
Gharb Regional Power Company	1518
Fars Regional Power Company	4430
Kerman Regional Power Company	1830
Gilan Regional Power Company	1389
Mazandaran Regional Power Company	3431
Hormozgan Regional Power Company	2151
Yazd Regional Power Company	926
Kish Water and Power Company	145
Large scale industries	3580

Source: Ministry of Energy.

9.16. ELECTRIC POWER TRANSMISSION LINES (km circuits)

Year	Transmission lines		Sub-transmission lines	
	400 kV	230 kV	132 kV	63 and 66 kV
1380	9924	20731	13857	29400
1385	12404	25634	18582	37974
1390[1]	18625	29158	22092	44956
1391	19745	29722	22602	45754
1392	19915	30300	22665	46240
1393	19995	30732	22919	47105
1394	20205	30869	23046	47506
1395	***20477***	***31324***	***23413***	***48063***

1.In the year 1390, statistical data for power transmission lines of the country were revised and decreased in some cases.
Source: Ministry of Energy.

9.17. CAPACITY OF POWER TRANSMISSION SUB-STATIONS OF THE COUNTRY

(MVA)

Year and Ostan	Transmission sub-stations		Sub-transmission sub-stations	
	400 kV	230 kV	132 kV	63 and 66 kV
1380	22458	37287	12762	31265
1385	29633	53816	18489	43987
1390	46708	67412	25352	59759
1391	50968	69843	26844	61334
1392	54303	71605	27838	63270
1393	57143	75024	29269	65061
1394	59273	76532	29829	67080
1395	***62183***	***80470***	***30865***	***69456***
East-Azarbayejan	1715	2920	2573	698
West-Azarbayejan	630	1605	1916	15
Ardebil	500	720	0	698
Esfahan	5560	5175	0	7431
Alborz	1000	2236	0	2516
Ilam	0	1240	504	660
Bushehr	3395	2056	1602	1879
Tehran	9300	11080	0	12344
Chaharmahal&Bakhtiyari	850	0	0	980
South Khorasan	1000	0	850	0
Khorasan-e-Razavi	3228	160	5940	1012
North Khorasan	1000	0	878	0
Khuzestan	7895	7962	10334	0
Zanjan	1715	1250	0	2082
Semnan	1600	2010	0	1328
Sistan&Baluchestan	630	2595	30	2585
Fars	4760	4245	620	6529
Qazvin	400	1390	0	1925
Qom	0	1080	0	1455
Kordestan	0	1515	80	1115
Kerman	1870	4770	3812	360
Kermanshah	1230	2265	0	1960
Kohgiluyeh&Boyerahmad	400	490	461	0
Golestan	700	1730	0	1673
Gilan	1000	3125	120	2626
Lorestan	1000	1920	0	1917
Mazandaran	2630	3395	0	4043
Markazi	2000	2550	0	2881
Hormozgan	3090	6652	810	4855
Hamedan	600	1815	0	1863
Yazd	2485	2519	335	2028

Source: Ministry of Energy.

9.18. NUMBER OF DIFFERENT TYPES OF CUSTOMERS BY TYPE OF CONSUMPTION

(consumer)

Year and Ostan	Total	Household	Public	Agricultural	Industrial	Other
1380	16345450	13682563	523505	77556	91468	1970358
1385	20559946	16989284	748964	138137	152202	2531359
1390	27164768	22224100	1082528	284781	174255	3399104
1391	28751529	23467188	1180911	307329	184861	3611240
1392	30287179	24670834	1282618	329995	193628	3810104
1393	31671635	25739069	1382124	352628	206088	3991726
1394	32831066	26619546	1465251	378147	216515	4151607
1395	***33824208***	***27354153***	***1543440***	***400257***	***225296***	***4301062***
East Azarbayejan	1724428	1364158	72286	18708	15187	254089
West Azarbayejan	1172986	958774	30332	19055	5547	159278
Ardebil	517895	429005	21584	3784	2959	60563
Esfahan	2468707	1960938	89948	41960	29592	346269
Alborz	1241468	1013308	77009	4734	6161	140256
Ilam	206806	173437	7884	2586	1064	21835
Bushehr	425278	346607	14439	4413	2419	57400
Tehran	6575730	5020875	500415	11138	41598	1001704
Chaharmahal&Bakhtiyari	338398	284943	10441	6051	2368	34595
South Khorasan	346672	291582	14405	4752	2430	33503
Khorasan-e-Razavi	2652318	2204117	96701	20084	17685	313731
North Khorasan	329075	280568	10949	3231	1518	32809
Khuzestan	1543798	1281656	49955	9676	4256	198255
Zanjan	414107	340906	14443	7853	2714	48191
Semnan	357158	279485	20215	5338	4558	47562
Sistan&Baluchestan	746613	629470	24591	11760	2431	78361
Fars	1911475	1583305	62612	41553	13341	210664
Qazvin	565147	457164	34749	5599	4277	63358
Qom	526251	428524	17279	3534	5991	70923
Kordestan	599424	504556	17974	8983	2634	65277
Kerman	1095023	934775	30670	14782	4831	109965
Kermanshah	725073	609898	24186	7155	2630	81204
Kohgiluyeh&Boyerahmad	232939	202695	7295	2275	988	19686
Golestan	678573	559121	30712	9411	2702	76627
Gilan	1333059	1052239	64082	17814	5288	193636
Lorestan	595455	509919	15472	7717	2750	59597
Mazandaran	1824099	1457638	83825	67793	12588	202255
Markazi	680421	563596	25701	9509	6529	75086
Hormozgan	671758	548285	31372	8351	3100	80650
Hamedan	702295	577800	27466	11760	5002	80267
Yazd	621779	504809	14448	8898	10158	83466

