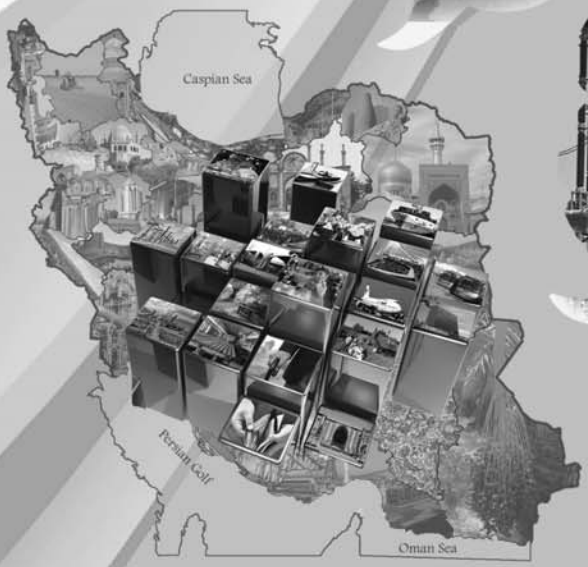
9 Water and Electricity



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 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 teelworks,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 oftransmissionlines 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 d: 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 1392-1393,the amount of annual discharge of the underground water resources was 61407 mln cu m which had an 5.42 percent decrease in comparison to the aquatic year 1391-1392. It should be noted that out of 6 main basins, the central plateau with 50.4% had the maximum annual discharge.

In the year 1393, the inflow of the large reservoir dams amounted to 28223 mln cu m had a 6.07% decrease in comparison to the last year. In this year, 26313 mln cu m of large reservoir dams have been consumed, 68 percent of which belongs to the agricultural consumptions.

In the same year, over 7244 mln cu m of water is produced in the water and sewage companies of the country (urban and rural) out of which about 5294 mln cu m was sold. Sale of water had a 2.81 percent increase compared to the preceding year. This is while that the production of water had a 4.15 percent increase compared to previous year.

In the year 1393, there were over 20118000 water extensions which had a 4.0 percent (urban and rural) increase in comparison to the preceding year. Out of this number about 14963000 extensions were for the urban areas which had a 4.0% increase compared to the previous year.

In the year 1393, the gross electricity generation of institutions affiliated to the Ministry of Energy was about 274480 mln kilowatt hours about 22.0 percent of which has been produced in the steam power plants. Furthermore, the gross electricity generation amount had a 4.68 percent increase compared to the preceding year.

In this year, 219653 mln kilowatt hours of generated electricity was consumed by a number of 31671000 subscribers. In this respect, the amount of electricity sold and the number of electricity subscribers increased about 8.08 and increased by about 4.57 percent respectively compared to the preceding year.

Among all electricity subscribers inthe year 1393, percentage of subscribers in the house, public,agricultural and manufacturing sectors was 81.26, 4.36, 1.11 and 0.65 percent, respectively. Also in this year, the percentage of the sold electricity which was consumed in the house and manufacturing, agricultural, public sectors and for the streets lighting was 32.39, 34.0, 16.0, 8.9and1.7 percent respectively.

At the end ofthe year 1393, a number of 55664 villages (about 4.3 mln rural households) were electrified which increased0.8%in comparison to the previous year.

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

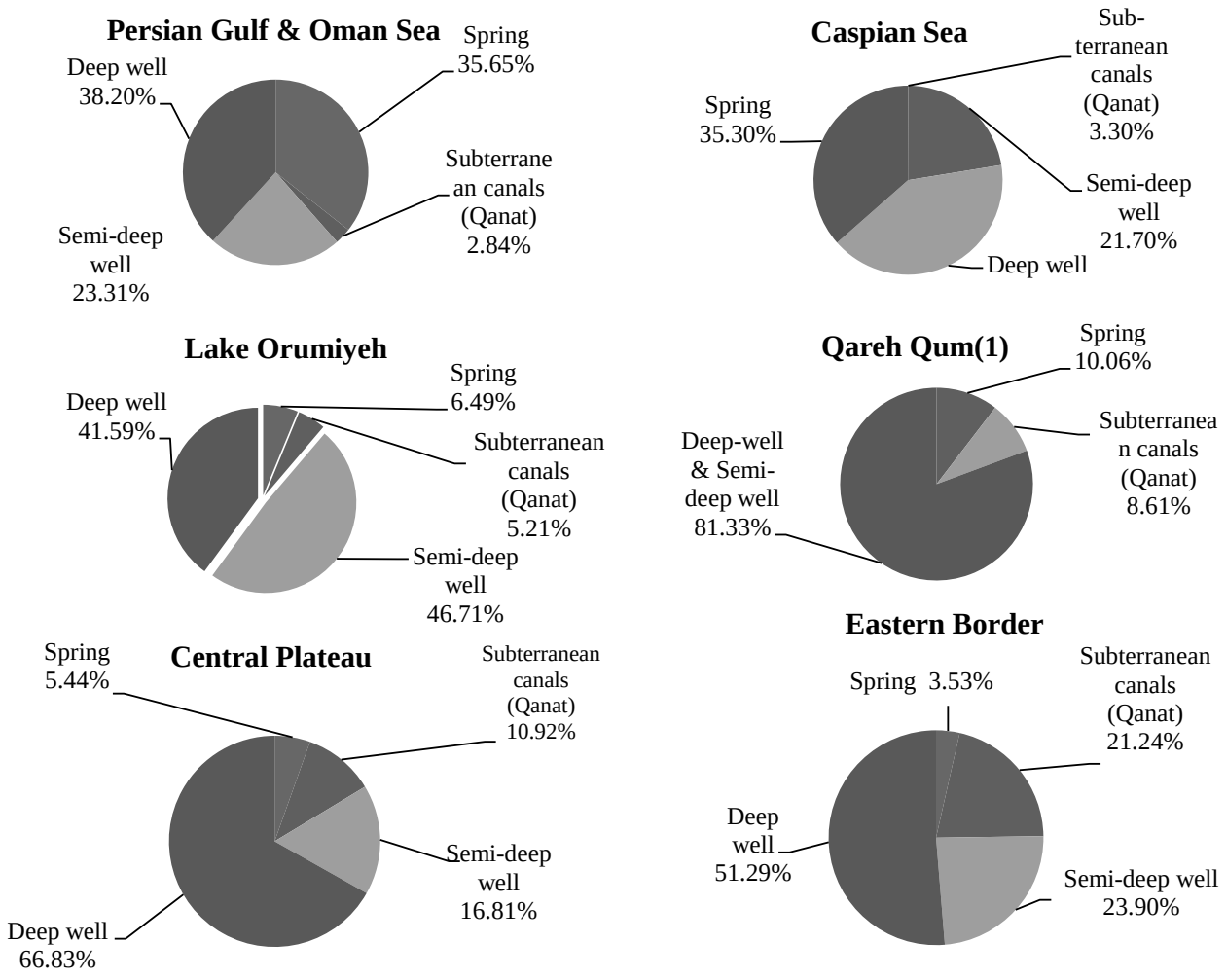
(mln cu m)

Aquatic year and main basins	Total discharge	Deep well		Semi-deep well		Subterranean canals (Qanat)		Spring	
		Number	Annual[(1)] discharge	Number	Annual discharge	Number	Annual discharge	Number	Annual discharge
1374-75	60946	93646	27708	254900	11441	30988	9543	44476	12253
1379-80	69549	118986	30757	314405	13263	33036	7962	49785	17566
1384-85	79837	155800	35843	432943	12778	36307	7527	112787	23690
1388-89	75714	176516	33977	472398	13323	39048	6458	145609	21956
1389-90	70482	191261	34367	497579	12479	39531	6259	159454	17378
1390-91	64523	195766	34872	567898	12311	41109	4752	173825	12588
1391-1392	64932	200859	34545	569708	12164	41130	4735	173611	13488
1392-1393……	***61407***	***199087***	***33729***	***582426***	***12241***	***41149***	***4738***	***174161***	***10699***
Caspian Sea	6991	36323	2778	231951	1515	2629	229	76467	2468
Persian Gulf and Oman Sea	17042	43069	6508	106344	3973	4823	485	55799	6076
Lake Orumiyeh	2402	7764	999	81757	1122	1809	125	9908	156
Central Plateau	30934	104082	20674	149382	5202	26714	3373	27779	1684
Eastern Border	1414	1862	725	8700	338	3111	300	1428	50
Qareh Qum	2625	5987	2044	4292	91	2063	226	2780	264

1.The data for annual dischargeare are estimated and are related to the second phase of national survey for the years 1386-1390.

Source: Ministry of Energy

9.1. ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES BY MAIN BASINS,THE ACQUATIC YEAR 1392-93



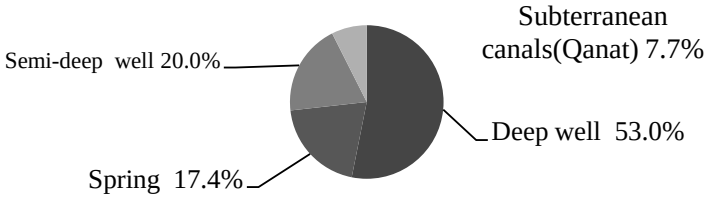
For data see Table 9.1.

9.2. UNDERGROUND WATER RESOURCES AND THEIR ANNUAL DISCHARGE BY REGIONAL WATER ORGANIZATIONS, AQUATIC YEAR 1392-1393 (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	***61407***	***199087***	***33729***	***582426***	***12241***	***41149***	***4738***	***174161***	***10699***
East Azarbayejan	1271	5759	626	34940	360	1960	186	2295	99
West Azarbayejan	2105	4625	966	53287	929	543	38	851	172
Ardebil	395	2058	163	4875	88	221	19	3354	125
Esfahan	4952	15732	1801	33286	1083	4203	773	8686	1296
Alborz	816	5329	638	11186	59	157	12	1736	107
Ilam	359	1165	237	825	13	4	1	744	109
Bushehr	516	1405	114	11808	351	48	11	180	40
Tehran	2722	19499	2186	29847	129	536	248	2503	159
Chaharmahal&Bakhtiyari	2367	2237	332	1767	166	1011	84	4760	1785
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	910	1679	420	2554	46	635	87	3145	358
Khuzestan	1319	3455	774	7133	210	3	1	1086	334
Zanjan	1144	3831	662	13459	293	725	33	5836	156
Semnan	991	2924	697	1996	35	738	92	1873	167
Sistan&Baluchestan	1982	1446	375	17530	1189	1282	377	905	41
Fars	7996	31140	4066	53324	2491	1730	401	2226	1038
Qazvin	1336	4292	1009	5972	77	313	50	13852	201
Qom	903	1183	543	3756	179	753	163	1397	19
Kordestan	1029	2698	354	14699	173	519	24	38562	478
Kerman	6397	16039	4494	18517	1337	2391	456	1593	110
Kermanshah	1493	4099	518	11041	445	401	30	11187	501
Kohgiluyeh&Boyerahmad	1044	880	121	2046	97	61	5	4510	821
Golestan	926	8871	506	26942	267	344	20	3766	133
Gilan	777	942	122	50018	241	0	0	16153	414
Lorestan	960	3193	479	3738	121	1167	31	5692	329
Mazandaran	1688	15841	520	121337	333	34	7	21688	827
Markazi	2924	7818	1908	7565	343	4254	497	3159	176
Hormozgan	1536	4406	739	17830	617	169	33	639	147
Hamedan	1819	8303	1457	7822	184	1287	69	2386	109
Yazd	1137	2911	843	769	97	2630	170	387	27

Source: Ministry of Energy.

9.2. PERCENTAGE OF ANNUAL DISCHARGE FROM UNDERGROUND WATER RESOURCES, THE YEAR 1392-93



For data see Table 9.1.

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other [5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
1375	36901	40137	26784	13352	18125	15009	1462	374	1280
1380	30400	27311	18386	8925	11467	8819	1209	382	1058
1385	50873	54716	44913	9803	17157	13233	2276	589	1059
1389	35617	35711	17602	18109	25829	13220	3356	774	8479
1390	33740	32822	17122	15700	25675	16175	2226	855	6419
1391	38549	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***
East Azarbayejan	***3854***	***3668***	***2481***	***3657***	***1633***	***1230***	***39***	***8***	***356***
Aydoghamush	65	54	0	54	33	22	0	0	11
Aras[2, 6]	2716	2604	2481	123	1395	1070	0	0	325
Khoda Afarin[2]	3273	3237	0	3237	0	0	0	0	0
Arasbaran	8	10	0	0	8	5	0	0	3
Tajbar Sarab	6	2	0	2	2	2	0	0	0
Zonuz	4	4	0	4	4	3	0	0	1
Sattarkhanahar	35	45	0	45	40	29	8	2	1
Sahand[7]	109	78	0	78	40	29	4	0	8
Alavian	67	65	0	65	63	42	11	6	5
Ghale chai	31	29	0	29	29	27	0	0	2
Kord Kandi	5	3	0	3	2	2	0	0	0
Nahand	14	18	0	18	17	0	16	0	1
West Azarbayejan.	***1504***	***1518***	***94***	***1423***	***1386***	***920***	***227***	***3***	***235***
Aras 2	3	2	0	2	2	2	0	0	0
Aghchay	93	88	0	88	83	61	0	0	22
Barun	72	109	0	109	102	98	4	0	0
Bukan	889	852	0	852	790	447	150	3	190
Hasanlu	57	66	0	66	53	41	0	0	11
Deriq Salmas	10	10	0	10	10	10	0	0	0
Zola	47	29	0	29	29	29	0	0	0
Saruq	19	35	0	35	11	3	6	0	2
Shahrchay	122	140	0	140	137	80	48	0	9
Shahid Ghanbari	45	46	0	46	37	37	0	0	0
Qiqaj	13	6	0	6	5	5	0	0	0
Mahabad	135	135	94	41	125	106	19	0	0

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other [5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Ardebil……..	***115***	***118***	***0***	***118***	***110***	***44***	***32***	***0***	***33***
Sabalan.....	43	43	0	43	39	9	0	0	29
Saqizchi.....	6	6	0	6	3	3	0	0	0
Qurichay	4	3	0	3	3	3	0	0	0
Gilarlu	1	0	0	0	0	0	0	0	0
Moghadasardebili.....	6	5	0	5	5	2	0	0	3
Yamchi	56	61	0	61	60	27	32	0	1
Esfahan……..	***1375***	***1392***	***989***	***302***	***1216***	***570***	***477***	***78***	***91***
Baghkal-e-Khansar	5	1	0	1	1	1	0	0	0
Hana	12	17	0	17	13	13	0	0	0
Khamiran.....	7	7	0	7	7	7	0	0	0
Zayandehrud	1138	1063	989	74	1024	514	381	78	51
Qareh Aqach	4	5	0	5	2	2	0	0	0
Golpayegan[8]	208	200	0	200	170	34	96	0	40
Ilam.....	***104***	***151***	***0***	***151***	***88***	***65***	***16***	***0***	***6***
Ilam	38	53	0	53	28	11	16	0	0
Doborj	66	98	0	98	60	54	0	0	6
Bushehr……..	***112***	***237***	***0***	***237***	***199***	***169***	***0***	***0***	***30***
Reis Ali delvari	113	237	0	237	199	169	0	0	30
Tehran	***1011***	***1053***	***679***	***549***	***1022***	***243***	***656***	***14***	***109***
Taleghan.....	250	262	76	186	254	111	144	0	0
Karaj.....	245	272	268	4	272	24	248	0	0
Lar	299	301	140	161	297	65	140	0	92
Latiyan[2]	204	198	194	4	132	0	114	1	17
Mamlo[2]	69	76	0	76	67	44	10	13	0

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Chaharmahal&Bakhtiyari	***32***	***32***	***0***	***32***	***15***	***15***	***0***	***0***	***0***
Choghakhor	30	29	0	29	14	13	0	0	0
Naghan	2	2	0	2	1	1	0	0	0
South Khorasan	***10***	***10***	***0***	***10***	***5***	***4***	***1***	***0***	***0***
Asadyieh	3	0	0	0	0	0	0	0	0
Parsa	0	0	0	0	0	0	0	0	0
Haji Abad	0	1	0	1	1	1	0	0	0
Farrokhi	0	1	0	1	1	1	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	5	7	0	7	3	2	1	0	0
North Khorasan	***67***	***61***	***0***	***61***	***51***	***34***	***12***	***0***	***5***
Barzu	20	8	0	8	7	7	0	0	0
Bidvaz	10	16	0	16	14	9	3	0	2
Chary	1	1	0	1	1	1	0	0	0
ShirinDarreh	36	36	0	36	30	18	9	0	3
Khorasan- e- Razavi	***334***	***240***	***0***	***240***	***136***	***35***	***98***	***0***	***4***
Tabarak Qochan	9	10	0	10	10	5	1	0	4
Chali DarrehTorghabeh	1	0	0	0	1	1	0	0	0
Daroungar-e-Dargaz	6	2	2	2	2	2	0	0	0
Shahid Dehqan-e-Taybad	3	0	0	0	0	0	0	0	0
Dusti[6]	263	190	0	190	90	2	88	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	9	5	0	5	5	5	0	0	0
Sangerd	4	4	0	4	3	3	0	0	0
Shahid Yaghobi	2	1	0	1	1	1	0	0	0
Toroq	8	4	0	4	4	0	4	0	0
Fariman	12	9	0	0	0	0	0	0	0
Kardeh	7	7	0	7	7	3	4	0	0
Komayestan	6	4	0	4	1	1	0	0	0
Yam	4	2	0	3	1	1	0	0	0