Source: Ministry of Energy.

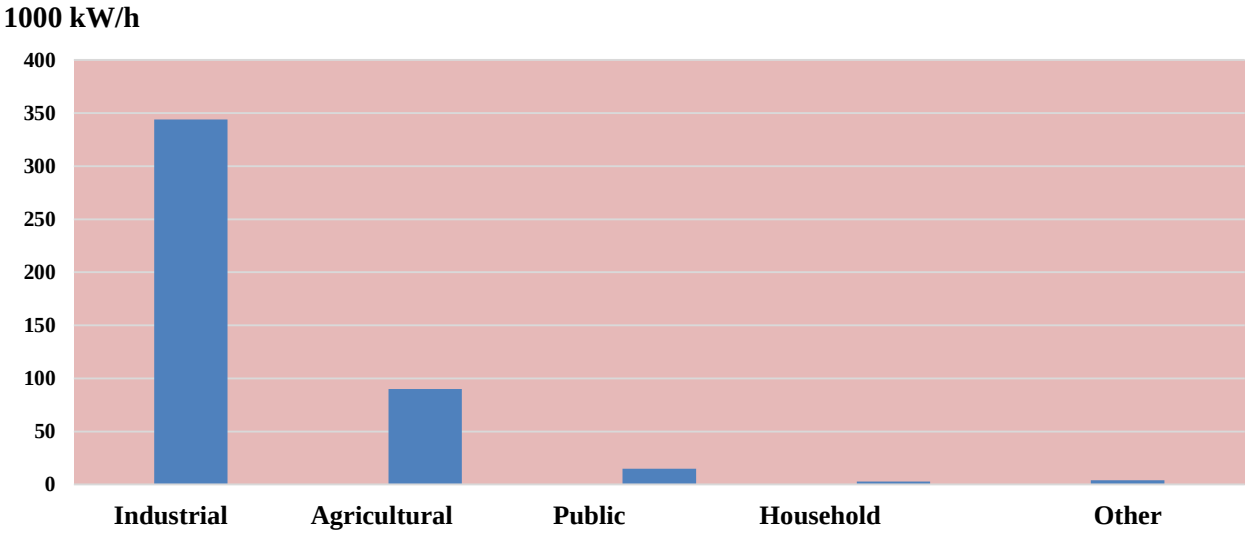
9.19. DOMESTIC SALE OF ELECTRICITY OF IRAN'S OSTANS BY TYPE OF CONSUMPTION

(mln KW/h)