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Khuzestan	***15456***	***17503***	***35599***	***3426***	***16803***	***11951***	***741***	***617***	***3494***
Jareh	84	148	0	148	107	107	0	0	0
Dez	5080	5785	5608	177	5694	3469	12	75	2138
Seymareh[2]	790	224	0	224	0	0	0	0	0
Karun1(Shahid Abbaspour)[2, 10]	6124	6540	6461	78	0	0	0	0	0
Karun 3[2,10]	5199	4686	4621	65	0	0	0	0	0
Karkheh[2,11]	1125	1727	562	1165	1559	1037	192	34	306
Karun 4[2,10,12]	3178	3326	3265	61	0	0	0	0	0
Gotvand-e-Olia[2,11,10]	7627	8347	7076	1271	8250	6401	440	496	913
Marun	732	1225	831	395	1194	937	97	23	137
Masjed-Soleyman[2,10] (Godar Lander)	7198	7192	7175	17	0	0	0	0	0
Zanjan	***41***	***42***	***0***	***42***	***30***	***10***	***19***	***0***	***2***
Talvar	13	7	0	7	6	4	0	0	2
Tahem	13	23	0	23	19	1	19	0	0
Kineh Vers	5	5	0	5	2	2	0	0	0
Golabar	10	7	0	7	2	2	0	0	0
Semnan	***17***	***18***	***0***	***18***	***15***	***10***	***4***	***0***	***2***
Damghan	13	17	0	17	15	10	4	0	2
Kalpush	3	0	0	0	0	0	0	0	0
Sistan&Baluchestan	***806***	***583***	***0***	***583***	***366***	***317***	***40***	***0***	***8***
Pishin	24	114	0	114	82	81	1	0	0
Chahehnimeh 4[2]	707	393	0	393	0	0	0	0	0
Chahehnimeh[2]	925	912	0	912	259	214	38	0	8
Kheirabad	1	8	0	8	4	3	1	0	0
Zirdan	12	31	0	31	20	20	0	0	0
Sha iKelk	1	1	0	1	0	0	0	0	0
Mashkid-e-Olia	5	12	0	12	0	0	0	0	0

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Fars	***543***	***652***	***327***	***520***	***560***	***402***	***69***	***13***	***77***
Izadkhast	2	4	0	4	3	3	0	0	0
Tangab	24	25	0	25	18	0	0	0	18
Dorudzan[2]	368	382	132	251	333	254	51	13	16
Rudbal	12	17	0	17	10	0	0	0	10
Salman Farsi	155	197	0	197	176	138	18	0	20
Sivand	3	3	0	3	3	3	0	0	0
Mollasadra[2](Tangehbaragh)	181	227	195	32	18	4	0	0	14
Qom	***42***	***30***	***0***	***30***	***23***	***6***	***17***	***0***	***0***
Panzdah Khordad	42	30	0	30	23	6	17	0	0
Kordestan	***229***	***171***	***0***	***171***	***90***	***31***	***51***	***1***	***6***
Azad	124	41	0	41	22	22	0	0	0
Baneh	7	6	0	6	5	0	5	0	0
Zarivar	27	28	0	28	0	0	0	0	0
Sang siyah	1	2	0	2	1	0	0	1	0
Sural	4	1	0	1	1	1	0	0	0
Qeshleq	39	70	0	70	61	9	46	0	6
Garan	27	24	0	24	0	0	0	0	0
Kerman	***266***	***285***	***130***	***155***	***256***	***235***	***4***	***1***	***17***
Baft	12	16	0	16	12	11	1	1	0
Sirjan (Tanguiyeh)	6	7	0	7	5	2	3	0	0
Jiroft	150	183	130	52	167	164	0	0	4
Nesa	98	80	0	80	72	58	0	0	13
Kermanshah	***91***	***199***	***0***	***199***	***173***	***115***	***25***	***0***	***34***
Azadi	16	38	0	38	35	5	1	0	29
Zagros	11	9	0	9	8	4	0	0	4
Soleymanshah[2]	15	11	0	11	9	7	2	0	0
Shiyan	0	0	0	0	0	0	0	0	0
Gavshan[2]	48	137	0	137	121	99	22	0	1
Gilangharb	1	1	0	1	0	0	0	0	0
Kohgiluyeh & Boyerahmad.	***338***	***445***	***0***	***445***	***337***	***63***	***113***	***3***	***157***
Shah Qasem	8	3	0	3	2	2	0	0	0
Kosar	330	442	0	442	335	60	113	3	157
Golestan	***91***	***126***	***0***	***126***	***91***	***74***	***0***	***3***	***14***
Alagol	4	14	0	14	1	0	0	0	0
Daneshmand	4	4	0	4	4	1	0	0	3
Golestan 2[2]	55	71	0	71	39	30	0	0	9

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu-facturing	Other[5]
Golestan[2]	29	35	0	35	16	15	0	0	2
Nomel	3	4	0	4	3	3	0	0	0
Voshmgir[2]	35	37	0	37	27	24	0	2	0
Gilan	***1119***	***1209***	***824***	***386***	***1166***	***962***	***105***	***10***	***89***
Sefidrud	1119	1209	824	386	1166	962	105	10	89
Lorestan	***69***	***32***	***0***	***32***	***29***	***23***	***0***	***0***	***7***
Eyvashan	35	9	0	9	8	6	0	0	2
Tanghaleh	0	1	0	1	1	1	0	0	0
Khanabad	14	10	0	10	9	6	0	0	3
Kaznar	1	1	0	1	1	1	0	0	0
Maruk	19	11	0	11	11	9	0	0	2
Mazandaran	***290***	***328***	***110***	***219***	***283***	***232***	***16***	***0***	***35***
Alborz	***111***	***115***	***0***	***115***	***91***	***66***	***12***	***0***	***14***
Alimalat	4	4	0	4	0	0	0	0	0
Berenjestanak	10	9	0	9	6	6	0	0	0
Sonbolrud	3	3	0	3	3	3	0	0	0
Shahid Rajaee	132	167	110	57	164	146	0	0	18
Shiyadeh	2	4	0	4	4	4	0	0	0
Salaheddinkola	1	1	0	1	0	0	0	0	0
Farimsahra	1	1	0	1	1	0	0	0	0
Meijeran	26	26	0	26	13	6	4	0	3
Markazi	***84***	***71***	***0***	***71***	***55***	***18***	***26***	***11***	***0***
Saveh	29	31	0	31	21	18	3	0	0
Kamal Saleh	55	40	0	40	35	2	23	11	0
Hormozgan	***177***	***292***	***0***	***292***	***136***	***87***	***49***	***0***	***0***
Esteqlal	24	86	0	86	49	5	44	0	0
Jegin	127	137	0	137	60	60	0	0	0
Shamil & Nian	26	69	0	69	27	22	5	0	0

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

(mln cu m)

Description	Inflow[2]	Outflow[4]			Water consumption[3]				
		Total	From turbines ducts for electricity generation	Other[5]	Total	Agriculture	Drinking	Manu facturing	Other[5]
Hamedan	***48***	***43***	***0***	***43***	***38***	***14***	***24***	***0***	***0***
Ekbatan[2]	29	29	0	29	27	3	24	0	0
Abshineh[2]	0	0	0	0	0	0	0	0	0
Shirinsu	1	1	0	1	0	0	0	0	0
Kalan-e-Malayer	20	13	0	13	11	11	0	0	0

1. For the 152large reservoir dams (based on the ICOLD definition) with the capacity of 47.4bln.cu.m, almost equaling 95% of the total volume of the dams under use. Exlcluding the data for Khoda Afarin Dam due toits incompletion

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)Ostans.Moreover, inflow volume is calculated through balance of volume changes in reservoir and amount of outflows..

3. 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.

4. Other outflows include evaporation, weir, dam take-out gates, slit ejection, direct pumping from reservoir, drainage and leaking.

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. In Sahand dam, 23 mln cu m was released without use due to the lack of*water need and not finishing the downward network*

8. Major part of 143 mln cu m of inflow to the Golpayegan reservoir dam in the year1393 relates to the transferring of the water from Dez branches to Qomrud.

9. .Net outflow of the turbine with elimination of series dams is 16840 mln cu m..

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

11. Major part of other consumption in dams of Dez, Karkheh and Masjed-Soleyman were due to the improvement of drinking water.

12. 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.

13. Main difference between consumption(26.1 bln cu m) and net outflow(30.4 bln cu m) is due to the following reasons:1.2 bln cu m of Aras and Dusti dams for consumption of Iran's neighboring country, 0.3 bln cu m of surplus outflow of Gorganrud in Golestan Ostan, 1.9 bln cu m of direct outflow from weir, 0.2 bln cu m from evaporation of dams of the country and 0.1 bln cu m of generation of surplus hydroelectricity generation.

14. Statistics for the reservoir dams such as:Kangir(in Ilam Ostan), Ardak Chenaran(in Khorasan-e-Razavi Ostan), Kabud Val(in Golestan Ostan), Shahr Bijar(in Gilan Ostan) and Sarabi(in Hamedan Ostan) have been included in the system of dams in the second half of the year 1393; however due to the lack of complete data for the year 1393, the statistics were not included in the report of the Statistical Centre of Iran.

Source: Ministry of Energy.

9.4. DATA FOR CAPACITY OF RESERVOIRS, URBAN WATER DISTRIBUTION AND TRANSMISSION NETWOR

(cu m / km)

Year and urban water and sewage company	Capacity of reservoirs	Length of the network For water distribution	Length of the network For water distribution
1375	6735738	66557	8000
1380	8402485	77955	13458
1385	10914721	119059	18500
1389	12643894	127570	23329
1390	13101344	133163	25475
1391	13599484	136398	26238
1392	13963308	141410	26994
1393	***14136572***	***144084***	***27671***
East Azarbayejan	896775	8756	1108
West Azarbayejan	382770	4423	679
Ardebil	218035	2254	450
Esfahan	907800	11358	2302
Kashan	116900	1778	342
Alborz	409034	2808	655
Ilam	139450	1293	451
Bushehr	231050	3201	850
Tehran	2947810	15578	2273
Chaharmahal&Bakhtiyari	153960	1574	327
South Khorasan	110360	1926	572
Khorasan-e-Razavi	390445	5036	1793
Mashhad	561000	3649	500
North Khorasan	107230	1214	267
Khuzestan	684684	6772	1510
Ahvaz	78000	2528	200
Zanjan	129820	1556	289
Semnan	170450	2277	458
Sistan&Baluchestan	264460	3931	1280
Fars	552140	6766	2275
Shiraz	327260	2980	230
Qazvin	209580	1850	251
Qom	220820	2099	154
Kordestan	183835	4151	382
Kerman	676760	8967	1867
Kermanshah	300890	2944	538
Kohgiluyeh&Boyerahmad	106615	1369	281
Golestan	240205	2727	428
Gilan	403123	4879	631
Lorestan	241850	2664	520
Mazandaran	398898	6716	975
Markazi	273620	3151	673
Hormozgan	337611	2985	1076
Hamedan	297205	2561	442
Yazd	466127	5363	642

Source: Water and Sewage Engineering Company

9.5. DATA FOR WATER SUPPLY, PRODUCTION AND SALE CAPACITIES AND NUMBER OF EXTENTIONS OF URBAN WATER (1000 cum/number)

Year and urban water and sewage company	Max. capacity of water supply	Production	Sale(1)	Extensions
1375	157801	3694153	2737860	6452300
1380	165328	4008252	2617518	8060690
1385	214154	5094428	3464452	10115430
1389	243943	5677772	4071058	12313750
1390	247392	5323362	3900727	12891481
1391	258750	5425077	4034954	13614415
1392	265281	5643076	4236009	14386295
1393	***263019***	***5847738***	***4330157***	***14963718***
East Azarbayejan	10860	241222	193846	992688
West Azarbayejan	9861	184127	142782	576128
Ardebil	4548	70583	52931	284529
Esfahan	18481	376545	310691	1069365
Kashan	1592	40201	31526	134279
Alborz	9632	228770	173000	377432
Ilam	1280	38841	29674	127305
Bushehr	3013	95020	62100	227038
Tehran	61663	1379810	1037260	1814105
Chaharmahal&Bakhtiyari	2721	46075	35293	195226
South Khorasan	1800	43970	30064	164392
Khorasan-e-Razavi	7319	154600	104900	606860
Mashhad	8606	219895	170577	830285
North Khorasan	2088	37533	28829	170042
Khuzestan	15558	372380	224670	625224
Ahvaz	7383	155530	107692	317416
Zanjan	2537	65123	49771	203118
Semnan	2184	55714	42824	227361
Sistan&Baluchestan	5158	109535	82090	304447
Fars	8355	174590	128180	622292
Shiraz	5432	131719	98130	416205
Qazvin	3186	77662	63332	273427
Qom	7387	111187	88919	287469
Kordestan	3955	98090	70750	297447
Kerman	7464	164850	125500	554529
Kermanshah	9650	167646	91808	355074
Kohgiluyeh&Boyerahmad	1329	38400	28100	128739
Golestan	3647	74487	56120	259483
Gilan	5161	133367	105182	418809
Lorestan	3699	111010	78950	354524
Mazandaran	9745	253810	172119	537600
Markazi	5340	107153	84314	294887
Hormozgan	3297	102416	82758	219295
Hamedan	4668	95236	71288	335843
Yazd	4420	90641	74185	360855

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

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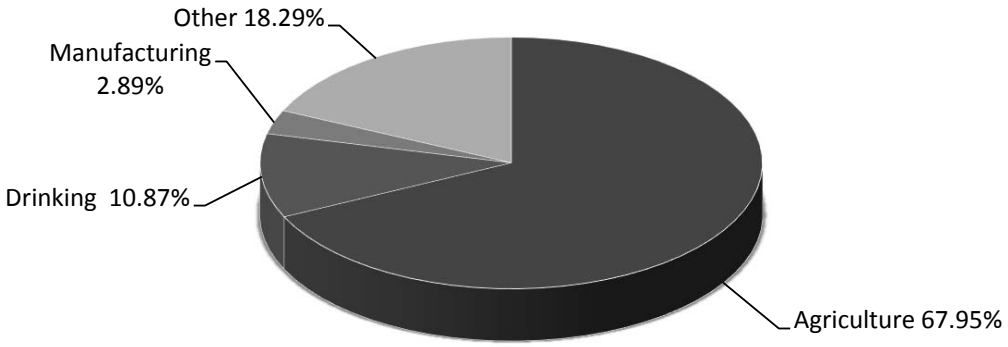
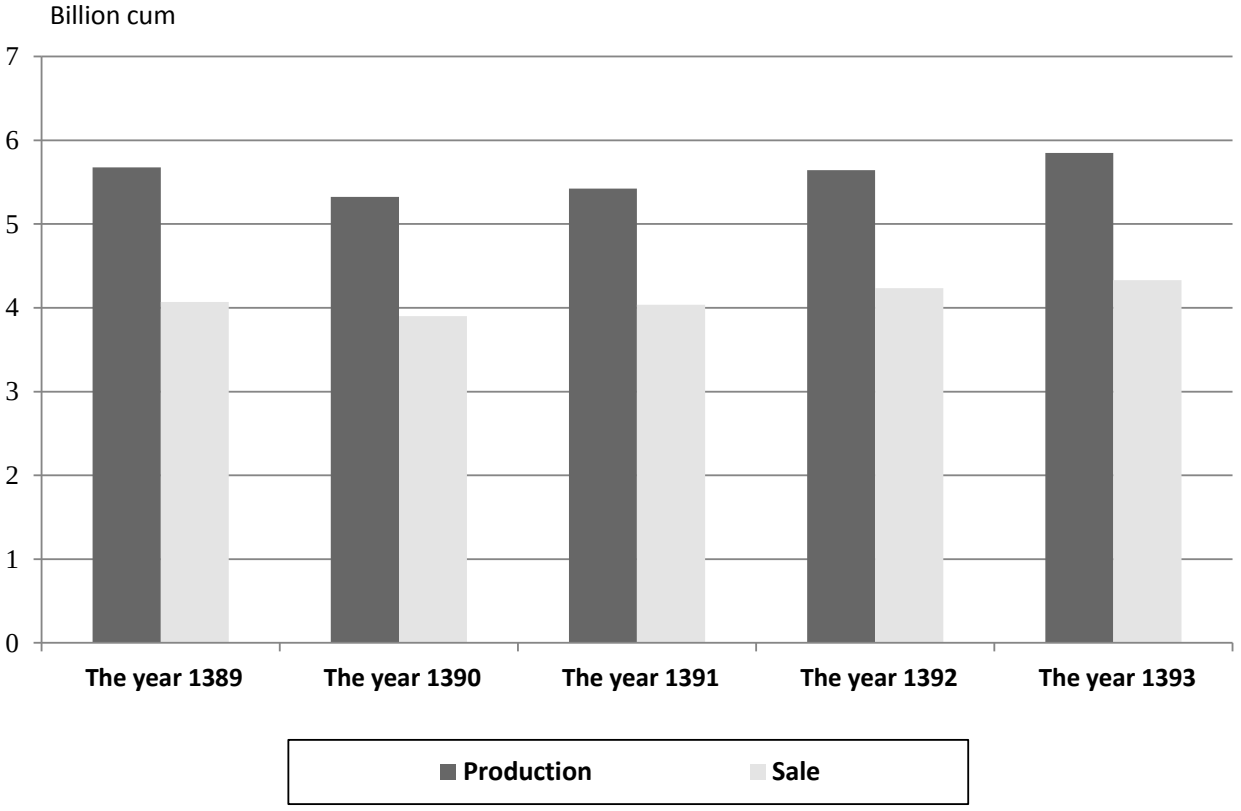
9.3. STATISTICS ON LARGE RESERVOIR DAMS(1) BY REGIONAL WATER ORGANIZATIONS