Year and Ostan	Total	Household	Public	Agricultural	Industrial	Streets lighting	Other
1380	96811	32891	11951	11079	30379	4117	6394
1385	144598	48085	18329	17666	46590	4608	9320
1390	183905	56771	16808	29965	63945	3752	12664
1391	194148	61350	17810	31647	67107	3635	12599
1392	203215	64379	17833	33126	70733	3765	13378
1393	219653	71163	19767	35188	74294	3837	15404
1394	227790	76103	22196	36089	72705	4017	16680
1395	***237436***	***78378***	***22914***	***36222***	***77603***	***4699***	***17620***
East Azarbayejan	7695	2300	622	1019	2969	189	596
West Azarbayejan	4956	1824	397	1020	1186	134	396
Ardebil	1660	634	184	236	418	55	133
Esfahan	22492	3951	1327	2792	12980	408	1033
Alborz	6099	2081	609	706	2017	130	557
Ilam	1326	560	289	162	208	32	75
Bushehr	5989	3684	939	274	570	99	423
Tehran	33534	11526	5953	2257	7437	519	5842
Chaharmahal&Bakhtiyari	1782	461	107	584	461	82	87
South Khorasan	1532	412	142	476	341	73	89
Khorasan-e-Razavi	15061	4317	1089	4334	3839	372	1110
North Khorasan	1475	420	98	335	514	31	76
Khuzestan	29041	14123	2432	2516	8253	393	1323
Zanjan	3711	537	165	629	2212	52	117
Semnan	2767	487	205	625	1268	56	125
Sistan&Baluchestan	5464	2891	823	879	366	179	326
Fars	13775	4289	1110	4444	2655	329	948
Qazvin	4197	814	251	991	1876	70	195
Qom	3427	1116	346	457	1136	66	305
Kordestan	2118	943	174	490	317	45	149
Kerman	11616	2846	709	3995	3429	218	419
Kermanshah	3299	1185	506	411	896	93	208
Kohgiluyeh&Boyerahmad	1632	698	240	203	346	49	96
Golestan	3044	1516	268	467	487	71	234
Gilan	5352	2182	499	494	1454	168	555
Lorestan	3280	983	433	729	907	92	136
Mazandaran	7810	3296	749	920	1876	266	703
Markazi	7807	960	277	1162	5107	104	197
Hormozgan	13987	5244	1408	787	5688	121	740
Hamedan	3906	1111	305	1102	1103	96	188
Yazd	7603	985	258	727	5287	108	238

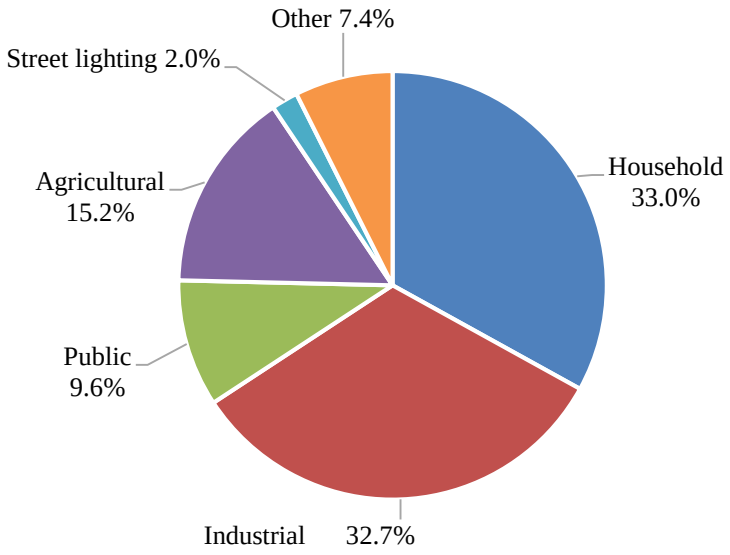
Source: Ministry of Energy.

9.7. AVERAGE OF ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMERS, THE YEAR 1395



For data see Tables 9.18. and 9.19.

9.8. DOMESTIC SALE OF ELECTRICITY BY TYPE OF USE, THE YEAR 1395



For data see Table 9.19.

9.20. NUMBER OF VILLAGES, RURAL HOUSEHOLDS ENJOYING ELECTRICITY AND CHARACTERISRICS OF ELECTRICITY TRANSMITING INSTALLATIONS TO VILLAGES

Year and Ostan	Village	Household enjoying electricity	Length of power disribution lines with medium pressure(km)	Length of power disribution lines with low pressure(km)	Number of distribution transformers	Capacity of distribution transformers (MVA)
1380	45359	4056072	120580	89359	54162	5688
1385	50985	4427849	138330	93464	64718	6812
1390	54116	4452795	139429	98390	72186	7283
1391	54561	4460145	140273	98631	72818	7316
1392	55191	4469565	141066	98986	73625	7361
1393	55664	4476786	142096	99299	74228	7389
1394	56170	4484170	143292	99618	7417	74866
1395	***56793***	***4492752***	***145049***	***99958***	***76735***	***7687***
East Azarbayejan	2848	297202	8432	5641	3019	317
West Azarbayejan	2895	210193	5676	4076	2993	288
Ardebil	1591	70229	4503	3582	1587	116
Esfahan	1758	296820	4810	4532	3029	273
Alborz	224	21841	512	489	237	30
Ilam	625	44739	1452	806	692	72
Bushehr	512	39849	1486	1228	821	112
Tehran	599	152791	1267	1625	1084	152
Chaharmahal&Bakhtiyari	740	85454	575	982	524	59
South Khorasan	1470	124724	3464	2303	1729	128
Khorasan-e-Razavi	3255	327125	7222	4606	3556	310
North Khorasan	925	93875	3289	1886	1126	84
Khuzestan	3754	206755	7928	3517	7774	1131
Zanjan	921	91462	3817	2038	1018	118
Semnan	501	35938	2814	953	477	51
Sistan&Baluchestan	4421	243088	15325	6239	6364	580
Fars	3186	283212	9025	5904	4593	431
Qazvin	852	72761	2606	2236	1117	168
Qom	189	18234	410	248	189	16
Kordestan	1773	127272	5326	2159	1855	187
Kerman	5077	239031	12659	7780	7974	655
Kermanshah	2514	127261	4351	2548	2598	257
Kohgiluyeh&Boyerahmad	1632	54663	3309	1403	2113	229
Golestan	895	106236	1630	1197	1016	69
Gilan	3019	286206	4529	10187	4792	421
Lorestan	2682	102673	5474	2686	2516	190
Mazandaran	3000	262097	4659	5945	3067	221
Markazi	1190	124312	4700	4086	1387	173
Hormozgan	1701	126875	8113	5014	4401	580
Hamedan	1124	164980	3391	2980	2071	195
Yazd	920	54854	2296	1082	1016	73