For data see Table 9.3.

9.4. DATA FOR CAPACITY OF RESERVOIRS, URBAN WATER DISTRIBUTION AND TRANSMISSION NETWOR



For data see Table 9.5.

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

Year and rural water and sewage company	Max. capacity of water supply	Production	Sale[1]	Extensions
1385	51242	1019180	652929	3200860
1389	56108	1211890	824564	4270530
1390	77038	1160295	794211	4415236
1391	77806	1217272	842466	4734879
1392	78479	1311453	913055	4975782
1393	***75623***	***1396408***	***964205***	***5155136***
East Azarbayejan	4217	75254	55096	301400
West Azarbayejan	2568	79973	57358	244151
Ardebil	793	22373	16790	114216
Esfahan	2029	58100	39800	226112
Alborz[2]	000	000	000	000
Ilam	1998	15240	10775	46588
Bushehr	1268	32419	21191	84640
Tehran[2]	3805	84929	48814	201099
Chaharmahal&Bakhtiyari	1300	22170	15015	77098
South Khorasan	856	22164	15604	128313
Khorasan-e-Razavi	3710	110190	81319	553335
North Khorasan	1110	29000	16000	108487
Khuzestan	4439	79340	47596	168323
Zanjan	1046	24853	17247	96090
Semnan	729	18692	9636	56126
Sistan&Baluchestan	4091	42000	29720	152796
Fars	5961	106674	73702	396751
Qazvin	951	28894	20514	106653
Qom	951	14000	8700	29725
Kordestan	3488	29650	20810	117806
Kerman	5010	66260	49204	243248
Kermanshah	1839	36870	26000	123053
Kohgiluyeh & Boyerahmad	1268	16810	11330	53137
Golestan	3583	54040	36510	207355
Gilan	2029	50790	36000	258284
Lorestan	2283	36000	26000	120592
Mazandaran	4661	103730	72800	381529
Markazi	2759	33979	25325	142786
Hormozgan	3837	41870	31730	161757
Hamedan	2283	42345	30719	154272
Yazd	761	17799	12900	99414

1.Water sale refers to water consumption.
2.Statistics for Alborz are included with Tehran.
Source: Water and Sewage Engineering Company.

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

(cu m / km)

Year and rural water and sewage company	Capacity of reservoirs	Length of the network For water distribution	Length of the network For water distribution
1385	2914866	116474	64500
1389	3453064	150148	83598
1390	3292684	155248	87848
1391	3361062	160414	91670
1392	3480029	162781	93498
1393	***3332951***	***167234***	***95094***
East Azarbayejan	175833	7972	6747
West Azarbayejan	143775	6027	4270
Ardebil	68747	3195	1984
Esfahan	120511	5225	2599
Alborz(1)	000	000	000
Ilam	59969	1284	1400
Bushehr	66160	3342	1824
Tehran(1)	132057	3398	1725
Chaharmahal&Bakhtiyari	88184	2656	1704
South Khorasan	107523	3026	3825
Khorasan-e-Razavi	299472	12060	7880
North Khorasan	72765	2815	1791
Khuzestan	128858	11996	7730
Zanjan	75247	3037	2276
Semnan	34827	1168	782
Sistan &Baluchestan	150602	8186	5727
Fars	282689	12063	6262
Qazvin	57956	2360	1553
Qom	41301	877	661
Kordestan	84989	2398	2597
Kerman	150783	10339	3256
Kermanshah	122828	4883	2678
Kohgiluyeh & Boyerahmad	78513	3317	2627
Golestan	78215	5085	2943
Gilan	145826	15008	3146
Lorestan	67848	4208	3556
Mazandaran	100983	14164	4840
Markazi	70100	2922	2061
Hormozgan	113780	5581	3412
Hamedan	121732	4288	1947
Yazd	90878	4354	1291

1. Statistics for Alborz are included with Tehran.
Source: Water and Sewage Engineering Company.

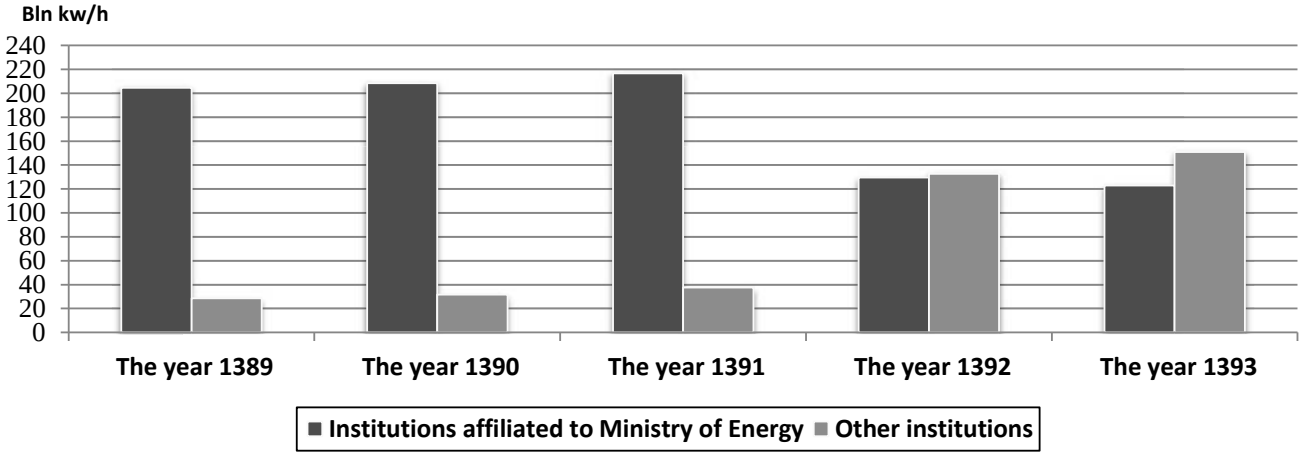
9.8. NOMINAL CAPACITY AND GROSS ELECTRICITY GENERATION OF INSTALLED GENERATORS

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
1375	27077	22420	4657	90851	85825	5026
1380	34233	28043	6190	129996	124275	5721
1385	45151	40909	4242	192534	181538	10996
1389	61203	50319	10884	232994	204515	28478
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	***73152***	***35075***	***38077***	***274480***	***123151***	***151329***

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 Energyand the increasein the figures for other institutions affiliated to 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)

Description	Nominal capacity (Nominal power)	Actual capacity (actual capacity)	Power generated at the point of peak consumption
1375	22420	21210	16027
1380	28944	26496	21853
1385	45288	40985	32997
1389	61203	54069	38891
1390	65212	57522	42245
1391	68941	60724	43243
1392	70279	61907	45659
1393	***73152***	***63987***	***46696***
Ministry of energy..	***35075***	***32238***	***24319***
Hydroelectric	10785	10785	7894
Steam	11241	10984	7850
Gas	7195	5656	4360
Combined cycle	4275	3389	3155
Diesel	439	284	60
Atomic	1020	1020	1000
Renewable……..	120	120	0
Large scale industries	***5581***	***4597***	***724***
Steam	589	490	242
Gas	4992	4107	482
Private sector	***32496***	***27152***	***21653***
Steam	4000	3778	3261
Gas	14224	11605	9065
Combined cycle	14219	11716	9327
Renewable	53	53	0

Source: Ministry of Energy.

9.10. CAPACITY OF INSTALLED GENERATORS AND GROSS ELECTRICITY GENERATION OF POWER PLANTS, THE YEAR 1393

Description	Nominal capacity (1000 kW)	Actual capacity (1000 kW)	Gross generation (mln kW h)
Total	***73152***	***63986***	***274480***
East Azarbayejan	1710	1520	8737
West Azarbayejan	1411	1143	5804
Ardebil	1016	821	2447
Esfahan	5030	4477	23323
Alborz	1624	1301	8655
Ilam	195	163	12
Bushehr	5181	4499	13403
Tehran	6296	5039	24748
Chaharmahal&Bakhtiyari	1053	1051	1415
South Khorasan	786	586	2597
Khorasan-e-Razavi	3605	3102	16907
North Khorasan	957	816	3236
Khuzestan	14054	13365	32031
Zanjan	708	560	2288
Semnan	658	526	2771
Sistan &Baluchestan	1488	1189	4784
Fars	4799	3730	20252
Qazvin	2073	1866	12042
Qom	721	602	4784
Kordestan	971	781	5464
Kerman	2588	1951	11120
Kermanshah	1379	1238	6394
Kohgiluyeh & Boyerahmad	17	17	28
Golestan	973	882	2722
Gilan	2829	2618	13265
Lorestan	67	40	138
Mazandaran	3351	3242	12903
Markazi	1341	1311	7254
Hormozgan	3267	2958	13552
Hamedan	1009	1009	2529
Yazd	1999	1587	8876

Source: Ministry of Energy.

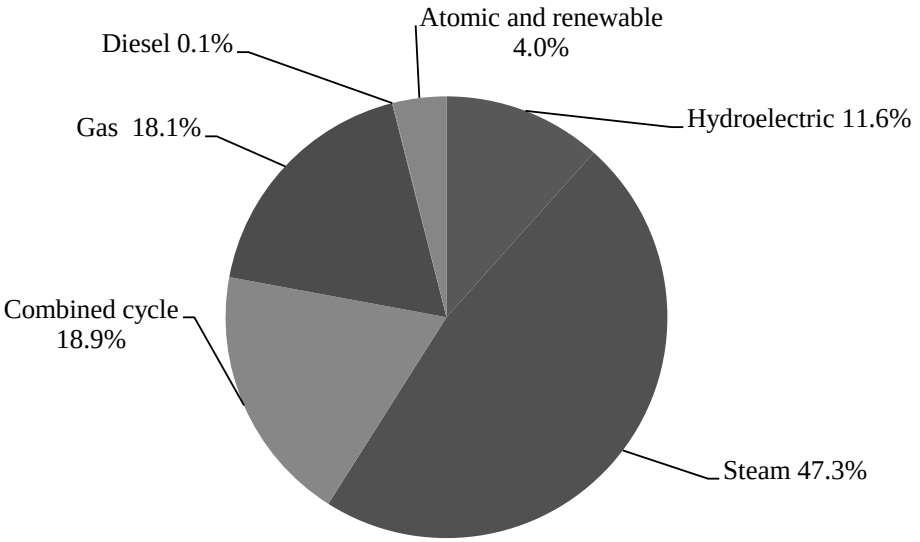
9.11. ELECTRICITYGENERATIONAND INTERNAL CONSUMPTION OF THE POWER PLANTS

(mln kWh)

Year and type of generator	Gross generation	Internal consumption of plants	Net generation
1375	85825	4568	81257
1380	127169	6123	121046
1385	192535	7773	184762
1389	232994	8082	224912
1390	240063	8442	231621
1391	254265	8352	245913
1392	262192	8727	253465
1393	***274480***	***8426***	***266054***
Ministry of energy	***123151***	***4583***	***118568***
Hydroelectric	13862	85	13777
Steam	60036	3948	56088
Combined cycle….	22863	406	22457
Gas	21618	138	21480
Diesel	83	6	77
Atomic	4546	0	4546
Renewable	143	0	143
Large scale industries	***6271***	***389***	***5882***
Steam	2458	218	2240
Gas	3813	171	3642
Private sector	***145058***	***3454***	***141604***
Steam	23129	1762	21367
Gas	47910	351	47559
Combined cycle	73960	1341	72619
Renewable	59	0	59

Source: Ministry of Energy.

9.6. NET PRODUCTION SHARE OF ELECTRICITY OF THE POWER PLANTS AFFILIATED TO THE MINISTRY OF ENERGY, THE YEAR 1393



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
1375	11	7375938	6	7069895	5	306043	-	-
1380	13	5056652	8	4902159	5	154493	-	-
1385	29	18168964	13	12634896	18	5550129	12	182164
1389	45	9522515	25	6373709	9	3078230	11	70574
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***
East Azarbayejan Regional Water Organization	0	0	0	0	0	0	0	0
West Azarbayejan Regional Water Organization	4	56269	1	0	2	56269	1	0
Ardebil Regional Water Organization	1	0	0	0	0	0	1	0
Esfahan Regional Water Organization	2	125509	2	125509	0	0	0	0
Tehran Regional Water Organization	5	272149	3	176686	2	95463	0	0
Chaharmahal&Bakhtiyari Regional Water Organization	2	1412170	2	1412170	0	0	0	0
Khorasan-e-Razavi Regional Water Organization	2	0	2	0	0	0	0	0
Khuzestan Regional WaterOrganization	7	11135248	3	6057289	4	5077959	0	0
Fars Regional Water Organization	3	108523	1	4373	2	104150	0	0
Kerman Regional Water Organization	1	42241	1	42241	0	0	0	0
Kermanshah Regional Water Organization	1	10775	1	10775	0	0	0	0
Kohgiluyeh &Boyerahmad Regional Water Organization	5	27885	3	16851	0	0	2	11031
Gilan Regional Water Organization	3	131720	1	131720	0	0	2	0
Lorestan Regional Water Organization	3	1939	3	1939	0	0	0	0
Mazandaran Regional Water Organization	6	533013	2	24040	1	508973	3	0
Markazi Regional Water Organization	2	0	1	0	0	0	1	0
Hamedan Regional Water Organization	1	4929	0	0	0	0	1	4929

Source: Ministry of Energy.

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

Description	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)			
1375	78449	1014	7446	13443	205737	2623	32.8
1380	122081	1618	6799	24012	295114	2414	35.6
1385	174280	4362	7587	32168	393246	2403	35.8
1389	223259	5918	8859	44890	525097	2352	36.6
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	37.0
1393	***255869***	***8872***	***10273***	***50172***	***606707***	***2371***	***36.3***
Power plants affiliated to the Ministry of Energy.	104599	2104	8228	18287	252537	2414	35.6
Large scale industries	6271	19	0	1896	18196	2902	29.6
Private sector	144999	6749	2045	29989	335974	2317	37.1

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	1375	1380	1385	1389	1390	1391	1392	1393
Gross generation	85825	124275	181538	204515	208414	216988	129540	123150
Less:Internal consumption of plants.....	4568	5942	7064	7589	7985	7849	5386	4583
Net generation.....	81257	118333	174474	196926	200429	209139	124154	118567
Plus:Electricity purchased from large-scale industries(1).....	2135	5721	10997	23954	23637	29365	125273	141834
Less: Distribution and transmission networks losses	11202	20857	35566	34663	34102	36755	37407	34610
Net sales	70055	97476	144831	187874	188917	201280	211094	225541
Net exports	384	305	233	3692	5012	7132	7879	5888
Domestic sales	69671	97171	144598	184182	183905	194148	203215	219653

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
1375	15616
1380	23220
1385	33453
1389	38919
1390	41481
1391	42027
1392	44724
1393	***46204***
Kish Water and Power Company	2554
Azarbayejan Regional Power Company	3158
Esfahan Regional Power Company	2393
Bakhtar Regional Power Company	8638
Tehran Regional Power Company	3040
Khorasan Regional Power Company	6665
Khuzestan Regional Power Company	1142
Zanjan Regional Power Company	419
Semnan Regional Power Company	1090
Sistan&Baluchestan Regional Power Company	1414
Gharb Regional Power Company	4214
Fars Regional Power Company	1711
Kerman Regional Power Company	1197
Gilan Regional Power Company	2962
Mazandaran Regional Power Company	2131
Hormozgan Regional Power Company	692
Yazd Regional Power Company	127
Large scale industries	2659

Source: Ministry of Energy.