Source: Ministry of Energy.

9.21. EXCHANGE OF ELECTRICITY WITH NEIGHBORING COUNTRIES

Year	Exports					
	Total	Nakhjavan	Turkey	Armenia	Azerbaijan	Turkminestan
1380	1049	389	251	224	185	0
1385	2774	561	576	316	11	2
1390	8668	56	1118	57	0	8
1391	11029	59	1912	7	0	8
1392	11586	65	2395	82	0	3
1393	9660	66	2179	86	0	1
1394	9880	50	1723	45	0	0
1395	***6688***	***48***	***297***	***105***	***1***	***0***

Year	Exports		
	Pakistan	Afghanistan	Iraq
1380	0	0	0
1385	172	134	1002
1390	271	557	6601
1391	369	639	8035
1392	414	796	7831
1393	446	819	6063
1394	457	782	6822
1395	***482***	***731***	***5024***

Year	Energy exchange	Imports					
		Total	Nakhjavan	Turkey	Armenia	Azerbaijan	Turkminestan
1380	305	745	0	0	315	430	0
1385	233	2541	0	0	428	536	1576
1390	5012	3656	57	0	1508	2	2089
1391	7132	3897	60	0	1582	2	2253
1392	7879	3707	65	0	1103	6	2533
1393	5888	3772	65	0	1051	3	2653
1394	5732	4148	50	0	1344	4	2751
1395	***2467***	***4221***	***51***	***0***	***1133***	***4***	***3033***

Year	Imports		
	Pakistan	Afghanistan	Iraq
1380	0	0	0
1385	0	0	0
1390	0	0	0
1391	0	0	0
1392	0	0	0
1393	0	0	0
1394	0	0	0
1395	***0***	***0***	***0***

Source: Ministry of Energy.

9.22. ELECTRICITY DISTRIBUTION NETWORK OF THE COUNTRY BY OSTAN, THE YEAR 1395

Ostan	Length of power disribution lines with medium voltage(km)	Length of power disribution lines with low voltage (km)	Number of distribution transformers	Capacity of distribution transformers (MVA)
Total	***416089***	***353395***	***657808***	***114948***
East Azarbayejan	17425	15108	22930	3651
West Azarbayejan	14913	11857	18484	2480
Ardebil	7296	6087	6410	900
Esfahan	25603	26737	44269	8458
Alborz	4981	7425	13636	2834
Ilam	4611	2569	5563	907
Bushehr	7499	6262	14746	3325
Tehran	24068	40634	60678	19961
Chaharmahal&Bakhtiyari	6433	4828	8089	1036
South Khorasan	12406	5549	9027	991
Khorasan-e-Razavi	32678	23506	38167	6752
North Khorasan	6023	4432	5974	735
Khuzestan	21769	18668	51309	12284
Zanjan	8122	5663	9220	1444
Semnan	7167	3934	7609	1324
Sistan&Baluchestan	23386	12220	21793	2690
Fars	35805	24527	63409	8147
Qazvin	6951	5124	11551	1874
Qom	3771	3682	7185	1812
Kordestan	10133	5598	11578	1361
Kerman	30659	21029	40672	5016
Kermanshah	11441	6727	16365	2003
Kohgiluyeh&Boyerahmad	4846	3469	7296	1141
Golestan	7346	7326	16278	2208
Gilan	8936	19107	18326	3068
Lorestan	9617	5666	15181	1787
Mazandaran	15002	22151	41693	5468
Markazi	11489	8250	15587	2330
Hormozgan	15275	9414	24361	4873
Hamedan	10199	7923	15772	2194
Yazd	10239	7923	14650	1894

Source: Ministry of Energy.