9.16. ELECTRIC POWER TRANSMISSION LINES (km circuits)

Year	Transmission line		Sub-transmission line	
	400 kV	230 kV	132 kV	63 and 66 kV
1375	6730	14115	10647	23336
1380	9924	20731	13857	29400
1385	12404	25634	18582	37974
1389	18761	29117	21111	44007
1390(1)	18625	29158	22092	44956
1391	19745	29722	22602	45754
1392	19915	30300	22665	46240
1393	***19995***	***30732***	***22919***	***47105***

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
1375	15330	29447	9544	23947
1380	22458	37287	12762	31265
1385	29633	53816	18489	43987
1389	44893	64502	24403	57929
1390	46708	67412	25352	59759
1391	50968	69843	26844	61334
1392	54303	71605	27838	63270
1393	***57143***	***75024***	***29269***	***65061***
East-Azarbayejan	1715	2880	2465	648
West-Azarbayejan	630	1445	1756	15
Ardebil	0	720	0	705
Esfahan	4780	4890	0	6926
Alborz	1000	2056	0	2371
Ilam	0	1240	424	520
Bushehr	3395	2056	1512	1733
Tehran	9100	10370	0	11589
Chaharmahal&Bakhtiyari	450	0	0	935
South Khorasan	1000	0	805	0
Khorasan-e-Razavi	3028	160	5620	982
North Khorasan	800	0	848	0
Khuzestan	6995	7521	9959	0
Zanjan	1400	1250	0	1785
Semnan	1600	1670	0	1328
Sistan&Baluchestan	630	2452	30	2433
Fars	4760	4290	605	6281
Qazvin	400	1430	0	1915
Qom	0	1080	0	1245
Kordestan	0	1315	80	975
Kerman	1670	4610	3592	360
Kermanshah	1230	2025	0	1870
Kohgiluyeh&Boyerahmad	400	320	387	0
Golestan	700	1660	0	1598
Gilan	1000	3125	120	2391
Lorestan	1000	1295	0	1867
Mazandaran	2000	3355	0	3926
Markazi	2000	2550	0	2786
Hormozgan	3090	5634	720	4315
Hamedan	600	1780	0	1753
Yazd	1770	1843	345	1813

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
1375	12854735	10440912	290156	37747	55036	1579329
1380	16345450	13682563	523505	77556	91468	1970358
1385	20559946	16989284	748964	138137	152202	2531359
1389	25692719	21048404	1005121	258138	158538	3222518
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***
East Azarbayejan	1621770	1290900	62820	17211	14072	236767
West Azarbayejan	1102511	905305	26728	17359	5117	148002
Ardebil	478937	399586	17917	3396	2631	55407
Esfahan	2318548	1851194	77908	38907	27089	323450
Alborz	1158636	949537	68784	4348	5422	130545
Ilam	194250	163211	7159	2492	1041	20347
Bushehr	388996	319899	11760	3613	2178	51546
Tehran	6232279	4786906	464139	10156	37687	933391
Chaharmahal&Bakhtiyari	314847	266593	9138	5417	2161	31538
South Khorasan	329225	277809	13312	4392	2109	31603
Khorasan-e-Razavi	2497573	2073006	86483	18577	16352	303155
North Khorasan	311370	266286	9980	2918	1376	30810
Khuzestan	1417199	1180268	43746	8854	4021	180310
Zanjan	393103	326215	13054	7253	3054	43527
Semnan	339141	268642	18058	4825	4228	43388
Sistan&Baluchestan	687256	581929	21660	10837	2144	70686
Fars	1769688	1471288	52737	37792	12533	195338
Qazvin	530066	431197	31287	5172	4008	58402
Qom	486571	400354	13775	3082	5486	63874
Kordestan	563168	478680	14689	8402	2374	59023
Kerman	1017086	873567	27633	13413	4198	98275
Kermanshah	678979	573347	21261	6794	2418	75159
Kohgiluyeh&Boyerahmad	215506	186995	6931	2286	1007	18287
Golestan	635063	525754	27324	8354	2535	71096
Gilan	1254457	993966	57884	15712	4766	182129
Lorestan	560558	482716	13814	6905	2542	54581
Mazandaran	1672909	1354659	72571	48347	11302	186030
Markazi	640668	536034	23177	8878	5660	66919
Hormozgan	620809	507913	27565	7593	2748	74990
Hamedan	662575	547303	24455	11147	4534	75136
Yazd	577891	468010	14375	8196	9295	78015

Source: Ministry of Energy.

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

(mln KW/h)

Year and Ostan	Total	Household	Public	Agricultural	Industrial	Streets lighting	Other
1375	69671	23993	6595	5731	22925	2805	7622
1380	96811	32891	11951	11079	30379	4117	6394
1385	144598	48085	18329	17666	46590	4608	9320
1389	184182	60908	21308	24189	61483	3568	12726
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***
East Azarbayejan	7249	2167	575	974	2854	175	504
West Azarbayejan	4491	1666	343	1011	1006	135	329
Ardebil	1516	586	139	241	374	55	120
Esfahan	21343	3751	1194	2740	12441	292	925
Alborz	5236	1886	531	667	1566	115	470
Ilam	1039	448	221	182	102	30	55
Bushehr	5286	3257	832	187	608	65	337
Tehran	31423	10924	5274	2403	7145	420	5258
Chaharmahal&Bakhtiyari	1611	414	101	521	443	60	72
South Khorasan	1439	373	122	509	303	58	75
Khorasan-e-Razavi	14618	3862	939	4776	3783	290	967
North Khorasan	1444	389	92	340	532	25	66
Khuzestan	26414	12404	1940	2006	8676	272	1116
Zanjan	3232	518	144	544	1866	57	103
Semnan	2876	464	185	664	1406	50	105
Sistan&Baluchestan	4725	2473	615	835	363	170	270
Fars	12445	3735	1080	4142	2339	240	910
Qazvin	4539	753	230	1045	2271	62	178
Qom	3020	955	281	507	979	54	244
Kordestan	1984	877	153	516	260	47	131
Kerman	10115	2702	676	3659	2561	158	362
Kermanshah	3081	1072	481	432	824	90	183
Kohgiluyeh&Boyerahmad	1209	558	110	152	288	35	66
Golestan	2942	1413	252	499	509	66	203
Gilan	4872	2063	453	459	1327	152	418
Lorestan	3269	917	297	630	1195	85	146
Mazandaran	7298	3108	651	834	1908	196	601
Markazi	7560	917	246	1171	4959	94	173
Hormozgan	12641	4635	1154	660	5445	95	652
Hamedan	3781	1003	236	1171	1111	95	165
Yazd	6955	874	222	708	4851	99	202

Source: Ministry of Energy.

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)
1375	35074	3318832	84745	73046	42203	4703
1380	45359	4056072	120580	89359	54162	5688
1385	50985	4427849	138330	93464	64718	6812
1389	53461	4251123	184831	98226	71239	7240
1390	54116	4261123	185943	98583	72186	7283
1391	54561	4268473	186787	98824	72818	7316
1392	55191	4277893	187580	99180	73625	7361
1393	***55664***	***4285114***	***188610***	***99492***	***74228***	***7389***
East Azarbayejan	2791	296569	8236	5613	2962	315
West Azarbayejan	2895	210193	5676	4076	2993	288
Ardebil	1582	70168	4488	3581	1579	116
Esfahan	1744	296635	4752	4525	3014	273
Ilam	223	21810	508	487	235	30
Bushehr	614	44678	1440	804	681	72
Tehran	511	39835	1481	1227	819	112
Chaharmahal&Bakhtiyari	599	152791	1267	1626	1084	152
South Khorasan	727	85285	550	973	511	58
Khorasan-e-Razavi	1430	124324	3409	2257	1688	127
North Khorasan	3232	326797	7180	4595	3523	308
Khuzestan	907	93607	3257	1878	1107	84
Zanjan	3657	205622	17741	3486	7643	1122
Semnan	921	91462	3817	2038	1018	118
Sistan&Baluchestan	501	35938	2814	953	477	51
Fars	4148	46525	50827	6248	4919	322
Qazvin	3145	282681	8912	5876	4519	428
Qom	849	72737	2601	2234	1114	168
Kordestan	189	18234	410	248	189	16
Kerman	1772	127260	5325	2158	1854	187
Kermanshah	4793	235776	12167	7618	7635	645
Kohgiluyeh&Boyerahmad	2497	126979	4322	2542	2581	256
Golestan	1585	54023	3201	1382	2050	226
Gilan	895	106236	1630	1197	1016	69
Lorestan	3005	285944	4520	10182	4780	421
Mazandaran	2562	100598	5042	2609	2383	186
Markazi	2994	262037	4658	5943	3065	221
Hormozgan	1183	124271	4696	4084	1383	173
Hamedan	1671	126309	8007	4990	4323	576
Yazd	1123	164951	3387	2979	2070	194

Source: Ministry of Energy.

9.21. EXCHANGE OF ELECTRICITY WITH NEIGHBORING COUNTRIES

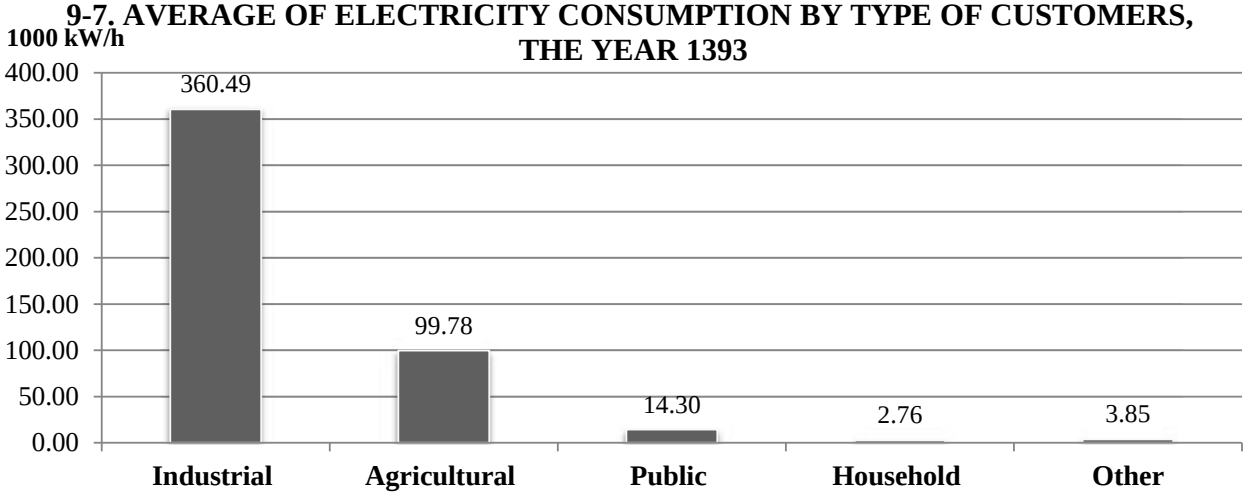
Year	Exports								
	Nakhjavan	Turkey	Armenia	Azerbaeijan	Turkminestan	Pakistan	Afghanistan	Iraq	Total
1375	283	101	0	0	0	0	0	0	384
1380	389	251	224	185	0	0	0	0	1049
1385	561	576	316	11	2	172	134	1002	2774
1389	70	822	118	0	1	266	446	4985	6707
1390	56	1118	57	0	8	271	557	6601	8668
1391	59	1912	7	0	8	369	639	8035	11029
1392	65	2395	82	0	3	414	796	7831	11586
1393	***66***	***2179***	***86***	***0***	***1***	***446***	***819***	***6063***	***9660***

Year	Imports				
	Nakhjavan	Turkey	Armenia	Azerbaeijan	Turkminestan
1375	0	0	0	0	0
1380	0	0	315	430	0
1385	0	0	428	536	1576
1389	69	0	1149	20	1777
1390	57	0	1508	2	2089
1391	60	0	1582	2	2253
1392	65	0	1103	6	2533
1393	***65***	***0***	***1051***	***3***	***2653***

Year	Imports				Exchange of energy
	Pakistan	Afghanistan	Iraq	Total	
1375	0	0	0	0	384
1380	0	0	0	745	305
1385	0	0	0	2541	233
1389	0	0	0	3015	3692
1390	0	0	0	3656	5012
1391	0	0	0	3897	7132
1392	0	0	0	3707	7879
1393	***0***	***0***	***0***	***3772***	***5888***

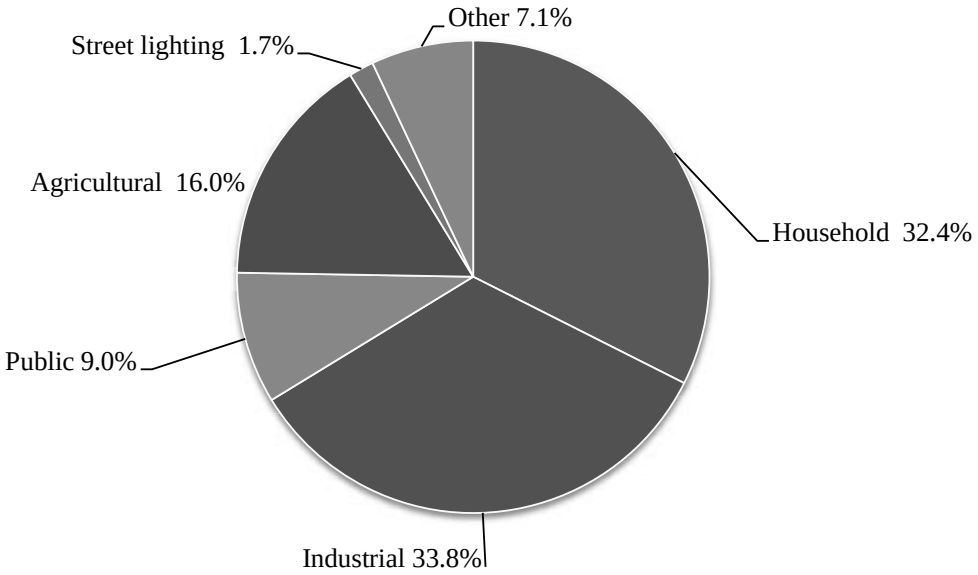
Source: Ministry of Energy.

9-7. AVERAGE OF ELECTRICITY CONSUMPTION BY TYPE OF CUSTOMERS, THE YEAR 1393



For data see Tables 9.18 and 9.19.

9.8. DOMESTIC SALE OF ELECTRICITY BY TYPE OF USE, THE YEAR 1393



For data see Table 9.19.

9.22. ELECTRICITY DISTRIBUTION NETWORK OF THE COUNTRY BY PROVINCE, THE YEAR 1393

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	***397998***	***336491***	***598040***	***105356***
East Azarbayejan	16703	14288	21012	3417
West Azarbayejan	14485	11443	17345	2330
Ardebil	7060	5923	5992	853
Esfahan	24197	24765	39671	7567
Alborz	4836	7211	12643	2659
Ilam	4367	2493	5084	857
Bushehr	7100	5774	13161	2970
Tehran	22274	39786	54801	18348
Chaharmahal&Bakhtiyari	6296	4555	7554	971
South Khorasan	12197	4848	8301	908
Khorasan-e-Razavi	31583	21955	33472	5594
North Khorasan	5763	4159	5582	699
Khuzestan	21027	17164	47688	11550
Zanjan	7857	5437	8560	1363
Semnan	6850	4202	7001	1241
Sistan&Baluchestan	22680	11369	19630	2460
Fars	33398	23101	57456	7301
Qazvin	6763	4885	10799	1750
Qom	3287	3569	5636	1406
Kordestan	9905	5226	10741	1273
Kerman	29377	19814	37296	4727
Kermanshah	11221	6487	15575	1922
Kohgiluyeh&Boyerahmad	4688	3318	6874	1083
Golestan	7078	6988	14843	2021
Gilan	8648	18528	17006	2890
Lorestan	8866	6968	12605	1797
Mazandaran	14234	20381	37112	5022
Markazi	11201	7982	14675	2215
Hormozgan	14434	8950	21519	4280
Hamedan	9937	7545	15021	2118
Yazd	9688	7378	13385	1765

Source: Ministry of Energy.